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## VIII Annual Changes Sept. 2018
This is the 9th edition of the Patient Care Guidelines for the Kenosha Fire Department Emergency Medical Services. These guidelines will be updated anytime there is a need for change, and the entire set will undergo review and necessary update at least once every 2-3 years. This edition represents a 2-year review.

In the KFD EMS system, Emergency Medical Technicians are present on every 911 call and are integral in the high quality of pre-hospital care provided. Thus, their roles, responsibilities, and scope of practice have been incorporated into all patient care guidelines as listed under “All providers.” “All providers” include EMTs and paramedics.

Most guidelines are introduced with a paragraph that helps explain background and the importance of assessment and treatment of each working assessment with highlights as necessary. This is important because these guidelines are not meant to, nor are they able to, provide an absolute treatment plan or algorithm for every conceivable patient encounter. Rather, they are to guide the EMTs’ and paramedics’ best clinical judgment based on education and experience.

These guidelines shall be recognized as standing orders of the physician medical director to be administered by authorized members of the City of Kenosha EMS System as appropriate in the treatment of the ill or injured patient. It is recognized that these guidelines are intended to treat and stabilize most patient care situations eliminating the need for routine or frequent on-line medical control.

On-line medical control shall be contacted in accordance with the guidelines, when a patient or condition is not sufficiently addressed in the guidelines, when considering termination of resuscitation, when a patient does not respond as expected, or for any other situation in which EMTs or paramedics need real time consultation with a physician.

In the event that on-line communications cannot be established, pre-hospital providers shall continue to treat the patient to the best of their ability within these guidelines. Under no circumstances shall emergency pre-hospital care be delayed while attempting to establish contact with on-line medical direction.
Similar to trauma patients, medical patients need a focused, organized evaluation. However, for medical patients, scene time will generally be longer and assessment will often be more detailed.

<table>
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<tr>
<th>All Providers</th>
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<tr>
<td></td>
<td>♦ Assess and secure scene safety.</td>
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<td>♦ Use universal precautions utilizing appropriate PPE as necessary.</td>
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### PRIMARY SURVEY

#### Airway
- ♦ Assess, establish and/or maintain an effective airway.
- ♦ C-spine immobilization as indicated.
- ♦ Reposition airway and suction as necessary.
- ♦ Airway adjuncts as required.
  - NP/OP airways.
  - Non-visualized airway.

#### Breathing/Ventilation
- ♦ Obtain respiratory rate and determine pulse-oximetry if any distress.
- ♦ Listen to lung sounds.
- ♦ Oxygen per Oxygen Therapy Guideline.
- ♦ Assist with BVM as necessary.

#### Circulation
- ♦ Assess pulses for presence, rate, quality, and regularity. If no pulse start CPR and go to Cardiac Arrest Guideline.
- ♦ Assess skin for color, moisture, and temperature.

#### Disability/Mini-neurological exam
- ♦ A Alert.
- ♦ V Not alert but responds to verbal stimuli.
- ♦ P Not alert but responds to painful stimuli.
- ♦ U Unresponsive to all stimuli.

#### Expose
- ♦ Loosen tight clothing, removing as appropriate.
- ♦ Assist patient to position of comfort.

### Paramedics
- ♦ Intervene with endotracheal intubation to control airway as needed.
- ♦ Initiate IV as appropriate.
- ♦ Obtain 12-lead EKG early in suspected cardiac cases.
- ♦ Apply cardiac monitor as appropriate.
### SECONDARY SURVEY

#### All Providers
- Obtain History
  - Chief complaint
  - History of present illness
    - Onset/duration
    - Location/radiation
    - Quality/quantity
    - Alleviating/aggravating factors
    - Associated symptoms
  - Past medical/surgical history
  - Medications
  - Allergies
  - Social history
    - Living situation
    - Drug and/or alcohol use
    - Tobacco use
  - Review of systems
  - Primary care doctor/cardiologist/surgeon
- Complete vital signs
- Head-to-toe exam as appropriate for complaint
- Notify receiving hospital as soon as practical
Patient autonomy must be respected and this includes decisions related to end-of-life care. Also there are times when medical care is obviously futile. This guideline address when it is appropriate to withhold resuscitation efforts.

**All Providers**

**Obviously Dead Patients** (resuscitation not indicated)

- Decapitation
- Rigor mortis without hypothermia
- Profound dependent lividity
- Decomposition
- Mummification
- Incineration
- Frozen torso or airway

**DNR Orders**

Valid DNR exists if a patient has a state-approved DNR bracelet or a valid DNR order.

- A valid **DNR bracelet** is a clear, standard, hospital-type bracelet at least 3/4 in. wide which is found on the patient’s wrist or a standard metal bracelet. The metal bracelet (from MedicAlert®) displays the internationally recognized Staff of Aesculapius symbol on the front and the words “Wisconsin-Do-Not-Resuscitate-EMS” and the qualified patient’s first and last name engraved on the back. The plastic DNR bracelet contains:
  - On the left, the patient’s name, orders, date of birth and gender;
  - On the right, the physician’s name, phone number and original signature;
  - An insert with the words printed in blue, stating “Do Not Resuscitate” and the State of Wisconsin Seal.

- A valid **DNR order** is a written document which must contain:
  - Name of patient;
  - Name and signature of attending physician;
  - Effective date (renewal unnecessary; no expiration unless modified or revoked by the maker);
  - The words “Do Not Resuscitate”;
  - Evidence of consent, such as:
    - Signature of patient;
    - Signature of legal guardian; or
    - Signature of Durable Power of Attorney for Health Care Agent; or
    - Attached Living Will or other advance directive prepared by or on behalf of patient (if signed).

*If the DNR order is valid, resuscitative efforts shall be withheld.* “Resuscitation” is defined as cardiopulmonary resuscitation or any component of cardiopulmonary resuscitation, including: cardiac compressions, endotracheal intubation, advanced airway management, artificial ventilation, defibrillation, ACLS care or use of medications, and related procedures at the appropriate EMS license provider level.
All Providers

If resuscitative efforts were begun prior establishing DNR status, efforts should cease once a valid DNR status is established.

A DNR order may be revoked by the (competent) patient, legal guardian, or Durable Power of Attorney for Health Care. This is accomplished by any of the following methods:

♦ They express to EMS personnel the desire to revoke the DNR order and have resuscitation performed;
♦ They deface, burn, cut or otherwise destroy the DNR bracelet or DNR order;
♦ They remove the DNR bracelet or another person removes the bracelet (at the patient’s request);
♦ The DNR order appears to have been tampered with or removed;
♦ EMS personnel, other personnel or a family member knows the patient is pregnant.

If there are any questions or ambiguities, contact Medical Control

Power of Attorney for Health Care/Living Wills

If someone represents themselves as having a Power of Attorney to direct medical care of the patient and/or a document referred to as a Living Will is presented; follow these procedures:

♦ Begin or continue medical treatment.
♦ Contact medical control; explain the situation and follow any orders received.
♦ Living wills may not be honored by field personnel without direction from on-line medical control.
♦ On-line medical control must help determine legitimacy of power of attorney for health care.

Bring any documents received to the hospital.

Hospice Patients (not in arrest)

If patients are registered in a hospice program, initiate BLS care and immediately contact medical control for orders on treatment and disposition. Inform medical control of the presence of written treatment orders and/or valid DNR orders. Supportive care may be initiated or continued on these patients, including oxygen therapy and IV fluids (if paramedic) en route to the hospital. DNR orders are not in effect until the patient is in cardiac/respiratory arrest.

Notes:

♦ Medical control contact is not necessary for obviously dead patients.
♦ Medical control contact is not necessary for clear DNR orders.
♦ Medical control should be contacted simultaneously with initiation of resuscitation in all situations in which there is a question.
♦ DNR bracelets from out-of-state shall be honored if the EMT/paramedic believes it to be valid.
If circumstances demand hospital care to stabilize a patient, minimizing scene time is desired. In any case where care is abbreviated or aborted in favor of expeditious transport, the unique and compelling reasons for doing so must be documented. While most patients will benefit from hospital care, it must be remembered that you can provide care much more quickly than the hospital can. If you have a therapy that can help a patient, you should initiate it. Deferring care to the hospital in favor of expeditious transport should only occur if there is something at the hospital that is going to immediately rescue a patient from permanent disability or death. This guideline does not imply that the rate of speed in transport is accelerated, but rather there is emphasis on rapid scene stabilization and transportation to the hospital as soon as possible. At all times transport should occur in a safe and controlled manner. Expeditious transport may occur with or without lights and siren depending on circumstances and the ability to maintain safe operation of the ambulance.

Examples of situations that may require an expeditious transport:
- Inability to establish or maintain a patent airway.
- Inability to ventilate or impaired gas exchange with hypoxia.
- Penetrating wounds to chest or abdomen with patient in shock.
- Blunt trauma patients in shock.
- Massive uncontrolled hemorrhage with shock.
- Head injury with rapidly deteriorating condition.
- Prolapsed umbilical cord.
- Breech birth.
- Acute ST elevation MI (STEMI).
- Acute CVA, within 24 hours of symptom onset.

All Providers
- Notify hospital as soon as possible of situation and ETA.

Paramedics
- Paramedic interventions should be utilized if they will provide benefit to the patient.
- Short transport time is not a reason alone not to initiate interventions.
| Indications | ♦ An IO infusion should be used only when at least one IV attempt has been made and IV/IO medications are a necessary intervention to prevent death or disability. |
| Contraindications | ♦ An IO infusion should **not** be established if:  
  - an IV can be established in less than 2 minutes with 2 attempts  
  - Patient is stable  
  - No life-preserving medications are going to be infused through it  
  ♦ Fracture suspected in target bone  
  ♦ Artificial limb or joint (knee or shoulder replacement)  
  ♦ Infection over the desired site  
  ♦ IO, or attempted IO insertion, in the same bone within the last 48 hours  
  ♦ Inability to definitively locate landmarks |
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<th>IM</th>
<th>IO</th>
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This guideline will infrequently be used alone as nausea and/or vomiting is typically associated with other complaints. Nausea and vomiting may be a symptom of many different disease processes and all should be considered including abdominal problems, cardiac problems, and head injuries. Regardless of the related complaint or cause of nausea and/or vomiting, this guideline may be utilized.

| All Providers | ♦ Assist patient to position of comfort  
|              | ♦ Maintain airway  
|              | ♦ Do not give anything by mouth  
| Paramedics   | ♦ Ondansetron (Zofran) 4mg IV/IM (0.15mg/kg max 4mg for peds)  

- **Indications:**  
  - Nausea and/or vomiting regardless of cause  
  - Can be used on unconscious patients who are vomiting  

- **Contraindications:**  
  - Allergy to Ondansetron or Zofran  

- **Routes:**  
  - Intravenous (IV) over not less than 30 seconds, ideally over 1 minutes  
  - Intramuscular (IM)  

- **Onset:**  
  - Action can be seen in as little as 5 to 10 minutes, but may take longer  
  - No need to repeat in the pre-hospital setting
No Transport
Algorithm

Does the patient want to go to the hospital?

YES → Transport to the hospital

NO →

Does the patient deny injury & illness and a reasonable person would agree that the probability of injury or illness is unlikely?

YES → See “Denial of Injury”

NO →

Does the patient only require simple first aid (e.g. Ice pack or Band-Aid)?

YES → See “Treat and Release”

NO →

Is the patient diabetic with corrected low blood sugar and no other problems?

YES →

Does the patient only take insulin for diabetes? Does the patient have access to food? Does the patient have a caregiver to stay with?

YES →

NO → See “Refusal of Care”

NO →

Does the patient only take insulin for diabetes?

NO →

Does the patient have access to food?

NO →

Does the patient have a caregiver to stay with?

NO →
Not all requests for service will find a patient. Sometimes 911 is activated by bystanders or others based on something they witnessed without any definitive knowledge of a patient need. Once “the dust settles,” it is possible that there is no patient with an injury or illness.

All Providers

♦ Every attempt should be made to contact the caller and look for a potential patient.

♦ Any denial of injury should be initiated by the potential patient.
  • The EMS provider should never suggest a denial of injury.

♦ If the potential patient denies injury or illness, evaluate the circumstances.
  • If a reasonable person would look at the circumstances and not have a high suspicion of injury or illness (a minor fender bender), you can accept the denial.
    ▪ No further evaluation is necessary.
  • If circumstances suggest the potential for injury or illness (high speed crash with a spidered windshield, or a person that is pale and diaphoretic), then this person is defined as a patient and you must attempt a formal evaluation and recommend treatment and transport.
    ▪ If this person refuses, see Refusal of Care.

♦ The Patient Care Record should document the following
  • Circumstances of the call
    ▪ Motor vehicle crash should include site of impact, location of potential patient, restraint use, severity of impact
  • Offer to transport to the hospital
  • Instructions to call 911 or seek care if an injury or illness should develop or become apparent
  • Observations of the potential patient’s physical condition

♦ The “Nonconveyance—Denial of Injury/Treat and Release” form should be completed and signed for any potential patient contact
♦ Primary impression should be “no apparent illness/injury” or “patient assist only”
♦ Disposition should be “no treatment required”

Notes: Minors are allowed to deny injury. Use judgment regarding contacting a parent or guardian (would a reasonable person want that contact made?)
Patients have the right to refuse care. However, a patient must have decisional capacity to make an informed refusal. Competence is a legal determination. We are not assessing competence, but rather decisional capacity. This means the patient understands what is going on, what choices he has, and what risks are involved with refusing treatment and/or transport. A patient does not have to make a good decision, but they must make a deliberate, informed decision.

<table>
<thead>
<tr>
<th>All Providers</th>
<th>Determine decisional capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Are awake and oriented</td>
</tr>
<tr>
<td></td>
<td>Can verbalize an understanding of what is happening</td>
</tr>
<tr>
<td></td>
<td>Can verbalize why refusing (is the thought process cogent?)</td>
</tr>
<tr>
<td></td>
<td>Can verbalize what the risks are related to refusing</td>
</tr>
<tr>
<td></td>
<td>Provide a clear recommendation of treatment and transport</td>
</tr>
<tr>
<td></td>
<td>Provide the risks associated with refusal which will always potentially include disability and death</td>
</tr>
<tr>
<td></td>
<td>Instruct patient to seek care elsewhere, find alternative transportation, or call 911 at any time he changes his mind or condition worsens</td>
</tr>
<tr>
<td></td>
<td>Document</td>
</tr>
<tr>
<td></td>
<td>Complete exam including vitals</td>
</tr>
<tr>
<td></td>
<td>If patient refuses any part of the exam, document accordingly</td>
</tr>
<tr>
<td></td>
<td>Decisional capacity assessment</td>
</tr>
<tr>
<td></td>
<td>Risks of refusal conveyed to the patient</td>
</tr>
<tr>
<td></td>
<td>Instructions provided to the patient</td>
</tr>
</tbody>
</table>

- If a patient is deemed non-decisional (does not have decisional capacity), he should be transported
  - The use of restraint is appropriate as needed
  - Call police for assistance if necessary
- The “Conveyance Declined—Refusal of Care” form should be completed and signed
- Primary impression should reflect likely diagnosis
- Disposition should be “citizen refused care”

Notes:

- Refusal of transport or part of treatment (such as an IV start) does not relieve EMS of the duty to provide appropriate care up to the level which is acceptable to the patient.
- Alcohol consumption or psychiatric disease does not automatically mean a patient is non-decisional. The provider must determine if the current status of the patient in relation to the problem is understandable to the patient.
- Use on-line medical control liberally for high risk situations, including all psychiatric refusals. The on-line physician can help you assess decisional capacity and sometimes having a doctor speak with the patient can actually help convince him to go to the hospital.
While a primary purpose of an EMS activation is to transport to the hospital, there are times when a patient needs nothing more than simple treatment. EMS should never suggest a “treat and release.” Our default is to ALWAYS offer and be willing to make transport. However, a patient declining transport may be reasonable.

All Providers

- If a patient is denying injury and circumstances are such that an injury/illness is unlikely, see the No Transport-Denial of Injury Guideline.

- If a patient is a diabetic with low blood sugar and no other complaint is refusing transport after treatment, a treat and release is appropriate if all of the following are met:
  - The patient is not on any oral diabetic medications
  - The patient has access to and will eat a meal
  - The patient can be left in the care of another responsible person

- If a patient requires nothing more than simple first aid such as a bandaid or ice pack for a minor injury, a treat and release is appropriate if all of the following are met:
  - The patient has decisional capacity
  - If a reasonable EMT or paramedic would agree that no more than simple first aid is needed
  - If a reasonable EMT or paramedic would not feel the patient is at risk for any significant worsening of condition or is at risk for a serious injury or illness
  - The Patient Care Record should document the following
    - Circumstances of the call
    - Exam findings (exam should be appropriately complete based on complaint and findings) including pertinent negative findings
    - Offer to transport to the hospital
    - Basic care instructions
  - Instruction to call 911 or seek further care should the condition change

- The Nonconveyance—Denial of Injury/Treat and Release form should be completed and signed
- Primary impression should reflect likely diagnosis
- Disposition should be “treated and released”

Notes: Minors are allowed to request a treat and release. Use judgment regarding contacting a parent or guardian (would a reasonable person want that contact made?)

Reviewed: September 2018
Historically oxygen has been considered good for all patients and many times high flow oxygen has been provided empirically. While oxygen is still essential to normal cellular respiration, it is now recognized that high oxygen levels can lead to tissue damage. Therefore oxygen needs to be treated like any other drug we utilize and should be administered when clinically indicated based on best available evidence. Its routine use will be minimized.

<table>
<thead>
<tr>
<th>All Providers</th>
<th>Titrated oxygen should be provided to the following patients</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Hypoxia (Pulse oximetry less than 94%)</td>
</tr>
<tr>
<td></td>
<td>▪ When available, pulse-oximetry should be measured, and amount of oxygen should be adjusted to keep pulse-oximetry reading between 94-99%</td>
</tr>
<tr>
<td></td>
<td>▪ Breathlessness, dyspnea, shortness of breath</td>
</tr>
<tr>
<td></td>
<td>▪ Amount of oxygen should be adjusted to lowest level to improve symptoms.</td>
</tr>
<tr>
<td></td>
<td>100% Oxygen utilizing 10-15 liters via non-rebreather mask (NRB) or bag-valve mask (BVM) should be provided to the following patients</td>
</tr>
<tr>
<td></td>
<td>▪ Ill pregnant women</td>
</tr>
<tr>
<td></td>
<td>▪ Cardiac/respiratory arrest</td>
</tr>
<tr>
<td></td>
<td>▪ CO poisoning and/or smoke inhalation</td>
</tr>
</tbody>
</table>

Notes:

- If pulse-oximetry is not available or the reading is deemed unreliable, oxygen should be administered based on clinical judgment.
  - It is preferable to error on the side of giving too much oxygen
- Oxygen will not be routinely used on chest pain and stroke patients
  - Only if hypoxic or with respiratory symptoms
- After return of pulses, oxygen should be aggressively titrated to maintain a pulse-oximetry reading of 94-99%
- Oxygen via nasal cannula (NC) should be delivered at 4-6 liters
- Oxygen via NRB should be delivered at 10-15 liters
Pain management is very important in patient care. Untreated pain is not only a source of needless suffering, it can also interfere with health care providers’ ability to appropriately assess and treat a patient. The idea that treating pain may mask a serious problem and prevent appropriate diagnosis is an old and unfounded one and should never be a reason for withholding pain medication. Unfortunately it is also true that there are patients that have “drug-seeking” behavior who may feign pain in an attempt to receive a narcotic pain medicine. Unscrupulous administration of pain medicine to these patients is inappropriate. It is essential for the paramedic to use his best clinical judgment in treating pain and regardless of working diagnosis, pain should always be acknowledged and non-pharmaceutical pain management techniques should be used regardless of decision to use narcotic analgesia. It also needs to be recognized that the epidemic of narcotic abuse and addiction is growing at an alarming rate and has become the leading cause of death in young adults in this country. As such, all non-narcotic pain management modalities should be maximized. Those with chronic pain issues should not be treated by EMS with narcotics or ketamine. Non-pharmacological modalities should be used and medications deferred to the hospital.

### All Providers
- Assess pain on 1-10 scale for adults and FACES scale for peds.
- Patients should be assisted to position of comfort as appropriate.
- Suspected fractures/dislocations should be splinted as appropriate.
- Assess for cause of pain and remove if possible.
- Re-assess after each intervention.
- Apply ice pack to injuries as appropriate.

### Paramedics
- **Consider establishing IV.**
- **Consider non-narcotic analgesia**
  - **Toradol (Ketorolac)**
    - Adult: 15mg IV/IO or 30mg IM
    - Peds: 0.5mg/kg IV/IO (Max dose 10mg) or 1mg/kg IM (Max dose 30mg)
  - For severe pain, consider narcotic analgesia.
  - **Fentanyl**
    - Adult 25-100mcg IV/IM/IN. Re-dose every 2-5 min up to 300mcg total.
    - Peds 0.5-1mcg/kg IV/IM/IN. Re-dose every 2-5min up to 100mcg total.
  - Contact medical control for additional dosing.
- For severe pain requiring aggressive control (i.e. significant open fracture, entrapment with significant injury, large surface area burns.)
  - **Ketamine** (adults and peds)
    - 0.1-0.2mg/kg IV/IO
    - 0.5mg/kg IN
    - A reported or estimated weight must be documented.
    - This may be repeated once in 10-15 minutes as needed.
    - If the patient develops nystagmus, dosing has gone beyond that for pain control and no more should be given.
Notes:
♦ When given IV, Fentanyl and/or Ketamine should be administered over 2 minutes.
♦ Fentanyl has a quicker onset but does not last as long as morphine.
♦ For most adults, Fentanyl dosing should start at 50-100mcg. 25mcg is provided as an option for small adults and the elderly who may be very sensitive to narcotic pain medicine. A starting dose of 150mcg may be appropriate for a large patient or one in severe pain.

Wong-Baker FACES Pain Rating Scale

![Wong-Baker FACES Pain Rating Scale](image)

**Brief word instructions:** Point to each face using the words to describe the pain intensity. Ask the child to choose the face that best describes his pain and record the appropriate number.

**Original instructions:** Explain to the person that each face is for a person who feels happy because he has no pain (hurt) or sad because he has some or a lot of pain. Face 0 is very happy because he doesn’t hurt at all. Face 1 hurts just a little bit. Face 2 hurts a little more. Face 3 hurts even more. Face 4 hurts a whole lot. Face 5 hurts as much as you can imagine, although you don’t have to be crying to feel this bad. Ask the person to choose the face that best describes how he is feeling.

Rating scale is recommended for persons age 3 years and older.

EMS STANDARD OF CARE APPROVED ABBREVIATIONS

The EMS Division has approved the following abbreviations for acceptance on the Patient Care Report (PCR). Limit your use of abbreviations to this list. When using these abbreviations they are to be written as they appear in this PCG.

ALL PROVIDERS

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>å (a)</td>
<td>before (ante)</td>
</tr>
<tr>
<td>AAA</td>
<td>abdominal aortic aneurysm</td>
</tr>
<tr>
<td>Abd</td>
<td>abdomen</td>
</tr>
<tr>
<td>ACS</td>
<td>acute coronary syndrome</td>
</tr>
<tr>
<td>AED</td>
<td>automatic external defibrillator</td>
</tr>
<tr>
<td>AHA</td>
<td>American Heart Association</td>
</tr>
<tr>
<td>AIDS</td>
<td>acquired immune deficiency syndrome</td>
</tr>
<tr>
<td>ALOC</td>
<td>altered level of consciousness</td>
</tr>
<tr>
<td>ALS</td>
<td>advanced life support</td>
</tr>
<tr>
<td>AMA</td>
<td>against medical advice</td>
</tr>
<tr>
<td>AMI</td>
<td>acute myocardial infarction</td>
</tr>
<tr>
<td>Amp</td>
<td>ampule</td>
</tr>
<tr>
<td>Amt</td>
<td>amount</td>
</tr>
<tr>
<td>Ant</td>
<td>anterior</td>
</tr>
<tr>
<td>AOX3</td>
<td>Alert oriented to time, place, person</td>
</tr>
<tr>
<td>Approx</td>
<td>Approximately</td>
</tr>
<tr>
<td>ASAP</td>
<td>as soon as possible</td>
</tr>
<tr>
<td>BBB</td>
<td>bundle branch block</td>
</tr>
<tr>
<td>BLS</td>
<td>basic life support</td>
</tr>
<tr>
<td>BP</td>
<td>blood pressure</td>
</tr>
<tr>
<td>BG</td>
<td>blood glucose</td>
</tr>
<tr>
<td>BS</td>
<td>breath sounds</td>
</tr>
<tr>
<td>c (c)</td>
<td>With (cum)</td>
</tr>
<tr>
<td>CA</td>
<td>cancer</td>
</tr>
<tr>
<td>CABG</td>
<td>coronary artery bypass graft</td>
</tr>
<tr>
<td>CAD</td>
<td>coronary artery disease</td>
</tr>
<tr>
<td>Cath</td>
<td>catheter</td>
</tr>
<tr>
<td>CC</td>
<td>chief complaint</td>
</tr>
<tr>
<td>Chemo</td>
<td>chemotherapy</td>
</tr>
<tr>
<td>CHF</td>
<td>congestive heart failure</td>
</tr>
<tr>
<td>Cl</td>
<td>chloride</td>
</tr>
<tr>
<td>cm</td>
<td>centimeter</td>
</tr>
<tr>
<td>CNS</td>
<td>central nervous system</td>
</tr>
<tr>
<td>C/O</td>
<td>complaining of</td>
</tr>
<tr>
<td>COPD</td>
<td>chronic obstructive pulmonary disease</td>
</tr>
<tr>
<td>CPR</td>
<td>Cardiopulmonary resuscitation</td>
</tr>
<tr>
<td>CRT</td>
<td>capillary refill time</td>
</tr>
<tr>
<td>c-section</td>
<td>Cesarean section</td>
</tr>
<tr>
<td>c-spine</td>
<td>cervical spine</td>
</tr>
<tr>
<td>CSF</td>
<td>cerebrospinal fluid</td>
</tr>
<tr>
<td>CSM</td>
<td>Circulation, sensation, movement</td>
</tr>
<tr>
<td>CVA</td>
<td>cerebrovascular accident</td>
</tr>
<tr>
<td>D/C</td>
<td>discontinue</td>
</tr>
<tr>
<td>Dec</td>
<td>decreased</td>
</tr>
<tr>
<td>DKA</td>
<td>diabetic ketoacidosis</td>
</tr>
<tr>
<td>DOA</td>
<td>dead on arrival</td>
</tr>
<tr>
<td>DOE</td>
<td>dyspnea on exertion</td>
</tr>
<tr>
<td>DM</td>
<td>diabetes mellitus</td>
</tr>
<tr>
<td>EBL</td>
<td>estimated blood loss</td>
</tr>
<tr>
<td>ED</td>
<td>emergency department</td>
</tr>
<tr>
<td>ECG/EKG</td>
<td>electrocardiogram</td>
</tr>
<tr>
<td>Exempli Gratia</td>
<td>for example (exempli gratia)</td>
</tr>
<tr>
<td>Abbreviation</td>
<td>Description</td>
</tr>
<tr>
<td>--------------</td>
<td>---------------------------</td>
</tr>
<tr>
<td>epi</td>
<td>epinephrine</td>
</tr>
<tr>
<td>ET</td>
<td>endotracheal</td>
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<td>evaluation</td>
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</tr>
<tr>
<td>F</td>
<td>fahrenheit</td>
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<tr>
<td>FB</td>
<td>foreign body</td>
</tr>
<tr>
<td>freq</td>
<td>frequency</td>
</tr>
<tr>
<td>Fx</td>
<td>fracture</td>
</tr>
<tr>
<td>GI</td>
<td>gastrointestinal</td>
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<tr>
<td>gm</td>
<td>gram</td>
</tr>
<tr>
<td>GSW</td>
<td>gunshot wound</td>
</tr>
<tr>
<td>gtts</td>
<td>drops</td>
</tr>
<tr>
<td>hr</td>
<td>hour</td>
</tr>
<tr>
<td>Hep A</td>
<td>Hepatitis A (HAV)</td>
</tr>
<tr>
<td>Hep B</td>
<td>Hepatitis B (HBV)</td>
</tr>
<tr>
<td>Hep C</td>
<td>Hepatitis C (HCV)</td>
</tr>
<tr>
<td>HHN</td>
<td>hand held nebulizer</td>
</tr>
<tr>
<td>HIV</td>
<td>human immunodeficiency virus</td>
</tr>
<tr>
<td>H&amp;P</td>
<td>history and physical exam</td>
</tr>
<tr>
<td>HPI</td>
<td>history of present illness</td>
</tr>
<tr>
<td>HTN</td>
<td>hypertension</td>
</tr>
<tr>
<td>Hx</td>
<td>history</td>
</tr>
<tr>
<td>IDDM</td>
<td>insulin dependent diabetes mellitus</td>
</tr>
<tr>
<td>IM</td>
<td>intramuscular</td>
</tr>
<tr>
<td>IN</td>
<td>intranasal</td>
</tr>
<tr>
<td>inf</td>
<td>inferior</td>
</tr>
<tr>
<td>IO</td>
<td>intraosseous</td>
</tr>
<tr>
<td>IV</td>
<td>intravenous</td>
</tr>
<tr>
<td>JVD</td>
<td>jugular vein distention</td>
</tr>
<tr>
<td>kg</td>
<td>kilogram</td>
</tr>
<tr>
<td>L</td>
<td>left</td>
</tr>
<tr>
<td>lac</td>
<td>laceration</td>
</tr>
<tr>
<td>lat</td>
<td>lateral</td>
</tr>
<tr>
<td>lb</td>
<td>pound</td>
</tr>
<tr>
<td>LMP</td>
<td>last menstrual period</td>
</tr>
<tr>
<td>L-spine</td>
<td>lumbar spine</td>
</tr>
<tr>
<td>max</td>
<td>maximum</td>
</tr>
<tr>
<td>mcg</td>
<td>microgram</td>
</tr>
<tr>
<td>MD</td>
<td>medical doctor</td>
</tr>
<tr>
<td>mg</td>
<td>milligram</td>
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<tr>
<td>MI</td>
<td>myocardial infarction</td>
</tr>
<tr>
<td>misc</td>
<td>miscellaneous</td>
</tr>
<tr>
<td>ml</td>
<td>milliliter</td>
</tr>
<tr>
<td>mm</td>
<td>millimeter</td>
</tr>
<tr>
<td>mod</td>
<td>moderate</td>
</tr>
<tr>
<td>N/A</td>
<td>not applicable</td>
</tr>
<tr>
<td>NAD</td>
<td>no acute distress</td>
</tr>
<tr>
<td>neg</td>
<td>negative</td>
</tr>
<tr>
<td>NIDDM</td>
<td>non-insulin dependent diabetes mellitus</td>
</tr>
<tr>
<td>NKA</td>
<td>no known allergies</td>
</tr>
<tr>
<td>no.</td>
<td>number</td>
</tr>
<tr>
<td>NPO</td>
<td>nothing by mouth</td>
</tr>
<tr>
<td>NSR</td>
<td>normal sinus rhythm</td>
</tr>
<tr>
<td>NTG</td>
<td>nitroglycerin</td>
</tr>
<tr>
<td>occ</td>
<td>Occasional</td>
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<tr>
<td>Oz</td>
<td>Ounce</td>
</tr>
<tr>
<td>PAC</td>
<td>Premature atrial complex</td>
</tr>
<tr>
<td>P</td>
<td>Pulse</td>
</tr>
<tr>
<td>P (p)</td>
<td>After (post)</td>
</tr>
<tr>
<td>Abbreviation</td>
<td>Definition</td>
</tr>
<tr>
<td>--------------</td>
<td>------------------------------------</td>
</tr>
<tr>
<td>PAD</td>
<td>public access defibrillation</td>
</tr>
<tr>
<td>Palp</td>
<td>palpation</td>
</tr>
<tr>
<td>PE</td>
<td>physical examination</td>
</tr>
<tr>
<td>PE</td>
<td>pulmonary embolus</td>
</tr>
<tr>
<td>PERL</td>
<td>pupils equal, reactive to light</td>
</tr>
<tr>
<td>PMD</td>
<td>private (Personal) medical doctor</td>
</tr>
<tr>
<td>PMH</td>
<td>past medical history</td>
</tr>
<tr>
<td>PNB</td>
<td>pulseless non-breather</td>
</tr>
<tr>
<td>PND</td>
<td>paroxysmal nocturnal dyspnea</td>
</tr>
<tr>
<td>POC</td>
<td>position of comfort</td>
</tr>
<tr>
<td>pos</td>
<td>positive</td>
</tr>
<tr>
<td>PP</td>
<td>policy/procedure</td>
</tr>
<tr>
<td>pt.</td>
<td>patient</td>
</tr>
<tr>
<td>PTA</td>
<td>prior to arrival</td>
</tr>
<tr>
<td>PVC</td>
<td>premature ventricular contraction</td>
</tr>
<tr>
<td>q</td>
<td>every</td>
</tr>
<tr>
<td>R</td>
<td>respirations</td>
</tr>
<tr>
<td>R</td>
<td>right</td>
</tr>
<tr>
<td>Rx</td>
<td>treatment</td>
</tr>
<tr>
<td>SIDS</td>
<td>sudden infant death syndrome</td>
</tr>
<tr>
<td>SL</td>
<td>sublingual</td>
</tr>
<tr>
<td>SOB</td>
<td>shortness of breath</td>
</tr>
<tr>
<td>SOC</td>
<td>standard of care</td>
</tr>
<tr>
<td>SQ</td>
<td>subcutaneous</td>
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<tr>
<td>subQ</td>
<td>subcutaneous</td>
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<tr>
<td>stat</td>
<td>immediately</td>
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<tr>
<td>temp</td>
<td>temperature</td>
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<tr>
<td>TB</td>
<td>tuberculosis</td>
</tr>
<tr>
<td>TBSA</td>
<td>total body surface area</td>
</tr>
<tr>
<td>TKO</td>
<td>to keep open</td>
</tr>
</tbody>
</table>
The electronic patient care record (ePRC) narrative will provide a complete picture of the patient presentation, pertinent findings, pertinent negatives, ongoing development of the patient care event, care and treatment provided and condition at end of call.

The intent of writing a narrative is to tell a story that can be completely understood by people who were not present at the scene. Narrative documentation shall provide a clear and concise, yet thorough explanation of what occurred at the scene of the call. Document an unbiased and factual description of the call. Make sure all check boxes or electronic screen choices match documentation made in the narrative section of the ePCR. Use a systematic approach; a good ePCR should be written with the same systematic approach that is used for the patient assessment. Include critical information and document care chronologically.

ALL PROVIDERS

**Guideline for Narrative Documentation:**

1. Found *(age and sex of patient)* in *(position)* complaining of ______________.
2. Since *(duration).*
3. States chief complaint began *(time).*
4. Precipitating factors.
5. List interventions by patient/family and results.
6. Describe signs and symptoms and assessments which are not mentioned previously in record.
7. Document critical thinking including pertinent negatives which supports your primary impression.
8. Describe treatments not already mentioned in record: patient treated with __________ or treated as above.
9. List responses to treatments if not already mentioned.
11. List any problems which may have occurred as a result of your interventions.
12. Patient transported in *(position)* to ______ hospital and with/without lights/siren, if not already mentioned.
14. Document status of patient upon admission to emergency department. Include comments of any “significant findings” which the patient was treated for, ex: Upon admission to ED, patient __________.
15. After you have written it – READ IT. Check for accuracy AND consistency.
16. Officer/Acting Officers shall review the electronic patient care record (ePCR) prior to it being posted to the KFD Elite Site and validate it as being documented completely, thoroughly and accurately.
A narrative in conjunction with other data fields in the ePCR should clearly provide the patient assessment information below:

**Guideline for Assessment/Interview:**

1. Name:
2. Age:
3. Chief Complaint:
4. Onset/Duration:
5. Precipitating Factors:
6. Interventions by Patient:
7. Associated Symptoms:
8. Pertinent Negatives:
9. Medical History:
10. Allergies/What Kind:
11. Vital Signs – Blood Pressure, Pulse, and Respirations:
12. Breath Sounds:
13. Pupils:
14. Skin:
15. Mental Status:
16. Initial Physical Exam:
17. Decide on what your Primary Impression is and how you are going to treat the patient.
All reports to the hospital and/or medical control need to be complete, yet concise. Following an established format will allow for consistent quality reports. Information should only be included if it will directly impact on the care of the patient (getting respiratory ready, choosing an appropriate ED room, preparing for an imminent procedure, etc).

The receiving hospitals are expecting all of the following information to be provided in the order listed.

### All Providers
- Reports should be provided to the receiving hospital as soon as practical. This may occur while still on scene.
- If ongoing patient care issues don’t allow time to provide a report as outlined below, it is acceptable for someone not directly involved in patient care to provide report indicating chief complaint, current status of patient, and immediate needs once at hospital in addition to circumstances necessitating an abbreviated report (this should be infrequent).
- Reports to medical control or the receiving hospital should be provided in accordance with the following template and should take 30 seconds or less.

When calling the hospital, key the mic for 2 seconds before beginning to speak each time.

The template includes and should be in the following order:

1. **Dept name, unit, destination** then wait for reply.
2. After acknowledgement, repeat dept name, unit, destination, number of patients, and ETA
3. Patient age and sex
4. Chief complaint (one sentence or less)
5. Level of consciousness (AVPU {and GCS for trauma})
6. History
   - Brief history of present illness
   - Pertinent past medical history
   - Meds (only those that relate)
   - Allergies (to include latex)
7. **Clinical Findings**
   - Vital signs (pulse, BP, RR)
   - Pertinent physical exam (i.e. lung sounds in CHF patient or location of injuries in trauma patient)
8. Other data (only as pertinent)
   - Monitor
   - Pulse-oximetry reading
   - Finger stick reading
   - 12-lead EKG interpretation
9. Interventions (only as pertinent)
   - Patient (took own ntg)
   - KFD (IV, O₂, meds)

### Notes:

“KFD Med [#] calling [hospital name].” {wait for reply}

“This is KFD Med [#] en route to [confirm hospital name destination here] with [# of patients] patient(s) and an ETA of [minutes]. {for each patient, report the following} Patient is a [age] year old [m/f] c/o [chief complaint] (or “victim of [describe mechanism of injury]”). Patient is [AVPU (and GCS for trauma)]. Patient has a history of [provide pertinent history (or pertinent negative history)] and is taking [pertinent meds only]. Patient is allergic to [pertinent allergies only, including latex]. On exam vital signs are [pulse, BP, RR]. Pt has [provide only pertinent and most important findings]. [If applicable, provide findings on monitor/EKG/finger stick/etc]. We [list interventions provided (oxygen, monitor, IV)].”

Hospitals should be alerted as soon as possible with time sensitive diagnosis utilizing the following in place of the triage category:

**STEMI Alert**: for all ST-elevation myocardial infarctions

**NEURO Alert**: for all strokes with last known well time less than 24 hours ago

**TRAUMA Alert**: for all serious trauma
Restraint is any method, physical or chemical, of involuntarily physically restricting a person’s freedom of movement, physical activity, or normal access to his/her body. Restraints are applied only after less restrictive measures have failed. Restraints are used to provide temporary external controls for patients whose actions may result in injury to the patient or others.

All Providers

When using restraints, always:

♦ Use least restrictive restraints that are effective.
♦ Explain purpose of restraint to patient and/or family.
♦ Secure extremities in 2-point or 4-point restraints; NEVER apply a single restraint or 2-foot restraints only. If using 2-point, apply to opposite sides: both hands, left hand and right foot, right hand and left foot, etc.
♦ NEVER restrict patient’s airway or respiratory mechanics as a method of restraint.
♦ Always use a quick release knot when using soft restraints.
♦ When using leather restraints, apply to all 4 extremities unless ordered otherwise.
♦ Assess neurovascular status upon application and every 15 minutes thereafter.
♦ You may release restraint to improve neurovascular status, to provide care, or to improve range of motion or comfort for the patient.

Document the following on every incident in which a restraint is used.

♦ The rational for use of restraint.
♦ The type of restraints used and the location of application.
♦ The time restraint was applied.
♦ Neurovascular status after application.
♦ Any change in restraint application or neurovascular rechecks.

Restraint Procedure:

♦ Be sure to have adequate help.
♦ Soft restraints should be used whenever possible.
♦ Once the decision to restrain the patient has been made, act quickly.
♦ Talk to and reassure the patient throughout the procedure.
♦ Approach the patient with at least 4 people, one assigned to each limb, all to act at the same time.
♦ Secure all four limbs with the appropriate selected restraint.
♦ Secure the restraints to the cot (be sure to secure to non-moving parts).

Continued on next page
Position the patient face up or on his side and assure that restraints do not restrict breathing.

**NEVER RESTRRAIN A PATIENT IN THE PRONE POSITION.**
**NEVER HOG TIE A PATIENT.**
**NEVER SANDWICH A PATIENT BETWEEN TWO LONGBOARDS/SOOP STRETCHERS.**
**HAND-CUFFS OR ZIP-STRIPS CAN ONLY BE USED BY POLICE** (If police use handcuffs or similar, they must remain available to the patient at all times to be able to remove cuffs as necessary for patient care. When transporting prisoners, if law enforcement restraints could potentially interfere with patient care, then law enforcement personnel need to be immediately available to remove restraints if necessary).

If patient is spitting or vomiting rescuers should wear protective masks, eyewear, and clothing.

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**Paramedic**

Chemical restraints are useful in the emergency setting to control agitation or psychotic behavior which constitutes an imminent threat to the patient or others. These medications may be used alone or in conjunction with physical restraints.

**Indications for chemical restraint**
- Agitated patient with psychotic symptoms who is a danger to self or others.
- Any patient that continues to fight against physical restraints or remains agitated.

**Procedure**
- Patients with major agitation/combativeness needing aggressive, reliable control
  - *Ketamine* 1-2mg/kg IV/IO or 3-5mg/kg IM
- Patients with mild to moderate agitation/combativeness
  - *Midazolam (Versed)* 1-2 mg IV/IM/IN, may repeat to a max of 10mg.
- Contact medical control for further orders.
The tiered emergency response the Kenosha Fire Department provides to the community often times includes a single paramedic aboard the first-responding fire suppression unit. This allows for ALS patient care to be provided prior to the arrival of an ALS unit. **A single paramedic may provide patient care utilizing all of the skills within the paramedic scope of practice as long as a second paramedic is enroute with the exception of RSA (RSA requires 2 paramedics at the patient side).**

In the event a single Kenosha Fire Department paramedic is providing patient care and a second paramedic is **NOT** enroute due to mutual aid or other circumstances, the single paramedic can only function to the level of an EMT-Intermediate, per Wisconsin Administrative Code 110.50 (1)(d)4.

### Paramedics

The following procedures/medications found within the KFD Patient Care Guidelines **CANNOT** be performed/used by a single paramedic without a second paramedic en route to the scene:

- Diphenhydramine (Benadryl)
- Etomidate
- Labetalol
- Methylprednisolone (Solu-Medrol)
- Rocuronium
- Sodium Bicarbonate
- Cricothyrotomy

**RSA cannot be done without 2 paramedics on scene at the patient’s side.**
Persistent asystole has a very poor prognosis. PEA however can range from a slow and wide agonal rhythm with equally poor prognosis to a narrow, organized rhythm that may represent cardiac activity which is just too weak to generate a palpable pulse. The presence of a “normal” appearing rhythm without a pulse should prompt the paramedic to aggressively think about reversible causes of PEA. An increased end-tidal CO$_2$ reading may be an indicator of otherwise indiscernible perfusion.

**All Providers**
- See **Cardiac Arrest Guideline** and concentrate on good quality CPR with hard and fast chest compressions.

**Paramedics**
- **Epinephrine 1:10,000 1mg IV/IO.** Repeat every 3-5 minutes if remains pulseless.
- Confirm true asystole in 2 or more leads.
- Attempt to identify and correct potential causes as listed below.
- For known **renal (dialysis) patients** not responsive to first dose of Epinephrine, treat with the following:
  - **Calcium Chloride 1gm in 10ml IV/IO push.** (Make sure IV/IO is flushed well before and after giving Calcium Chloride)
    - If rhythm/patient responds, may repeat as needed to maintain circulation.
  - **Sodium Bicarbonate 50mEq IV/IO push.** (Make sure IV/IO is flushed well before and after giving Sodium Bicarbonate as this medication can adversely affect all other medications in the line).
    - If rhythm/patient responds, may repeat as needed to maintain circulation.
  - **DuoNeb** continuous nebulizer.
- If no response to treatment after 3 rounds of ACLS and 20 minutes of CPR, consider termination of resuscitation.
- Transport should not be considered until after ROSC or at least 20 minutes of ACLS.
- If transport is indicated, it should be done slowly and safely to allow for the safe provision of quality CPR.

**Notes:**
- The routine use of atropine in asystole is no longer indicated.

### Causes of Asystole/PEA

<table>
<thead>
<tr>
<th>Hypoglycemia</th>
<th>Toxins</th>
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<tbody>
<tr>
<td>Hypothermia</td>
<td>Tamponade (cardiac)</td>
</tr>
<tr>
<td>Hypovolemia</td>
<td>Tension Pneumothorax</td>
</tr>
<tr>
<td>Hypoxia</td>
<td>Thrombosis (PE)</td>
</tr>
<tr>
<td>Hydrogen Ion (acidosis)</td>
<td>Thrombosis (cardiac)</td>
</tr>
<tr>
<td>Hypo/Hyperkalemia</td>
<td>Trauma</td>
</tr>
</tbody>
</table>
Bradycardia in an awake and otherwise asymptomatic patient rarely becomes an acute emergency. Treatment should be considered only in the unstable patient or in the patient with symptoms likely related to his bradycardia. Nonetheless, close cardiac monitoring and transport is appropriate. Very serious cases of bradycardia include those in association with an acute myocardial infarction, overdose on beta-blockers or calcium channel blockers, and hyperkalemia. Atropine is the first-line treatment for both stable and unstable bradycardias.

### All Providers
- Obtain history of present illness and list of medications (particularly blood pressure medications including beta blockers and calcium channel blockers).
- **Oxygen** as needed per Oxygen Therapy Guideline

### Paramedics
- Apply cardiac monitor and determine rhythm.
- Apply pacing pads if symptomatic.
- Establish IV.
- Obtain 12-lead EKG.
- Atropine 0.5mg IV if symptomatic.
  - Do not use atropine in patients with acute myocardial infarction without online medical direction.
  - For continued symptoms, may repeat every 3 minutes up to a total of 0.04mg/kg (approx. 3mg in a 70kg patient).
- For unstable patients not responding to atropine (or for the unstable myocardial infarction patient), initiate transthoracic pacing.
  - Initiate at 70 bpm and adjust to clinical condition. Start at lowest mA setting, gradually increasing mA until capture occurs.
  - **Midazolam (Versed) 1-2mg IV PRN** discomfort/agitation. May repeat every 2-5 minutes up to 10mg as needed.
  - Consider Pain Management Guideline (Caution: using versed and pain medicine together will augment sedation. If using together, should space each medication by at least 2 minutes and use lower dose.)
- Consider Glucagon 1-2mg IV for beta-blocker or calcium channel blocker overdose.
- Consider Calcium Chloride 1gm/10ml over 5-10 minutes for beta-blocker or calcium channel blocker overdose
- Contact medical control if hyperkalemia is suspected. (i.e. renal disease patient)

### Notes:
While conventional teaching contraindicates atropine in type II second degree and third degree blocks, this is based on theoretical concerns and has no clinical basis. Paramedics should not withhold treatment if they are having difficulty defining an unstable bradycardia.
Survival from sudden cardiac death will be maximized by quick implementation of CPR with focus on quality chest compressions as soon as possible followed by defibrillation as appropriate. Before anything else, quality chest compressions should be started focusing on pushing hard and pushing fast. **NOTHING is more important than proper chest compressions!** Any movement of the patient such as from the residence to the ambulance or during transport to the hospital will negatively impact the provision of quality chest compressions and needs to be avoided except in cases involving safety of the patient or provider.

### All Providers
- **Initiate chest compressions** regardless of rhythm if pulseless. Focus on providing quality chest compressions with minimal interruptions.
  - Compressions should be initiated and continued where patient is found.
  - Move patient only as far as necessary to get into a position effective for resuscitation or safety of crew.
- **Ventilate with 100% Oxygen** using bag-valve-mask and OP or NP airway.
- If hypothermic, follow **Cold Emergencies Guideline**.
- **After initiation of chest compressions, apply AED** and analyze for shockable rhythm.
- **If shock advised, shock once and immediately resume chest compressions for an additional 2 minutes** unless patient wakes up.
- Consider placing **non-visualized airway**.
- If paramedic not available, prepare to transport only after at least 15 minutes of resuscitative efforts.
  - Consider Termination of Resuscitation if 1) Arrest not witnessed by EMS 2) No ROSC after 3 rounds of CPR and 3) No AED shocks delivered (call medical control to consider)

### Paramedics
- Apply **monitor and determine rhythm**.
- **Establish IV**.
  - If IV cannot be established within 2 attempts in less than 2 minutes, an **IO** should be established.
- A 12 lead ECG shall be performed for all ROSC patients, and transmitted to the receiving hospital.
- See appropriate guideline based on rhythm.
- If non-visualized airway not in place, consider placing **I-Gel** or **endotracheal intubation**.
  - Intubation should be done in such a way to minimize interruption of chest compressions.
  - Intubation should be done after initiation of CPR, rhythm analysis, and IV/IO and pharmacologic therapy initiation.
  - The preferred route of medication is IV/IO; ET route used **ONLY** if IV/IO absolutely cannot be established.

### Notes
- A cardiac arrest victim may exhibit multiple rhythms throughout the resuscitation. It is imperative that the paramedic knows each guideline and be able to move between them effortlessly.
- If the patient in cardiac arrest is more than 20 weeks pregnant, or the uterus/fundus is clearly visible, assign a member of the EMS crew to manually displace the uterus to the patient’s left side with one or two hands (keeping the chest supine).
Chest pain is a common complaint. Chest pain also often represents the leading cause of death, heart disease. Unfortunately not all acute coronary syndromes or myocardial infarctions present with chest pain. Therefore this guideline should be used for any patient in whom you suspect an acute coronary syndrome. These symptoms can include neck, jaw, or throat pain, back pain, abdominal pain, shortness of breath, fatigue, diaphoresis, heartburn, and nausea as well as others. An acute ST elevation myocardial infarction (STEMI) is one of the few truly time dependent emergencies you diagnose and treat.

| All Providers | ♦ **Oxygen** per Oxygen Therapy Guideline  
|               | ♦ **Have AED readily available** (attach only if patient unresponsive).  
|               | ♦ Assist patient to position of comfort.  
|               | ♦ Obtain **12-lead EKG** and transmit to receiving hospital within 10 minutes of patient contact.  
|               |   ▪ Early identification of STEMI is essential.  
|               |   ▪ Only treatment that should come before a 12-lead should be stabilizing.  
|               |   ▪ 12-lead EKG should be obtained before treatment with NTG.  
|               |   ▪ The receiving hospital should be notified of “STEMI Alert” immediately upon identification of a STEMI and transport should be expedited.  
|               | ♦ **Aspirin 324mg**, chewed and swallowed for all patients with chest pain.  
|               |   ▪ The ONLY contraindications to aspirin administration is allergy or obvious active bleeding.  
| Paramedics    | ♦ Maintain **cardiac monitor**.  
|               | ♦ **Establish IV**.  
|               | ♦ **Nitroglycerin (NTG) 0.4mg SL** every 5 minutes up to 3 doses.  
|               |   ▪ Do not give if:  
|               |     ▪ Pt took Viagra or Viagra-like medications within the last 48 hours.  
|               |     ▪ SPB is less than 100 mmHg.  
|               |     ▪ Inferior wall infarction or ischemia.  
|               |     ▪ Bradycardia  
|               |     ▪ If SBP drops below 90 mmHg after NTG, administer Normal Saline 500 mL bolus and hold any further NTG. Repeat as needed up to 2L if no evidence of pulmonary edema/CHF.  
|               | ♦ Treat pain utilizing **Pain Management Guideline**.  
|               | ♦ If patient is experiencing recurrent runs of ventricular tachycardia and cardiac ischemia is suspected, **Amiodarone 150mg IV** in 100mL NS over ten minutes.  
|               |   ▪ Do not give if third-degree heart block or idioventricular rhythm.  

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Reviewed: September 2018
Notes:

♦ The goal of nitroglycerin or fentanyl is pain control. There is no evidence that one medication is better than the other in treating acute coronary syndrome. Nitroglycerine has the benefit of being easy and quick to use and can be administered by EMTs. Fentanyl may be more appropriate based on paramedic clinical judgement.

♦ Paramedics shall always use their clinical judgment in determining whether the etiology of chest pain is of cardiac origin and how extensive they will treat with this guideline. However, every complaint of chest pain must be evaluated with a 12-lead EKG and have continuous cardiac monitoring unless the cause of pain is unquestionably known and documented.

♦ All patients with STEMI or symptoms suspicious for cardiac ischemia should have the cardiac monitor left on until the patient is in the ED room.

♦ Nitroglycerine should only be considered when the cause of pain is believed to be secondary to coronary artery disease.

♦ Aspirin is one of the most important treatments for cardiac chest pain. The only contraindications to administering aspirin is a true allergy or obvious active bleeding. A one time dose of aspirin given by EMS is safe for patients that have already taken aspirin, who have a history of ulcers, who are pregnant, or who are on other anti-coagulants.
Timely defibrillation has been shown to increase survival from sudden cardiac death. As such, all KFD responding units are equipped with defibrillators, either automated external defibrillators (AEDs) or fully functional manual monitor/defibrillator/pacer units. There are also many AEDs in public places being used by trained laypersons (Public Access Defibrillation—PAD) as well as AEDs used by the police. It is acceptable (and preferable) for KFD EMTs to continue care with any PAD that is currently attached to a patient. Paramedics should switch to their monitor/defibrillator as soon as practical without interfering with chest compressions. If the PAD pads are compatible with our machines, there is no need to change the pads.

| All Providers | ♦ Continue resuscitation efforts using attached PAD if in use and appropriate following the Cardiac Arrest Guideline.  
♦ If no PAD, all cardiac arrest patients **unwitnessed** by EMS shall receive **2 minutes of CPR prior to AED analysis**.  
♦ Upon transport, the patient should be attached to a KFD defibrillator. The PAD should be left with its owner. It is the PAD owner’s responsibility to replace used equipment and ready the PAD for the next use.  
♦ Any information regarding PAD use including who and number of shocks needs to be documented in the patient care record. |
| Paramedics | ♦ When practical without interrupting CPR, switch to KFD defibrillator.  
♦ Follow Cardiac Arrest Guideline. |

**Notes:**
♦ Adult pads are acceptable for use on all patients if pediatric pads are not available.
Many patients have implanted cardiac defibrillators also known as ICD, PCD, and AICD. Many new pacemakers have defibrillation capabilities. The defibrillators are often implanted below the skin in the upper left chest, but they may be found in other locations. They are usually easily palpable and are usually the size of a deck of playing cards or smaller. Implanted defibrillators pose no harm to the pre-hospital care provider, even when shocking.

<table>
<thead>
<tr>
<th>All Providers</th>
<th>♦ Provide appropriate initial medical care.</th>
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<tbody>
<tr>
<td></td>
<td>♦ For those only complaining of their defibrillator firing.</td>
</tr>
<tr>
<td></td>
<td>• <strong>Oxygen</strong> per <strong>Oxygen Therapy Guideline</strong></td>
</tr>
<tr>
<td></td>
<td>• Assist to position of comfort.</td>
</tr>
<tr>
<td></td>
<td>• <strong>Have AED ready (but do not attach unless unconscious).</strong></td>
</tr>
<tr>
<td></td>
<td>♦ For those with any other complaint</td>
</tr>
<tr>
<td></td>
<td>• Go to appropriate patient care guideline.</td>
</tr>
<tr>
<td></td>
<td>♦ An implanted defibrillator is NOT a contraindication to AED use or CPR as needed and both should be performed as necessary ignoring the activity of the implanted defibrillator.</td>
</tr>
<tr>
<td></td>
<td>♦ Do not place AED pads directly over implanted defibrillator or pacemaker.</td>
</tr>
<tr>
<td></td>
<td>♦ Any patient that has been shocked by his defibrillator should be transported to the hospital.</td>
</tr>
</tbody>
</table>

| Paramedics | ♦ Obtain **12-lead EKG.** |
|            | ♦ Maintain **cardiac monitoring.** |
|            | ♦ **Establish IV.** |
|            | ♦ For those receiving repeated shocks treat pain per **Pain Management Guideline** or provide anxiety relief with **Midazolam (Versed) 1-2 mg IV.** |
|            | ♦ Consider contacting **medical control** to discuss **Amiodarone 150mg IV** over 10 minutes |
A narrow complex tachycardia has a QRS with a duration of less than 0.12 seconds and a rate greater than 150 beats per minute. Any narrow complex tachycardia without a discernable p-wave can be considered an SVT. Regardless, you need to consider the possible causes of any narrow complex tachycardia and treat appropriately. These include heart failure, hypovolemia or other causes of shock, drug effects, fever, and pain. While considering possible causes, you need to determine whether a patient is stable or unstable. Unstable patients are those that exhibit altered mental status, are hypotensive, or are having other significant signs of hypoperfusion. Patients often complain of a racing heartbeat, palpitations, shortness of breath, or chest discomfort.

### All Providers
- Oxygen per Oxygen Therapy Guideline.
- Assist patient into position of comfort.

### Paramedics
- Apply and maintain cardiac monitor.
- Establish IV in proximal vein.
- If stable
  - Obtain 12 lead EKG.
  - Valsalva maneuver.
    - Have patient cough forcefully or increase intrathoracic pressure by bearing down.
    - If above doesn’t work, patient is younger than 50 years old, has no history of cerebrovascular disease (stroke or TIA), has no carotid bruit, perform right-sided carotid sinus massage for 15 seconds.
  - If no response, Adenosine 12mg rapid IV push followed immediately by 10mL of Normal Saline.
  - If no response, may follow with an additional dose of 12mg Adenosine.
- If unstable
  - Synchronized cardioversion.
    - Start at 100 joules. If no response, proceed to 150 and 200 joules.
    - Consider Midazolam (Versed) 1-2mg IV prior to cardioversion. May repeat up to 10mg

### Notes:
- Adenosine may slow the rate enough to confirm the underlying rhythm which may be atrial fibrillation or even sinus tachycardia. If either of these rhythms are identified, no further adenosine is indicated.
- Adenosine has a very quick onset and short period of action, thus it needs to be administered very quickly in a proximal vein immediately followed by a bolus of 10mL of Normal Saline.
- If there is any doubt about the width of the QRS, use the Wide-complex Tachycardia Guideline.
The most effective treatments for victims of cardiac arrest are good quality CPR and early defibrillation, both of which are provided with high quality by EMS. In addition, KFD paramedics provide a full scope of ACLS. There isn’t anything that is done in the emergency department for cardiac arrest that generally cannot be done in the field. Given the fact that any patient movement, including transport, will inevitably interfere with the ability to provide quality CPR as well as detract from other ACLS care, full resuscitative efforts need to be performed in the field prior to any consideration of patient movement and transport. If a patient does not respond to resuscitative efforts in the field, any further care is likely futile. Thus, termination of resuscitation (TOR), as supported by the AHA guidelines, should be considered in all cases of cardiac arrest that do not regain a pulse in the field.

All Providers

♦ TOR criteria must include ALL of the following:
  • Non-witnessed arrest
  • Asystole throughout
  • No environmental hypothermia
  • Patent or established airway
  • High quality CPR
  • Appropriately low or descending etCO2

♦ Full resuscitative efforts should be performed unless the DNR Guideline is appropriate.

♦ If paramedics are not available, termination of resuscitation can be considered after 15 minutes of CPR without a response.
  • Contact medical control to request Termination of Resuscitation

Paramedics

♦ If after 20 minutes of resuscitation there is no return of spontaneous circulation (ROSC), consider TOR.

♦ In the following cases, TOR does not need online medical direction:
  • Persistent asystole.
  • Patients with the following:
    ▪ Non-witnessed arrest.
    ▪ No defibrillation indicated.

♦ In all other cases unresponsive to resuscitation attempts, contact medical control to discuss TOR.

♦ The following are NOT contraindications to TOR:
  • Age.
  • Inability to start IV.
  • Inability to intubate.
  • Persistent VF not responsive to resuscitation.
  • PEA
  • Hypothermia with significant co-morbidities or associated with primary cardiac arrest.

♦ Paramedics may need to transport cardiac arrest patients without ROSC due to safety concerns or other scene dynamics.

♦ Any transport however should be done safely as there is no benefit to rapid transport and the risks are great.
A ventricular assist device (VAD or LVAD) is an implanted continuous flow device that assists the left ventricle in producing blood flow. Without the device, the patient’s heart is too weak to produce adequate blood flow. These devices are designed to produce continuous flow. Thus, these patients may not have a palpable pulse. Additionally, their pulse pressures are very narrow and a blood pressure may not be detected. Therefore, evaluation of these patients requires you to look for other signs of adequate perfusion (mental status, skin color and temperature, and patient symptomatology).

The patient and family or caretakers are trained to use and troubleshoot these devices. It is essential that you listen to them with regards to the device and allow them to manage it. This will necessitate their transport with the patient. Additionally, the device should have a pager number for a clinical engineer who should be contacted immediately upon any concern regarding the function of the device.

If a patient is unresponsive, is not breathing normally, and appears to be in cardiac arrest, start CPR. Defibrillation, cardioversion, and/or pacing should only be done at the direction of the clinical engineer.

All Providers
- Determine that a patient has a VAD (It is the responsibility of the patient and family/caregivers to provide this information to you. If you are not informed and it is not obvious, treat the patient per the usual patient care guidelines)
- If the patient is not experiencing any acute cardiac issues and if the VAD is not malfunctioning, treat patient using appropriate patient care guideline.
- If there is a cardiac issue or the VAD is malfunctioning, get in contact with the clinical engineer as soon as possible. (pager: 414-222-7434. The contact information should be on the device.) If no answer within 5 minutes, repage. Do not delay transport waiting for the engineer to call.
- DO NOT cardiovert, defibrillate, or pace without direction from the clinical engineer.
- Cardiac arrest should be treated on scene with CPR and further direction from the clinical engineer.
- Allow family/caretaker to manage VAD
- When transporting
  - Take all equipment/batteries/accessories with patient
  - Transport trained family/caretaker with patient
  - Transport patient to Aurora Kenosha only.
  - Notify Aurora Kenosha as soon as possible of patient being transported with VAD.

Paramedics
- As above
Patients who are in ventricular fibrillation as their presenting rhythm after sudden cardiac death have the best chance of survival. However, improved survival is directly related to initiation of CPR as soon as possible and timely defibrillation. In a witnessed arrest, if an AED or defibrillator is immediately available, a rescue shock should be delivered as soon as possible. For cardiac arrests that are not witnessed or if there is a delay in obtaining a defibrillator, patients should receive 2 minutes of CPR including high quality chest compressions prior to the first shock.

<table>
<thead>
<tr>
<th>All Providers</th>
<th>♦ See Cardiac Arrest Guideline and concentrate on good quality CPR with hard and fast chest compressions and timely use of the AED.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paramedics</td>
<td>♦ <strong>Defibrillate at 200J.</strong></td>
</tr>
<tr>
<td></td>
<td>♦ <strong>Resume CPR immediately</strong> after defibrillation.</td>
</tr>
<tr>
<td></td>
<td>♦ <strong>Do not check pulse or hold compressions to evaluate the rhythm after defibrillation.</strong></td>
</tr>
<tr>
<td></td>
<td>♦ <strong>Epinephrine 1:10,000 1mg IV/IO.</strong> Repeat every 3-5 minutes if patient remains pulseless.</td>
</tr>
<tr>
<td></td>
<td>♦ Check for pulse and rhythm every 2 minutes.</td>
</tr>
<tr>
<td></td>
<td>♦ If remains in ventricular fibrillation or pulseless ventricular tachycardia, <strong>defibrillate at 200J every 2 minutes.</strong></td>
</tr>
<tr>
<td></td>
<td>♦ If patient does not convert after second shock, or if patient has recurrent v-fib/v-tach, administer <strong>Amiodarone 300mg IV/IO</strong> push.</td>
</tr>
<tr>
<td></td>
<td>♦ <strong>Amiodarone can be repeated once at 150mg IV/IO</strong> push for continued pulseless v-fib/v-tach.</td>
</tr>
<tr>
<td></td>
<td>♦ If patient is a known <strong>renal failure</strong> patient (dialysis) and persistent or recurrent v-fib/v-tach:</td>
</tr>
<tr>
<td></td>
<td>♦ <strong>Calcium Chloride 1gm IV/IO.</strong></td>
</tr>
<tr>
<td></td>
<td>♦ <strong>Sodium Bicarbonate 50mEq IV/IO</strong> (ensure that line is flushed well between drugs).</td>
</tr>
<tr>
<td></td>
<td>♦ <strong>Duoneb</strong> continuous nebulizer (in-line with advanced airway).</td>
</tr>
<tr>
<td></td>
<td>♦ For persistent VF/VT without response to <strong>Amiodarone</strong> and 3 defibrillation attempts:</td>
</tr>
<tr>
<td></td>
<td>♦ <strong>Limit Epinephrine</strong> to 3 doses</td>
</tr>
<tr>
<td></td>
<td>♦ Apply second pad in the anterior/posterior orientation and deliver remaining shocks in this orientation.</td>
</tr>
</tbody>
</table>

**Notes:** Amiodarone is not indicated routinely for ROSC after ventricular fibrillation arrest.
Wide complex tachycardias have a QRS duration greater than 0.12 seconds and a rate greater than 150. Although some wide complex tachycardias develop from supraventricular tachycardias, prehospital providers should always assume that wide complex rhythms are ventricular tachycardia (VT). Like narrow complex tachycardias, the paramedic must first determine if the patient is stable or unstable. Unstable patients are those that exhibit altered mental status, are hypotensive, or are having other significant signs of hypoperfusion.

**All Providers**

- **Oxygen** per Oxygen Therapy Guideline.
- Assist patient into position of comfort.

**Paramedics**

- Apply and maintain **cardiac monitor**.
- **Establish IV**.
- If stable:
  - Obtain 12 lead EKG.
  - **Amiodarone 150mg IV over 10 minutes.**
- If unstable:
  - **Synchronized cardioversion.**
    - **Start at 100 joules.** If no response, proceed to 150 and 200 joules.
    - Consider **Midazolam (Versed) 1-2mg IV** prior to cardioversion.
      - May repeat up to 10mg.
    - After cardioversion, **Amiodarone 150mg IV over 10 minutes.**

**Notes:**

- Treat pulseless ventricular tachycardia as ventricular fibrillation.
- Don’t confuse an idioventricular rhythm as “slow” ventricular tachycardia. Ventricular tachycardia should have a rate of at least 150 bpm. Treating an idioventricular rhythm with cardioversion and/or Amiodarone can be deadly.
- Frequent runs of VT can be treated with Amiodarone 150mg over 10 minutes but treatment of occasional runs should be discussed with on-line medical control.
These guidelines are based on AHA Guidelines.

<table>
<thead>
<tr>
<th>Determine responsiveness and ability to speak.</th>
</tr>
</thead>
<tbody>
<tr>
<td>♦ Conscious and able to speak:</td>
</tr>
<tr>
<td>• Do NOT interfere with the patient’s own attempts to clear airway.</td>
</tr>
<tr>
<td>♦ Conscious and unable to speak:</td>
</tr>
<tr>
<td>• Perform <strong>Heimlich Maneuver</strong></td>
</tr>
<tr>
<td>▪ 5 Abdominal thrusts with patient standing or sitting</td>
</tr>
<tr>
<td>▪ 5 Chest thrusts if patient in second or third trimester of pregnancy or morbidly obese.</td>
</tr>
<tr>
<td>▪ Repeat until successful or patient becomes unconscious.</td>
</tr>
<tr>
<td>♦ Unconscious:</td>
</tr>
<tr>
<td>• Perform tongue lift/jaw thrust, clear any obvious foreign material, and <strong>attempt to ventilate</strong>.</td>
</tr>
<tr>
<td>• If remains obstructed</td>
</tr>
<tr>
<td>▪ Perform abdominal/chest thrusts with patient supine, or</td>
</tr>
<tr>
<td>▪ Visualize airway with laryngoscope and attempt to clear using forceps and/or suction.</td>
</tr>
<tr>
<td>• Reposition head and attempt to ventilate again.</td>
</tr>
<tr>
<td>• If remains obstructed, continue attempts to clear airway with abdominal/chest thrusts and visualization.</td>
</tr>
</tbody>
</table>

| Paramedics                                   |
|♦ If above fails, **intubate** and attempt to push foreign body into right mainstem bronchus. Then pull tube back slightly to ventilate both lungs. |
|♦ **If still obstructed** and unable to ventilate, perform **cricothyrotomy**. |
Remember: “All that wheezes is not asthma!” Always consider the possibility of congestive heart failure in older adults with wheezing. In comparison, the absence of wheezing may be indicative of extreme airflow obstruction. All hypoxic patients should be given enough oxygen therapy to reverse their hypoxia (SpO₂ ≥ 90%), even if they have COPD, but all COPD patients must be closely monitored for signs of respiratory depression due to oxygen therapy.

DuoNeb is our pharmacological treatment of choice. This formulation contains both albuterol sulfate (2.5mg) which is an adrenergic bronchodilator and ipratropium bromide (0.5mg) which is an anti-cholinergic bronchodilator. Regardless of how much DuoNeb is put in the nebulizer chamber, the dose received is directly related to the patient’s respiratory rate, tidal volume, and compliance with medication administration. Therefore, regardless of age, place 1 or 2 vials of DuoNeb into the nebulizer as initial treatment. Nebulized DuoNeb should be repeated as needed for respiratory distress and/or wheezing. When clear, regardless of medication left in the nebulizer, therapy can stop.

All Providers
- Oxygen per Oxygen Therapy Guideline.
- DuoNeb via nebulizer.
- If patient has known history of COPD and in severe distress, consider CPAP.
  - Don’t let CPAP interfere with DuoNeb therapy.

Paramedics
- Consider initiation of IV.
- If no response to DuoNeb and in moderate to severe distress or if patient initially in severe distress, Epinephrine 0.3mg IM and initiate IV and monitor.
- If age 50 or over, or if patient has significant co-morbidities, initiate and maintain cardiac monitor.
- Consider SoluMedrol 125mg IV.

Notes:
- DuoNeb may be administered via nebulizer/mouthpiece, nebulizer/mask, or via in-line nebulizer for CPAP and intubated patients.
- Administering medication via nebulizer is best done by creating a very fine mist. This is accomplished by adjusting the oxygen flow to a level where the medication just starts to mist. This occurs usually at a flow of 6-8L of oxygen. Too high of a flow will deplete the medication too quickly, wasting it.
Pulmonary edema can be caused by many pathologies including heart failure, heart valve disease, renal failure, narcotic overdose, and pulmonary toxins to name a few. Our treatment for the purposes of pre-hospital care is designed to treat congestive heart failure (pulmonary edema caused by heart failure) and fluid overload from hypertensive renal failure as these will be the most common causes encountered, and trying to differentiate between causes in the pre-hospital setting is difficult. Regardless, this treatment guideline should provide benefit to most patients with pulmonary edema regardless of etiology. If you can determine a cause outside of CHF or renal failure, consider contacting medical control for an individualized treatment plan. The most effective treatment for CHF is frequent high dose nitrates. Nitroglycerin should come before any other medication. Close monitoring of blood pressure and patient condition is important. Upon patient improvement, nitrate treatment should be less aggressive.

<table>
<thead>
<tr>
<th>All Providers</th>
<th>Oxygen per Oxygen Therapy Guideline.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Assist to position of comfort.</td>
</tr>
<tr>
<td></td>
<td>Consider CPAP if patient is in severe respiratory distress.</td>
</tr>
</tbody>
</table>

| Paramedics | If SBP is greater than 100 mmHg, Nitroglycerin 0.4 to 0.8mg SL. |
|           | - Do not let CPAP interfere with appropriate Nitroglycerin treatment. |
|           | - Do not use Nitroglycerin if: |
|           |   - Pt took Viagra or Viagra-like medications within the last 48 hours. |
|           |   - SBP is less than 100 mmHg. |
|           | - Start CPAP if indicated. |
|           | Establish IV. |
|           |   - If SBP precipitously drops below 90 mmHg after Nitroglycerin treatment, can judiciously administer 200-300mL bolus of Normal Saline. |
|           | Maintain cardiac monitor. |
|           | Consider 12-lead EKG. |
Pneumonia will be difficult to diagnose in the field. Patients may have already been diagnosed and are calling because they are getting worse. In general a patient with pneumonia will have fever and a cough and may or may not have difficulty breathing. Pneumonia can exacerbate asthma, COPD, cardiac disease, and other co-morbidities. Providers should use one of the other guidelines if more appropriate. In general, pneumonia is not contagious, but there are two pathogens of which EMS providers should be aware: MRSA and tuberculosis (TB). Risk factors for both of these are similar and when present, respiratory isolation should commence. These include patients with HIV/AIDS, homeless, institutionalized (nursing home, group home, jail, etc.), drug abuse, and exposure. Tuberculosis patients additionally often have night sweats and weight loss.

| All Providers |  ♦  Oxygen per Oxygen Therapy Guideline.  
|               |  ♦  Listen to breath sounds in all fields to identify any isolated abnormality.  
|               |  ♦  If risk for MRSA or TB, apply TB filtration masks to yourselves, and if appropriate, to patient and clearly advise receiving hospital.  
|               |  ♦  Consider CPAP if in severe respiratory distress.  
| Paramedics    |  ♦  Consider initiation of IV.  
|               |  ♦  If signs of dehydration, Normal Saline 500mL bolus.  
|               |  ♦  DuoNeb if wheezing.  |
Abdominal pain can range from a mild discomfort due to gastroenteritis or reflux to an indicator of an impending catastrophic event such as an abdominal aortic aneurysm rupture. Therefore, it is essential that abdominal pain patients be evaluated thoroughly and watched closely for any signs of worsening or shock. Cardiac disease can also present sometimes with abdominal pain. If patient has cardiac risk factors and/or associated symptoms, a cardiac etiology must be considered. Paramedics should have a low threshold for obtaining a 12-lead EKG on patients complaining of abdominal pain.

<table>
<thead>
<tr>
<th>All Providers</th>
<th>♦ Assist patient to position of comfort.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>♦ <strong>Oxygen</strong> per <strong>Oxygen Therapy Guideline.</strong></td>
</tr>
<tr>
<td>Paramedics</td>
<td>♦ <strong>Stable</strong></td>
</tr>
<tr>
<td></td>
<td>• Consider establishing IV.</td>
</tr>
<tr>
<td></td>
<td>• Consider pain management.</td>
</tr>
<tr>
<td></td>
<td>♦ <strong>Unstable</strong> (altered sensorium, signs of hypoperfusion)</td>
</tr>
<tr>
<td></td>
<td>• <strong>Establish IV</strong> (establish 2nd IV enroute).</td>
</tr>
<tr>
<td></td>
<td>• <strong>Normal Saline</strong> 500mL bolus, may repeat up to 2L to maintain SBP above 90 mmHg.</td>
</tr>
<tr>
<td></td>
<td>• Continuous cardiac <strong>monitor</strong>.</td>
</tr>
<tr>
<td></td>
<td>• Consider 12-lead EKG.</td>
</tr>
</tbody>
</table>

Notes: ♦ Classic abdominal aortic aneurysm (AAA) findings include
• Sudden onset low back pain with low blood pressure and/or syncope.
• Sudden onset abdominal pain with low blood pressure and/or syncope.
• Pulsatile abdominal mass.
• Expanding abdominal girth with associated pain and/or low blood pressure.
♦ The absence of the above findings does NOT exclude AAA.
♦ Ideal treatment of an AAA includes IV fluid to maintain a SBP above 90 mmHg, but blood pressure should not be normalized. It should be maintained between 90 and 110 mmHg.
Allergic reactions span a continuum from minor to life threatening. Angioedema with significant swelling of the tongue increases the risk of obstructed airway but also makes RSA technically more difficult and therefore relatively contraindicated. In patients with underlying coronary artery disease, or those at risk for it, epinephrine should be used with caution. In moderate to severe allergy and anaphylaxis, there is no absolute contraindication to epinephrine.

All Providers

♦ Identify and remove causative allergen if possible.
♦ Oxygen per Oxygen Therapy Guideline.
♦ Apply ice/cold pack to bite or injection site, if applicable.
♦ If wheezing, administer Duoneb via nebulizer. May repeat as needed.
♦ If patient has his own epinephrine auto-injector and is complaining of respiratory distress or signs and symptoms of shock, administer patient’s epinephrine auto-injector.
  • Verify that the auto-injector belongs to the patient.
  • Bare and cleanse the patient’s lateral thigh.
  • Press auto-injector firmly into lateral thigh and hold for several seconds.
♦ If respiratory distress or signs and symptoms of shock:
  • Epinephrine (1:1000) 0.3mg IM

Paramedics Determine severity of reaction.

♦ Mild reaction (alert and oriented with localized signs, normal blood pressure, normal skin, and clear lungs).
  • Benadryl 50mg IV/IM.
  • SoluMedrol 125mg IV/IM.
♦ Moderate reaction (alert and oriented, systemic signs and symptoms, but normotensive, skin warm and mild wheezing).
  In addition to above treatment:
  • Cardiac monitor.
  • Establish IV if not already established.
  • Be prepared to administer Epinephrine (1:1000) 0.3mg IM if worsening.
  • Duoneb via nebulizer if wheezing. May repeat as needed.
♦ Severe reaction/anaphylaxis (multi-system reaction with signs of hypoperfusion, hypotension or altered mental status; nausea/vomiting; or signs of airway constriction including stridor, air hunger, wheezing, and/or rales.)
  In addition to above treatment:
  • Normal Saline bolus 500mL, repeat as needed up to 2000mL.
  • Epinephrine (1:1000) 0.3mg IM or (1:10,000) 0.1mg IV slowly.
Altered mental status can encompass any number of emergencies. It is also important to recognize that while most interventions address a patient with a depressed altered mental status, patients that are agitated or otherwise acting differently are considered to have altered mental status. Any patient with altered mental status should be monitored closely for any decompensation which may lead to cardio-pulmonary arrest.

**All Providers**
- **Ensure safety** of scene and the crew.
- Attempt to identify components of history of present illness, past medical history, and social history that may identify reason for altered mental status.
- Obtain **fingerstick glucose** reading.
  - If glucose less than 60 mg/dl, go to Hypoglycemia Guideline.
- Administer **Oxygen** per Oxygen Therapy Guideline.
- Consider waving one broken **Ammonia Inhalant Capsule** under patient’s nose as appropriate.
- Restrain as appropriate (see Restraint Guideline).
- If narcotic use suspected and the decreased level of consciousness affecting ability of patient to protect airway, carefully consider **Naloxone 0.5-2mg IN/IM**.

**Paramedics**
- Further attempt to identify cause of altered mental status and go to appropriate guideline (i.e. Drug Overdose or Poisoning).
- If other guideline not appropriate:
  - Maintain airway as appropriate.
  - **Establish IV**, Normal Saline TKO vs 500mL as appropriate.
  - Initiate and maintain **cardiac monitoring**.
  - If decreased level of consciousness affecting ability of patient to protect airway, carefully consider **Naloxone 0.5-2mg IV/IM/IN**.
  - Consider **12-lead EKG**.

**Notes:**
- Naloxone should only be used to avoid the need for placement of an advanced airway.
- The dose should be titrated only enough to maintain respiratory drive.
- Patients with narcotic overdose receiving naloxone may go into withdrawal or lose their “high,” both of which can lead to agitation and violence which can be dangerous for the patient, the EMS providers, and bystanders.
If burns are associated with multi-system trauma, trauma care takes priority.

### All Providers

#### Thermal burns

- Keep burn as clean as possible.
- Assess depth of burn.
  - Superficial partial thickness
  - Deep partial thickness
  - Full thickness
- Assess extent of burns using Rule of Nines or using patient’s palmar surface as 1% of BSA (body surface area).
- If any respiratory involvement, **Oxygen 10-15L/NRM.**
  - Difficult or painful breathing
  - Stridor/Wheezing/Hoarse voice
  - Carbonaceous sputum
  - Singed nasal hair
- Cool with water or saline if burn occurred within the last 15 minutes.
- Cover with burn dressing (Water Jel), or:
  - Cover BSA less than 20% with sterile dressings soaked in saline.
  - Cover BSA 20% or greater with dry sterile dressings.
- Place sterile burn sheet on stretcher before placing patient on cot if diffuse burns.

#### Electrical/lightening burns

- Ensure scene safety.
- Assess for entrance or exit wounds and treat as above.
- If PNB, follow **Cardiac Arrest Guideline.**
- Assess CMS all extremities.

#### Chemical burns

- Brush off as much of the offending agent as possible.
- Irrigate with copious water or saline unless contraindicated (no water with sulfuric acid, sodium metals, or dry chemicals).
- If available, obtain and bring Material Safety Data Sheets (MSDS).
- **Establish IV** for any burn greater than 20% BSA.
  - Avoid putting IV in affected area, but in a severely burned critical patient, an IV may need to be placed through burned tissue.
- Consider IV for other burns.
- Consider pain management per **Pain Management Guideline.**
- Initiate and maintain **cardiac monitor for electrical burns.**
- For inhalation burns, airway management will be critical.
  - Endotracheal intubation is preferred to non-visualized airways.
  - Early airway management is important.
  - However, these airways may be difficult and if patient condition permits, management is best performed in the hospital.
- Consider cyanide exposure and Cyanokit use via **Cyanokit Skill Standard.**
Cold emergencies can be categorized into 3 categories for the purposes of this guideline.

<table>
<thead>
<tr>
<th>Frostbite</th>
<th>Mild/moderate hypothermia</th>
<th>Severe Hypothermia</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Localized cold injury to skin, particularly fingers and toes.</td>
<td>• Conscious and alert or slightly altered sensorium with shivering.</td>
<td>• Uncoordinated with poor muscle control or even muscle rigidity.</td>
</tr>
<tr>
<td></td>
<td>• Core temperature 86-97°F.</td>
<td>• Usually no shivering.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Confusion, stupor, or coma.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• May have profound bradycardia, heart block or even asystole.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Core temperature less than 86°F.</td>
</tr>
</tbody>
</table>

These patients should not be considered obviously dead in the field unless there is obvious trauma incompatible with life, obvious decomposition, or the torso is frozen. If hypothermia is thought to be the cause of the arrest, termination of resuscitation should be deferred until at the hospital.

**All Providers**
- Move to a warm environment.
- Remove wet clothing and dry patient.
- Keep warm with blankets.

**Frostbite**
- Handle skin/extremities gently.
- Protect with loosely covering sterile dressings.

**Mild/Moderate Hypothermia**
- Oxygen per Oxygen Therapy Guideline.
- Apply hot packs wrapped in towels to axillae, groin, and thorax.

**Severe hypothermia**
- Oxygen 15L/NRM.
- Move patient gently.
- If pulseless, begin CPR and attach AED and follow Cardiac Arrest Guideline
- Check blood glucose and if less than 60mg/dl, follow Hypoglycemia Guideline

**Paramedics**
- Frostbite
  - Consider IV and pain management per guideline.

**Mild/Moderate Hypothermia**
- Establish IV and infuse warm Normal Saline as available up to 2L.

**Severe Hypothermia**
- In addition to above, consider IO if IV unable.
- Initiate and maintain cardiac monitoring.
- If pulseless, continue CPR and follow Cardiac Arrest Guideline and appropriate rhythm guideline per usual ACLS care.

**Notes:**
Traditional teaching is that defibrillation should be limited to one time and no drugs should be given until patient is sufficiently warmed. Current AHA Guidelines make routine BLS and ALS care a Class IIb recommendation, so treat cardiac arrest no differently in these patients.
Heat emergencies can be categorized into 3 degrees.

<table>
<thead>
<tr>
<th>Heat Cramps</th>
<th>Heat Exhaustion</th>
<th>Heat Stroke</th>
</tr>
</thead>
<tbody>
<tr>
<td>Typically caused by dehydration and sodium deficiency. Marked by painful muscle spasms that usually occur during exercise in hot environments.</td>
<td>Signs include profuse sweating, paleness, dizziness, nausea, vomiting and syncope.</td>
<td>Hot, flushed skin which is often dry (absence of appropriate sweating) and altered mental status.</td>
</tr>
</tbody>
</table>

Those at increased risk for heat emergencies are the elderly, the young, patients taking psychiatric medications and other anti-cholinergic medications, those without air-conditioning, and those involved in strenuous activity in the heat.

**All Providers**
- Remove from hot environment.
- Remove clothing as appropriate.

**Heat Exhaustion**
- Treat as above.
- Check *finger stick glucose*.
  - If less than 60mg/dl, follow Hypoglycemia Guideline.
- If SBP less than 90 or patient dizzy, place in supine position with feet elevated.
- Apply *ice packs* to axillae and groin.

**Heat Stroke**
- Treat as above.
- *Oxygen* per Oxygen Therapy Guideline.
- Manage airway as appropriate.
- Sponge with cool water and fan to encourage evaporative cooling.

**Paramedics**

**Heat Exhaustion/Stroke**
- In addition to above, establish an IV and give Normal Saline 500mL
  - Repeat as appropriate up to 2L.
- Initiate and maintain cardiac monitoring.
- If not done, check *finger stick glucose* and if less than 60mg/dl treat according to Hypoglycemia Guideline.
- Apply *ice packs* to chest wall, carotid arteries, temples, and behind knees in addition to groin and axillae.
Hypertension (high blood pressure) is rarely an acute emergency itself. In general, you will be treating a patient for his complaint using an alternate patient care guideline. If hypertension is to be treated, the goal of treatment is a gradual reduction in blood pressure rather than an abrupt fall which may cause neurovascular or cardiac complications. The goal is also not to normalize blood pressure, but rather to decrease by less than 20%. Finally, remember to treat the patient and not a number. A relatively asymptomatic patient with a high blood pressure reading needs no pre-hospital blood pressure control.

| All Providers | ♦ Oxygen per Oxygen Therapy Guideline.  
|               | ♦ Assist to position of comfort.  
|               | ♦ Obtain baseline neurological assessment.  
|               | ♦ Go to appropriate patient care guideline.  

| Paramedics | ♦ Initial care should be based on the most appropriate patient care guideline.  
|           | ♦ Obtain 12-lead EKG.  
|           | ♦ Maintain cardiac monitoring.  
|           | ♦ Establish IV.  
|           | ♦ If hypertensive with a systolic blood pressure (SBP) greater than 220 mmHg and evidence of acute end organ damage, Labetalol 20mg IV.  
|           |   • Recheck BP 5 minutes after administration of Labetalol.  
|           |   • If SBP remains above 220 mmHg after 15 minutes, may repeat dose once.  

Notes:  
♦ Evidence of end organ damage includes new neurologic deficit, altered mental status, presumed cardiac chest pain. Headache alone is NOT an indication for blood pressure treatment by EMS.  
♦ Blood pressure should not be treated in chest pain patients unless SBP remains above 220 mmHg after treatment with Nitroglycerine and pain medication in Chest Pain Guideline.  
♦ Blood pressure should not be treated in CHF with this protocol. CHF should be treated aggressively with Nitroglycerine as outlined in the CHF guideline.
While this guideline will most often be used for patients with low blood sugar (hypoglycemia), those with high blood sugar (hyperglycemia) will be encountered. Hyperglycemia often times represents an underlying problem such as infection or cardiac ischemia. It can also be representative of diabetic ketoacidosis (DKA). DKA can be deadly. It is often marked with profound dehydration and electrolyte abnormalities including potassium alteration.

All Providers
♦ Obtain medication history including time and amount of last dose.
♦ Obtain time and amount of last oral intake.
♦ Check finger stick blood glucose.
  • If sugar less than 60mg/dl:
    ▪ If patient awake and able to protect airway, administer Oral Glucose or have patient drink juice with added sugar or non-diet soda.
    ▪ If patient unable to safely take oral sugar, consider Glucagon 1mg IM.

Paramedics
♦ Establish IV.
♦ If sugar greater than 180mg/dl or signs of dehydration:
  • Administer Normal Saline 500mL bolus and repeat up to 2L as long as no pulmonary edema.
  • Initiate and maintain cardiac monitoring.
♦ If sugar less than 60mg/dl, and not previously treated:
  • Administer Dextrose 25gm IV.
    ▪ 10% Dextrose (D10) 250mL
    ▪ 50% Dextrose (D50) 50mL (1 Amp)
  • If unable to establish IV and not previously administered, Glucagon 1mg IM.
♦ Recheck glucose level 5-10 minutes after any intervention and repeat treatment as outlined above.
♦ It is acceptable to give Dextrose after glucagon treatment if glucose remains low.

Notes:
♦ EMS providers shall never assist any patient in administering insulin.
♦ All patients with a diabetic emergency should be transported to the hospital. We see many repeat patients with episodes of hypoglycemia who frequently refuse transport. For patients that take only insulin, refusing transport is likely safe. However, the patient should be left in the care of someone. They need access to food and should be instructed to eat a meal as the treatment provided by this guideline is only temporary. For patients that take oral sulfonylureas (e.g. glipizide, glyburide, glimepiride), they are at very high risk for recurrent hypoglycemia, even with food intake. These patients really need transport to the hospital and every effort should be made to get them transported.
All persons submerged one hour or less must be vigorously resuscitated despite apparent “rigor mortis” unless evidence of trauma incompatible with life. Those submerged greater than one hour have an extremely poor prognosis. Routine stabilization of the c-spine in the absence of circumstances that suggest a spinal injury is not recommended (AHA Class III recommendation).

<table>
<thead>
<tr>
<th>All Providers</th>
<th>♦ Initial medical care.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>♦ <strong>Oxygen</strong> 10-15L/NRM or 100% BVM as appropriate.</td>
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<tr>
<td></td>
<td>♦ <strong>C-spine precautions</strong> only if mechanism suggestive of spinal injury.</td>
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<tr>
<td></td>
<td>♦ Consider <strong>non-visualized airway</strong> if patient unconscious and not protecting airway.</td>
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<tr>
<td></td>
<td>♦ Remove wet clothing and dry patient as much as possible.</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Paramedics</th>
<th>♦ Treat cardiac arrhythmias per appropriate guideline.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>♦ If hypothermic, follow <strong>Hypothermia Guideline</strong>.</td>
</tr>
<tr>
<td></td>
<td>♦ <strong>Establish IV</strong>.</td>
</tr>
<tr>
<td></td>
<td>♦ Consider <strong>advanced airway</strong> if not protecting airway.</td>
</tr>
</tbody>
</table>
All Providers

♦ Obtain gross visual acuity in each eye.
  • Finger count
  • Motion perception
  • Light perception

♦ Assess cornea, conjunctiva, sclera, and iris for signs of injury.
♦ Discourage patient from sneezing, coughing, straining, or bending.
♦ If chemical exposure, rapidly and continuously irrigate with copious amounts of water or saline.
♦ If penetrating injury (suspect if impaled object, foreign body sensation after operating high speed tool such as grinder, irregular pupil, excessive edema, blood in anterior chamber (hyphema), defect in sclera or cornea.)
  • Do not remove object.
  • Do not irrigate.
  • Minimize any manipulation and defer detailed exam.
  • Avoid pressure on eye.
  • Cover both eyes with patch or cup (to protect injured eye and to minimize any eye movement).
  • Elevate head of stretcher at least 45°.

Paramedics

♦ Consider pain management per Pain Management Guideline.
Many times the working assessment of an overdose will be suspected in the care of an altered mental status. It is important for the provider to consider all causes of altered mental status and to narrow in on a cause based on history of present illness including circumstances and findings at the scene in addition to past medical and social histories. Sometimes an overdose is obvious, particularly when that is the chief complaint. These guidelines are meant to provide further treatment options for specific known or suspected overdoses. At all times, patients should be treated based on other guidelines as appropriate (such as cardiac arrest) and the use of this guideline should augment that care.

**All Providers**
- Appropriate standard initial care.
- Do not induce vomiting.
- Collect *all* medication bottles/packages to accompany patient to hospital.
- Treat seizure per [Seizure Guideline](#).
- Treat cardiac arrest per [Cardiac Arrest Guideline](#).

**Narcotic Overdose**
- Support ventilation/maintain airway.
- Monitor **Pulse-oximetry**
- If respiratory arrest or agonal respirations, may consider **Naloxone** prior to placing advanced airway.
- **Naloxone 0.5-2mg IM/IN (peds: 0.05 to 0.1mg/kg).**
  - DO NOT use on patients with an established advanced airway.
  - May repeat as needed to maintain respiratory drive.
  - Consider physical restraints prior to Naloxone administration.

**Paramedics**
- Establish IV.
- Initiate and maintain **cardiac monitoring**.

**Narcotic Overdose**
- Naloxone may be given IV

**Tricyclic Anti-depressant Overdose**
- Must maintain **cardiac monitoring** regardless of how patient looks.
  - These patients may decompensate quickly and without warning into coma, seizure, and/or cardiac arrest.
  - Obtain **12-Lead EKG**.
- **Sodium Bicarbonate 1mEq/kg IV** if:
  - Hypotension not responsive to 1 liter Normal Saline.
  - Decreased mental status.
  - QRS duration is greater than 0.08 seconds.
  - Repeat Sodium Bicarbonate as needed if patient responds.
  - Contact medical control if initial or subsequent doses are not effective.
Paramedics continued

Cocaine
- Obtain 12-lead EKG if any chest pain.
- Midazolam (Versed) 1-2mg IV/IM/IN as needed to calm agitation.
  May repeat up to 10mg.

Calcium Channel Blocker/Beta-blocker Overdose
- If symptomatic and bradycardic:
  - Normal Saline 1 liter bolus (peds: 20cc/kg).
    - Repeat as needed (peds: limit to 2 boluses).
  - Atropine 1mg IV (peds: 0.02mg/kg {min 0.1mg}).
    - Repeat up to 3 doses (may repeat more if initial transient response to previous doses).
  - Glucagon 1-2mg IV (peds: start with 0.5mg).
    - Repeat as needed based on response.
- If signs of shock:
  - Calcium Chloride 1gm (10ml) slow IV/IO (peds: 20mg/kg{0.2ml/kg}).
    - May repeat as needed.
  - Consider contacting medical control for epinephrine orders.

Notes:
- Naloxone should only be used to avoid the need for an advanced airway.
- The dose should be titrated only enough to maintain respiratory drive.
- Patients with narcotic overdose receiving naloxone may go into withdrawal or lose their “high,” both of which can lead to agitation and violence which can be dangerous for the patient, the EMS providers, and bystanders.
Many times the working assessment of poisoning will be suspected in the care of an altered mental status. It is important for the provider to consider all causes of altered mental status and to narrow in on a cause based on history of present illness including circumstances and findings at the scene in addition to past medical and social histories. These guidelines are meant to provide further treatment options for specific known or suspected poisonings. At all times, patients should be treated based on other guidelines as appropriate (such as altered mental status or cardiac arrest) and the use of this guideline should augment that care.

Carbon monoxide poisoning can be the result of numerous exposures, all of which share in common incomplete combustion in an enclosed space. This can include a running engine in a garage, a malfunctioning appliance in a home, and closed space structure fire. Carbon monoxide poisoning however should not be ruled out just because the present environment is deemed safe through air testing. Rather, any patient that has any symptoms should be treated and transported regardless of air testing results.

| All Providers | ♦ Appropriate standard initial care.  
|               | ♦ Do not enter scene until established safe to do so.  
|               | ♦ **Remove patient and self from scene/exposure.**  
|               | ♦ Administer **Oxygen** 15L/NRM (High flow oxygen is indicated regardless of respiratory symptoms or pulse oximetry reading)  
|               | ♦ Monitor **pulse-oximetry** when available.  
| Paramedics    | ♦ **Establish IV.**  
|               | ♦ Initiate and maintain **cardiac monitoring.**  
|               | ♦ Treat cardiac arrest per **Cardiac Arrest Guideline.**
Many times the working assessment of poisoning will be suspected in the care of an altered mental status. It is important for the provider to consider all causes of altered mental status and to narrow in on a cause based on history of present illness including circumstances and findings at the scene in addition to past medical and social histories. These guidelines are meant to provide further treatment options for specific known or suspected poisonings. At all times, patients should be treated based on other guidelines as appropriate (such as altered mental status or cardiac arrest) and the use of this guideline should augment that care.

Cyanide poisoning can occur in any closed space structure fire as one of the by-products of such fire is cyanide. Otherwise, cyanide exposure will typically be industry related with known exposure.

Cyanide causes asphyxiation at the cellular level (the cells regardless of oxygen availability are unable to use oxygen). This will quickly lead to altered mental status, shock, and finally cardio-respiratory arrest. For treatment to be beneficial, it must be instituted quickly. As this is not a primary oxygenation problem, pulse-oximetry readings may be normal.

<table>
<thead>
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<td>♦ <strong>Establish IV.</strong></td>
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<td>♦ Monitor <strong>pulse-oximetry</strong>.</td>
<td></td>
</tr>
<tr>
<td>♦ Initiate and maintain <strong>cardiac monitoring.</strong></td>
<td></td>
</tr>
<tr>
<td>♦ Treat cardiac arrest per <strong>Cardiac Arrest Guideline.</strong></td>
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</tr>
<tr>
<td>♦ If patient has altered mental status, seizures, or other signs of hypoperfusion/shock <strong>and</strong> was in a closed space fire or had a known exposure to cyanide, treat with <strong>Cyanokit 5g IV</strong> over 15 minutes (peds: 70mg/kg, max 5g).</td>
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</table>

**Note:** Start separate IV for **Cyanokit**.
Many times the working assessment of poisoning will be suspected in the care of an altered mental status. It is important for the provider to consider all causes of altered mental status and to narrow in on a cause based on history of present illness including circumstances and findings at the scene in addition to past medical and social histories. These guidelines are meant to provide further treatment options for specific known or suspected poisonings. At all times, patients should be treated based on other guidelines as appropriate (such as altered mental status or cardiac arrest) and the use of this guideline should augment that care.

Organophosphates include agents of terror (nerve agents), but more commonly pesticides. Organophosphate poisoning should be expected when there is increased vagal tone causing:

- S: salivation (drooling)
- L: lacrimation (tearing)
- U: urination
- D: diarrhea/defecation
- G: generalized twitching/seizures
- E: emesis (vomiting)
- M: miosis (pinpoint pupils)

### All Providers
- Do not enter scene until established safe to do so.
- **Remove patient and self from scene/exposure.**
- Decontaminate patient while protecting yourself with appropriate **PPE**.
- Appropriate standard initial care.
- Do not induce vomiting.
- If an EMS provider is exposed to an organophosphate:
  - Decontaminate by undressing and flushing.
- Monitor **pulse-oximetry** when available.

### Paramedics
- **Establish IV.**
- Initiate and maintain **cardiac monitoring**.
- Treat cardiac arrest per **Cardiac Arrest Guideline**.
  - If signs/symptoms of poisoning, **Atropine 1mg IV/IO (peds 0.02mg/kg IV/IO, min dose 0.1mg)**.
    - Repeat every 3 minutes until signs of atropinization (dry mouth, dry and flushed skin, dilated pupils, tachycardia) appear.
    - Usual atropine dosage limits do not apply. Patients may require very high doses.
- Treat continued seizure with **Seizure Guideline**.
Personal safety is the primary focus when dealing with psychiatric emergencies. Never enter or remain in an unsafe environment. Call for law enforcement to secure scene as needed. It is also important to realize that many acute psychiatric emergencies may have a medical cause or trauma (such as head injury) etiology. These patients, once controlled, deserve a careful and detailed history and physical.

All Providers

♦ Ensure your safety.
♦ Attempt to determine if patient is a threat to self or others.
♦ Protect patient from harm to self or others.
♦ Always tell the patient what you are doing.
♦ Attempt to **verbally calm** a patient and reorient him to reality as possible.
♦ Physical restraint as necessary per **Restraint Guideline**.
♦ Consider etiologies of behavior and treat according to appropriate guideline.
♦ Consult medical control from the scene in ALL instances of psychiatric emergency where a refusal of transport is being considered.
♦ If the patient is an imminent threat to self or others, or is unable to care for himself, and is refusing transport, have the police evaluate the situation for Chapter 51 protections.
♦ If safe, check blood glucose level.
  ♦ If less than 60mg/dl, follow **Hypoglycemia Guideline**.

Paramedics

♦ **Consider chemical restraint** per **Restraint Guideline**.
Seizures often occur in patients with a known seizure disorder (epilepsy). They are usually self-limited requiring no more than supportive care. However, you must consider other causes, especially in patients with first time seizure. These include hypoglycemia, hypoxia, head injury, poisoning/overdose as well as other causes.

All Providers
- Move patient to area where he will not injure himself during seizure activity.
- Never do anything to physically restrain seizure activity.
- Never place anything in the mouth of an actively seizing patient.
- Administer Oxygen per Oxygen Therapy Guideline and assist ventilations with BVM as necessary.
- Obtain finger stick blood glucose.
  - If glucose less than 60mg/dl, refer to Hypoglycemia Guideline.
- Do not administer anything by mouth.

Paramedics
- Establish IV when able. (Paramedic may defer the IV on a seizure patient known to KFD if patient’s usual course does not include recurrent seizures while with EMS).
- If low glucose not previously treated, administer Dextrose 50%, 50mL IV.
  - If cannot establish IV, administer Glucagon 1mg IM.
- Recheck blood glucose 5 to 10 minutes after intervention and treat as appropriate.
- If grand mal (total motor) seizure activity lasts for more than 2 minutes or if seizures become recurrent, administer Midazolam (Versed) 4mg IV/IN or 10mg IM.
  - May repeat as necessary to stop seizure activity.
  - If more than 10mg needed, contact medical control.
All Providers

♦ Assure scene is safe.
♦ Provide appropriate psychological support with empathetic manner avoiding judgmental attitudes.
♦ Discourage patient from changing clothes, urinating, washing hands, showering, or eating and drinking.
♦ Treat obvious injuries per appropriate guidelines.
♦ Defer a GU exam unless concern about life threatening injury.
♦ Encourage victim to contact police to file a report and assist in doing so as requested.
  • We are not allowed to contact police without the victims consent.
  However
  • Police reporting is mandatory for any victim under the age of 18.
  • Avoid asking questions not directly related to injury or illness.
  • Allow police to perform investigation.
♦ If stable, transport to Aurora Kenosha
Shock is defined as inadequate perfusion of vitals organs, not merely hypotension. Clinical evidence of significant shock usually includes altered mental status. Shock can be the result of many different pathologies including:

- Infection/sepsis
- Trauma/hemorrhage
- Spinal cord injury
- Pump failure (cardiogenic)
- Dehydration
- Drugs and toxins
- Vasovagal syncope
- Arrhythmias
- Anaphylaxis
- Pulmonary embolism

Regardless of the cause, pre-hospital treatment is generally the same. However, there may be a more appropriate guideline to reference.

### All Providers
- **Oxygen** per [Oxygen Therapy Guideline](#).
- Control any external hemorrhage with direct pressure.
- Get patient into supine position (consider c-spine immobilization if trauma and consider recovery position as needed to protect airway).
- Keep patient warm (unless victim of hyperthermia, then see [Hyperthermia Guideline](#)).

### Paramedics
- Apply monitor and determine rhythm.
  - Go to appropriate arrhythmia guideline as necessary.
- Establish large bore IV.
- Normal Saline 500mL bolus (20mL/kg peds).
  - May repeat NS bolus up to 2L if no signs of pulmonary edema/CHF (repeat bolus once in peds).
Stroke is a very time sensitive condition. It is essential to establish symptom onset. If a patient wakes with symptoms or if found by someone, the time of onset is the time the patient was last seen awake and normal. Time should not be wasted on scene trying to determine onset time, but someone that can help ascertain this information should accompany the patient to the ED via ambulance.

**All Providers**
- Must determine last known well time, or symptom onset if observed.
- If onset of symptoms is **less than 24 hours**, priority of care is ABCs and expeditious transport with neuro alert activated.
- **Oxygen** per Oxygen Therapy Guideline.
- Monitor and protect airway.
- Perform neurologic exam as below.
- Check finger stick glucose and if less than 60mg/dl, treat according to Hypoglycemia Guideline.
- Protect paralyzed limbs from injury.
- Assist patient to position of comfort.

**Paramedic**
- Establish IV (do not delay transport).
- Initiate and maintain cardiac monitoring.
- If seizure occurs, treat according to Seizure Guideline.
- Bring all medications with patient to hospital.
- If SBP greater than 220 mmHg on 2 consecutive readings, administer Labetalol 20mg IV.
- Information to obtain, record, and report include:
  - Symptom onset or last known well time.
  - Stroke screening results (see below).
  - Seizure activity (focal or generalized).
  - Recent trauma or surgery.
  - If taking blood thinners.
  - History of stroke or bleed (head or otherwise).
These standards approved by Tom Grawey, DO, Medical Director

Kenosha Fire Department
Emergency Medical Services
Patient Care Guidelines

Stroke
Pg. 2 of 2

Universal Care

BEFAST SCREENING
Any of below:
- Balance (sudden loss of balance)
- Eyes (sudden loss of vision)
- Face (looks uneven suddenly)
- Arm (sudden arm/leg hanging down)
- Speech (suddenly slurred or confused)
- Terrible Headache (sudden, worst)

Positive

LVO SCREEN
Any of below:
- Eye Gaze Deviation
- Aphasia
- Neglect

Negative

Refer to other appropriate protocol

Positive

Initiate Neuro Alert- LVO Positive
Pre-Notification
Transport to the closest Stroke Center

Reviewed: June 2019
Syncope is defined as a loss of consciousness. There are many causes. You should attempt to determine cause if possible and treat according to most appropriate guideline.

<table>
<thead>
<tr>
<th>All Providers</th>
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<tbody>
<tr>
<td>♦ If patient still unconscious/unresponsive, follow <strong>Altered Mental Status Guideline</strong>.</td>
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<tr>
<td>♦ Assist patient to position of comfort.</td>
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<tr>
<td>♦ Obtain <strong>finger stick glucose</strong> reading and if less than 60mg/dl, follow <strong>Hypoglycemia Guideline</strong>.</td>
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<tr>
<td>♦ <strong>Oxygen</strong> per <strong>Oxygen Therapy Guideline</strong>.</td>
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<thead>
<tr>
<th>Paramedics</th>
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<tbody>
<tr>
<td>♦ <strong>Establish IV</strong> if over age 50.</td>
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</tr>
<tr>
<td>♦ Initiate and continue <strong>cardiac monitoring</strong>.</td>
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</tr>
<tr>
<td>♦ Obtain <strong>12-lead EKG</strong>.</td>
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</table>
Trauma patients need a focused, organized evaluation. Scene time, particularly in unstable patients, should be limited to 10 minutes.

<table>
<thead>
<tr>
<th>All Providers</th>
<th>General</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>♦ Assess and secure scene safety.</td>
</tr>
<tr>
<td></td>
<td>♦ Use universal precautions utilizing appropriate PPE as necessary.</td>
</tr>
<tr>
<td></td>
<td>♦ Anticipate potential injuries based on mechanism.</td>
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</tbody>
</table>

**PRIMARY SURVEY**

**Airway/c-spine**
- ♦ Assess, establish and/or maintain an effective airway.
- ♦ C-spine immobilization as indicated.
- ♦ Remove helmet as necessary to maintain airway.
- ♦ Reposition airway and suction as necessary.
- ♦ Airway adjuncts as required.
  - NP/OP airways
  - Non-visualized airway

**Breathing/Ventilation**
- ♦ Expose chest: inspect/palpate for rate, depth, pattern, quality of movement; inspect neck veins for distension, use of accessory muscles, retractions, flail segments, open wounds, tracheal deviation; listen for breath sounds: symmetry and depth.
- ♦ Oxygen
  - Per Oxygen Therapy Guideline.
- ♦ Assist with BVM if respiratory compromise.

**Circulation**
- ♦ Assess pulses for presence, rate, quality, and regularity. If no pulse go to Traumatic Arrest Guideline.
- ♦ Assess skin for color, moisture, and temperature.
- ♦ Look for external hemorrhage and control with direct pressure and/or tourniquet as indicated.

**Disability/Mini-neurological exam**
- ♦ Determine GCS and AVPU

**Expose**

<table>
<thead>
<tr>
<th>Paramedics</th>
<th>Intervene with advanced airway to control airway as needed.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>♦ Initiate IV during Circulation assessment.</td>
</tr>
<tr>
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<td>- Preferably large bore, and 2 if possible.</td>
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<td></td>
<td>- If unstable, IV should be initiated en route.</td>
</tr>
</tbody>
</table>
A secondary survey should be started only on unstable patients that are enroute to the hospital and have had all issues in the primary survey addressed or on patients that are stable.

**All Providers**

♦ Obtain full set of vital signs
♦ History
  - S Signs and symptoms
  - A Allergies
  - M Medications
  - P Past medical history
  - L Last meal
  - E Events leading up to present situation

Review of systems and complete physical exam based on mechanism, nature, and type of injury

♦ HEAD, EYES, EARS, NOSE, THROAT (HEENT): inspect/palpate the head and face. Note any alterations from normal including drainage from any orifice. Note gross visual acuity and any trauma to eyes. Note extra-ocular movements. Visualize nose and mouth for blood or other signs of injury.

♦ NECK: inspect and palpate for signs of injury such as tenderness, deformity, hematoma, subcutaneous emphysema.

♦ CHEST: re-inspect visually and by palpation looking for signs of injury.

♦ ABDOMEN: inspect visually and palpate for signs of injury to include bruising, distention, or tenderness. Gently cover any exposed bowel with moist sterile dressings.

♦ PELVIS/GU: as appropriate, inspect for bleeding. Palpate for crepitus or instability.

♦ EXTREMITIES: inspect for position, deformities, wounds, circulation, motor, sensory (CMS). Splint and/or dress any deformities/wounds as appropriate.

♦ BACK: palpate accessible areas of back for tenderness or deformity.
All trauma patients should receive an Initial Trauma Care—Primary Survey. This guideline should be used to augment that care.

<table>
<thead>
<tr>
<th>All Providers</th>
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</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Flail chest</td>
</tr>
<tr>
<td></td>
<td>♦ If ventilatory distress, ventilate with <strong>100% Oxygen</strong> using BVM.</td>
</tr>
<tr>
<td></td>
<td><strong>Open pneumothorax</strong></td>
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<tr>
<td></td>
<td>♦ Ask patient to maximally exhale or cough.</td>
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<td></td>
<td>♦ <strong>Apply HALO Seal</strong> to wound.</td>
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<tr>
<td></td>
<td><strong>Abdominal evisceration</strong></td>
</tr>
<tr>
<td></td>
<td>♦ Cover exposed organs with moist dressing.</td>
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<td>♦ If suspected of having internal chest or abdominal trauma, <strong>establish 1-2 large bore IVs</strong> en route to hospital.</td>
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<tr>
<td></td>
<td>♦ If evidence of shock and hypotension, administer normal saline 500ml boluses up to 2 liters to maintain a SBP of 90-100 mmHg.</td>
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<tr>
<td></td>
<td>♦ <strong>Consider pain management</strong> per <strong>Pain Management Guideline</strong>.</td>
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<td></td>
<td><strong>Tension Pneumothorax</strong></td>
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<td></td>
<td>♦ Signs include: unilateral absence of breath sounds, JVD, SBP less than 90, respiratory distress, resistance to BVM ventilations, tracheal deviation away from affected side.</td>
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<tr>
<td></td>
<td>♦ <strong>Needle decompression</strong> in 2nd intercostal space just above the 3rd rib, midclavicular line on affected side.</td>
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<td></td>
<td>♦ Expeditious transport.</td>
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<tr>
<td></td>
<td>♦ <strong>Monitor for PEA.</strong></td>
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<tr>
<td></td>
<td><strong>Pericardial Tamponade</strong></td>
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<tr>
<td></td>
<td>♦ Signs include: Beck’s Triad (narrowed pulse pressure, JVD, muffled heart tones).</td>
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<td>♦ Expeditious transport.</td>
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<td>♦ <strong>Monitor for PEA.</strong></td>
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**Notes:**

Any penetrating trauma to the arms proximal to the elbow should be considered chest trauma.

Any penetrating trauma to the legs proximal to the knees should be considered abdominal trauma.

Don’t forget that trauma to the back can be considered posterior chest and/or abdominal trauma.
All patients who have sustained a significant head injury must be assumed to have a cervical spine injury. The indication for advanced airway management rests primarily on the inability to adequately protect the airway or ventilate. The paramedics will need to use their clinical judgment to determine the best route to airway control.

| All Providers | ♦ Initial trauma care.  
|               | ♦ C-spine care.  
|               | ♦ Neuro exam (AVPU and GCS).  
|               |   - Repeat every 10-15 minutes as able.  
|               | ♦ If CSF rhinorrhea or otorrhea, apply 4x4 to nose or ear to contain drainage, but do not apply pressure, pack, or in any other way attempt to stop drainage.  
| Paramedics    | ♦ If grand mal (total motor) seizure activity, treat per Seizure Guideline.  
|               | ♦ If patient with advanced airway, ventilate normally and maintain end-tidal CO₂ between 35 and 40mm Hg.  
|               | ♦ If not hypotensive:  
|               |   - Elevate head 15-30°.  
|               |   - Keep IVF TKO.  
|               | ♦ If patient is combative and non-responsive to verbal attempts to calm, consider Restraints.  
|               |   - May give Midazolam (Versed) 1-2mg IV/IM. (Peds: 0.1mg/kg).  
|               |   - May repeat up to 10mg.  
|               | ♦ Check finger stick glucose.  
|               |   - If less than 60mg/dl, treat per Hypoglycemia Guideline.  

## Musculoskeletal Injuries
(Amputation/degloving/impaled objects)

### All Providers

- Assess and document the 5 Ps before and after splinting.
  - Pain, Paralysis, Paresthesias, Pulselessness, Pallor
- All extremity injuries in which a fracture and/or dislocation is suspected should be immobilized.
  - Immobilization occurs by splinting or otherwise preventing motion in the bones above and below the joint in question or the joints above and below the bone in question.
  - Immobilize and splint joint injuries in position found.
    - May attempt to reduce once if extremity pulseless.
  - For long-bone fractures, attempt to place into axial alignment unless:
    - Resistance is encountered.
    - Patient complains of too much pain to allow.
- Suspected femur fractures should be treated with traction splint unless:
  - Suspect injury to knee.
  - Unable to secure device due to other injury.
- If pulses are lost after applying a traction splint, leave splint in place. Do not release traction. Notify receiving hospital of loss of pulse.
- If pulses are lost after application of other splints, may attempt to re-splint once to regain pulse.
- If possible, elevate injured extremity after splinting.
- If practical, apply ice over injury site.

### Amputation/degloving injuries

- If incomplete amputation, attempt to stabilize with a bulky dressing. Do NOT attempt to complete the amputation.
- If bleeding cannot be controlled with direct pressure, apply tourniquet above amputation, as close as possible to injury. Note time of tourniquet placement, notify hospital, and do not remove once placed.

### Care of Amputated Parts

- Wrap loosely in saline-moistened gauze or towel.
- Place in plastic bag and seal and then keep cool with ice.
- Do not immerse tissue directly into water or saline.
- Bring amputated part to hospital with patient.

### Impaled objects

- Never remove an impaled object unless it extends through the cheek into the mouth and interferes with the airway.
- Stabilize object in position found with bulky dressing.

### Paramedics

- Consider establishing IV.
- Treat pain per Pain Management Guideline.
Unstable spinal column injuries can progress to severe neurological injuries in the presence of excessive movement of the spine. The goal of spinal motion restriction is to minimize unwanted movement of the potentially injured spine. Unnecessary spinal immobilization has been shown to cause more harm than good and should be avoided. With that in mind, the following guideline outlines specific circumstances when spinal restriction should be performed and how it should be done.

**All Providers**

- Do not strap or tape patient’s head to the cot.
- Document the initial neurologic exam and upon each patient transfer (e.g. onto stretcher, prior to movement onto hospital bed and once transfer to hospital bed occurs). A simple one-line statement such as “patient’s neurologic exam remained unchanged throughout all transfers” would suffice.
- Ideally, the backboard or scoop stretcher would be used as an adjunct if multiple extrication steps are needed in order to move a patient to a stretcher. Ambulatory patients or those patients with minor spine pain seated in a vehicle or at the scene may be gently assisted directly to an ambulance stretcher brought directly to them to minimize movement. Make every effort to minimize movement to the spine in this process.

**Paramedics**

If signs of neurogenic shock with SBP less than 90 mmHg, pulse less than 60 with signs/symptoms of hypoperfusion:

- **Establish IV.**
- **Give Normal Saline 500mL bolus.**
  - May repeat up to 2L to maintain SBP above 90 mmHg.
- **Atropine 0.5mg IV (peds: 0.02mg/kg) if not responsive to fluid.**
  - May repeat up to 3mg (peds: 0.04mg/kg).

For profound shock not responsive to fluids and atropine, administer Epinephrine (1:10,000) 0.5mg IV (peds: 0.01mg/kg).
* Altered level of consciousness can include GCS <15, intoxication, not following commands, etc.
# Focal neurologic signs and/or symptoms include numbness, motor weakness, etc.
+ Distracting circumstances or injury include long bone fracture, large burns, emotional distress, etc.
This PCG is for organized sports where an athletic trainer and/or sports medicine physician is typically present.

<table>
<thead>
<tr>
<th>All Providers</th>
<th>Athletic trainer or team physician present</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>♦ This is their patient and their scene.</td>
</tr>
<tr>
<td></td>
<td>♦ Allow them to continue to lead until they are ready to hand off.</td>
</tr>
<tr>
<td></td>
<td>♦ Allow them to continue to participate in patient care and utilize their expertise.</td>
</tr>
<tr>
<td></td>
<td>♦ If a physician is present, he does not need to accompany the transport unless he has initiated care outside of KFD’s scope of practice.</td>
</tr>
</tbody>
</table>

**No athletic trainer or team physician on-scene**

- ♦ Trauma assessment and care per usual standards
- ♦ If enough personnel available and you feel comfortable, remove uniform and equipment.

**Paramedics**

- ♦ Establish IV per usual indications.
- ♦ Utilize Pain Management PCG as appropriate.

**Heat Stroke/Exertional Hyperthermia**

- ♦ If the facility has the means and knowledge for rapid cooling with an ice bath, allow them to do so.
  - ♦ The patient will be cooled to 102.5°F before transport.
  - ♦ You may establish an IV while the patient is in the ice bath.
  - ♦ Assist the athletic trainer and/or physician in monitoring the patient.
  - ♦ If the patient should become apneic or pulseless, remove from ice bath and initiate resuscitation per usual standards.
This guideline addresses trauma patients found with no vital signs or who lose vital signs and who do not meet system criteria for obviously dead patients. Victims of trauma who lose a pulse have very poor outcomes and in the pre-hospital setting, attempted resuscitation is considered futile treatment.

### All Providers
- EMTs should initiate CPR on patients without obvious signs of death.
- If MVC and patient still in vehicle, rapid extrication is indicated.

### Paramedics
- If patient has no signs of life, apply cardiac monitor.
- If monitor shows asystole or a wide complex PEA with a rate less than 30, no resuscitation is indicated. (CPR initiated by EMTs can be stopped)
- If resuscitation indicated, do a rapid scene assessment and primary survey to find a possible cause of the arrest.
- If chest trauma and suspect tension pneumothorax: bilateral needle pleural decompression.
- Consider controlling airway with non-visualized airway or endotracheal intubation.
- Normal Saline wide open on pressure bags through large bore IV or IO
- If the above measures do not lead to ROSC, consider contacting medical control for termination of resuscitation, especially if rhythm decompensates to asystole or wide-complex bradycardia.
- If termination of resuscitation not considered, careful expeditious transport is indicated.
- Further initial trauma care should be completed enroute as time permits.

### Notes:
- A helicopter is never indicated for a pulseless patient.
- Defibrillate ventricular fibrillation per v-fib guidelines.
- ACLS medications are never indicated in a traumatic arrest.
The following criteria are developed from the Wisconsin Field Trauma Triage Guideline. These criteria are used in determining transport destination for trauma patients. This patient care guideline will be used to determine when a call for a medical helicopter to transport to a Level I trauma center may be indicated. Medical helicopter use is associated with considerable risk and its use should attempt to be limited to those patients for whom the benefit will outweigh the great risk not only to the patient, but our crews, the helicopter personnel, and the public. As outlined below, helicopter transport should be initiated based more on patient status or injuries, not on mechanism of injury alone.

All Providers

A helicopter request may be considered for the following:

- Persistent GCS 13 or less as a result of trauma.
- Persistent systolic blood pressure less than 90 mmHg (6 months or younger: less than 60 mm Hg; 6 months to 5 yrs: less than 70 mm Hg; 6-12 yrs: less than 80 mm Hg).
- Persistent respiratory rate less than 10/min or greater than 29/min (less than 1 yr: less than 20) or the need for ventilatory support.
- Ineffective breathing, grunting, or stridor.
- One or more abnormalities in Pediatric Assessment Triangle

- Any penetrating injury to head, neck, torso, or extremities proximal to elbow or knee.
- Symptomatic chest wall instability or deformity (e.g. Flail chest).
- Two or more suspected fractures involving the humerus or femur.
- Injured pulseless extremity.
- Complete or partial amputation proximal to wrist or ankle.
- Pelvic fracture/unstable pelvis.
- Open or depressed skull fracture.
- Paralysis (new onset).
- If in paramedic’s judgment, mechanism of injury is such that patient is likely to have a serious injury that would benefit from Level 1 trauma center, call online medical control to discuss need for helicopter.

- Based on scene dynamics and patient condition, a helicopter can be requested to respond directly to the scene or to meet the patient at the hospital.
  - Patients being taken to the hospital to meet the helicopter do not need to be taken into the emergency department.
- If after requesting helicopter, patient condition improves and indications are no longer met or verified, the request should be cancelled, regardless of location of helicopter.
It is important to remember that the most common cause of fetal mortality is maternal mortality. It is essential to concentrate on resuscitation of mother only. Pregnancy increases oxygen consumption so early airway and breathing management is essential. Furthermore, the airways of pregnant women tend to be edematous and friable making intubation potentially much more difficult. Gastric motility is slowed, so pregnant patients are more likely to have full stomachs and prone to aspiration. Also, pregnancy may blunt the typical tachycardic response to shock.

**All Providers**
- Apply Oxygen early: 10-15L/NRM for any potential serious injury.
- In 2nd or 3rd trimester, position pregnant patient on her left side to avoid compressing the inferior vena cava compromising blood flow.
- After primary survey, if time and condition permit, assess mother for:
  - Uterine contractions.
  - Vaginal bleeding or leaking of fluid.
  - Presence/absence of fetal movements (as described by mother).
- If any of the above are present, expeditious transport is indicated.
- If mother is in labor and signs of imminent birth are present, prepare for emergency childbirth if mother is stable.

**Paramedics**
- Additional treatment no different from other trauma guidelines.
All Providers

Obtain pregnancy history and determine if there is adequate time to transport:

- Gravida (# of pregnancies); para (# of live births).
- Number of miscarriages, stillbirths, abortions or multiple births.
- Due date (EDC) or LMP.
- Onset, duration, and frequency of contractions.
- Length of previous labors (in hours).
- Status of membranes (intact or ruptured) (Note time since rupture).
  - If ruptured or unsure, inspect for prolapsed cord and/or evidence of meconium.

Document any high-risk concerns:
- Lack of prenatal care;
- Drug abuse;
- Teenage pregnancy;
- Pre-term labor (less than 37 weeks);
- Multiple fetuses;
- Previous breech or C-section;
- History of diabetes, HTN, cardiovascular or other disease.

Inspect for bulging perineum or crowning. Determine whether mother is involuntarily pushing or feels like she has to move her bowels with contractions. If present, prepare for delivery.

DO NOT ATTEMPT TO RESTRAIN OR DELAY DELIVERY UNLESS PROLAPSED CORD IS PRESENT.

- If mother is hyperventilating, coach her to take slow, deep breaths.
- If mother becomes hypotensive or lightheaded at any time:
  - Roll mother onto her left side.
  - Oxygen 10-15L/NRM.

IF DELIVERY IMMINENT:

Position mother supine on flat surface, if possible.
Put on FULL blood and body secretion barriers.
Ready a stack of 5-6 open towels so that as the infant is dried, the wet towel may be quickly removed, and the next dry towel may be used to continue the process.
Open OB pack:
  - Place drapes over mother's abdomen and beneath perineum.
  - Prepare bulb syringe, cord clamps, scalpel, and chux to warm infant.
Have neonatal BVM and oxygen supply ready.

If delivery is not imminent, allow mother to assume most comfortable position and transport.

- Consider establishing IV access.
  - IV fluid challenge of Normal Saline in consecutive 500ml increments to maintain SBP greater than 90 mmHg as appropriate.
All Providers

- Allow head to deliver passively.
- Control rate of delivery by placing palm of one hand gently over occiput.
- Protect perineum with pressure from the other hand.
- If amniotic sac still intact, gently twist or tear the membrane.
- Once head is delivered, allow it to passively turn to one side. This is necessary for the shoulders to deliver.
- Feel around the infant’s neck for the umbilical (nuchal) cord.
- If present, attempt to gently lift cord over the baby’s head.
  - If unsuccessful, double clamp and cut the cord between the clamps.

- To facilitate delivery of the upper shoulder:
  - Gently guide the head downwards.
  - Support and lift the head and neck slightly to deliver the lower shoulder.
  - DO NOT forcefully move or roll head sideways onto the shoulder.
  - If necessary (shoulders are “stuck”), perform the McRoberts maneuver by hyperflexing the mother’s legs tightly toward her abdomen and chest. Consider also suprapubic pressure, to guide the impacted shoulder beneath the mother’s pubic bone.

- The rest of the infant should deliver quickly with the next contraction.
- Baby will be wet and slippery.
- Firmly grasp the infant as it emerges.

- Note the date and time of delivery.

- Keep the newborn level with uterus or place on mother’s abdomen in a 15° head-down position until the umbilical cord stops pulsating.

Proceed to Newborn and Post-Partum Care guideline.
Delivery - Breech

A breech birth or breech presentation is when the position of the baby in the uterus is such that it will be delivered buttocks-first or limb-first as opposed to the normal head-first position. Breech presentations occur in about 4% of all births. The two most common categories are:

- The frank breech presentation (65-70% of breech babies), where the baby's bottom comes first, and his or her legs are flexed at the hip and extended at the knees (with the feet near the ears).
- The footling breech presentation, where one or both feet come first, with the bottom at a higher position. This is rare with term babies, but relatively common with premature fetuses.
- Single limb or other abnormal presentations may require C-section. DO NOT attempt field delivery.

An infant in a frank breech or a double footling (both feet) breech presentation generally delivers in 3 stages:

- Legs \(\rightarrow\) abdomen; abdomen \(\rightarrow\) shoulders; and head.

With respect to the risk of hypoxia, the two most dangerous times for the infant are:

- After delivery of the legs \(\rightarrow\) abdomen, when the umbilical cord can become compressed against the pelvic inlet as the head descends; and
- After delivery of the abdomen \(\rightarrow\) shoulders, awaiting delivery of the head.

### All Providers

- **Expeditious transport** with care enroute.
- It is acceptable to stay on-scene for ONE CONTRACTION ONLY if the baby is delivered to the shoulders, while attempting delivery of the head.
- If the baby delivers to the shoulders while enroute, stop the vehicle to attempt delivery of the head.
- **NEVER ATTEMPT TO PULL THE INFANT BY THE LEGS OR TRUNK FROM THE VAGINA.**

#### DELIVERY PROCEDURE:

- As soon as the legs are delivered: support the baby's body wrapped in a towel/chux.
- If the umbilical cord is accessible, palpate frequently for pulsations.
- Attempt to gently loosen the cord to create slack for delivery of the head.
- After the torso and shoulders are delivered: gently sweep down the arms.
- If face down, gently elevate the legs and trunk to facilitate delivery of the head.
- **Do not hyperextend the neck.**
- Perform the Mauriceau maneuver (suprapubic pressure) to facilitate delivery of the head.
- The head should deliver in 30 seconds (with the next contraction). If **NOT:**
  - Reach two gloved fingers into vagina to locate baby's mouth and pull chin down.
  - Then push vaginal wall away from baby's mouth to form an airway.
  - Keep your fingers in place and transport immediately.
  - Alert the receiving hospital of the baby's position.
  - Keep delivered portion of baby's body warm and dry.

If head delivers, anticipate neonatal distress. Refer to **Neonatal Resuscitation Guideline** if necessary.

Anticipate need for maternal hemorrhage control after birth of the infant. Refer to **Post-Partum Care Guideline.**
All Providers  
Check for prolapsed umbilical cord whenever the patient states her bag of water has ruptured.

If a prolapsed cord identified:

- Place gloved hand into vagina and place fingers between pubic bone and presenting part, with cord between fingers. Apply continuous steady pressure on the presenting part to keep the cord from being compressed and allow for blood flow.

- Cover the exposed cord with a moist dressing and keep warm. Palpate the cord frequently for pulsations, and if lost, reposition.

- Expeditious transport, with care enroute.
  - Oxygen 10-15L/NRM.

- Transport with continued pressure on part to keep cord free.

Paramedics  
- Establish IV access while en route if possible.
The majority of newborn infants require no resuscitation beyond maintenance of temperature, and mild stimulation. Of the small numbers who require intervention, most will respond to oxygen via NRM and/or BVM. An even smaller number of severely asphyxiated infants require chest compressions; and an even smaller number need resuscitative medications. **Expeditious transport is always indicated** as soon as an airway is secured and resuscitative interventions have been initiated.

Be aware of factors which may increase the chances that neonatal resuscitation may be required:

- Maternal illness
- Fever during labor
- Meconium-stained amniotic fluid
- Cardiac disease or congenital abnormality diagnosed prenatally
- Premature or post-term birth
- Multiple births
- Prolonged labor or traumatic delivery
- Prolapsed cord

### All Providers

- Leave at least 6 in of umbilical cord when cutting on an infant in obvious distress.
- One team member should note the 1 minute and 5 minute APGAR scores.
- Rapidly warm and dry the neonate and provide tactile stimulation by flicking the soles of the feet and/or rubbing the back.
- Place the newborn on his/her back in a head-down position, if possible. A 1" thick towel roll placed under the shoulders is helpful in maintaining a "sniffing" position for optimal airway opening.
- If in distress, suction the mouth and nose with a bulb syringe. Deep suctioning of the oropharynx using an 8 Fr. catheter (if indicated) should be limited to 10 seconds at a time.
- **NOTE:** Infants born with meconium-staining require suctioning only if in distress.
- **Ventilate** the child between suctioning using **21% oxygen (room air)/neonatal BVM at a rate of 40-60/minute** if adequate spontaneous ventilations do not begin in 30 seconds.
  - Use only enough tidal volume to see the chest rise.
  - The first breath will require a little more pressure to begin lung inflation.
- Continue to suction the nose and mouth periodically to remove secretions that emerge from the lungs.
- **Assess for Bradycardia** (heart rate <100 beats per minute).
- If apneic, bradypneic, bradycardic, or central cyanosis is present:
  - **Continue to ventilate at 40-60/minute using 21% oxygen/neonatal BVM.**
If, despite adequate assisted ventilations for 30 seconds, the heart rate remains <60 beats per minute: Continue assisted ventilations and **begin chest compressions at 120/min.**

If heart rate remains less than 60/min for 90 seconds of ventilation, **increase oxygen to 100%.**

**Paramedics**

- Intubate, as able, using a 3.0 ET tube and a size 0 straight laryngoscope blade.
  - Carefully check tube placement by listening to bilateral breath sounds.
  - If the ETT attempt is unsuccessful and the airway is compromised, **expeditious transport.**
- If heart rate remains <60/minute despite warming, stimulation, 100% oxygen/BVM, and chest compressions:
  - Attempt antecubital IV X1 with 22/24 gauge catheter.
  - Give **Epinephrine (1:10,000) 0.01 mg/kg IV or 0.02 mg/kg ET.**
  - Repeat **Epinephrine (1:10,000) 0.01 mg/kg IV or 0.02 mg/kg ET** every 3 minutes if indicated.
Neonatal Resusc. Algorithm

Term gestation? Breathing/Crying? Good muscle tone?
- Yes
  - Provide warmth
  - Clear airway as needed
  - Dry
  - Stimulate

- No

Provide warmth
Clear airway as needed
Dry
Stimulate

Is heart rate < 100? Is baby gasping or apneic?
- No
  - Post-Resuscitation Care

- Apaneic or HR < 100

Provide positive-pressure ventilation at a rate of 40-60 breaths per minute
- HR < 60
  - Continue positive-pressure ventilation and consider endotracheal intubation
  - Provide chest compressions at a 3:1 compression/breath ratio
  - Reassess heart rate every 60 seconds

- HR > 60
  - Effective ventilation, HR > 100

Initial ventilation to occur with 21% (room air) oxygen. Add supplemental oxygen if heart rate remains below 100 or central cyanosis persists beyond 90 seconds

Administer epinephrine
0.01 mg/kg IV
Consider saline 10 mg/kg bolus
Assess the airway, breathing and circulatory status of the neonate. If in distress, refer to the Neonatal Resuscitation Guideline.

**Initial Medical Care**, immediately after delivery:
Dry and warm the neonate, wrap in blanket or chux.
Stimulate the infant by gently rubbing the back or flicking soles of the feet.
Spontaneous ventilations should begin in 30 seconds.
If no spontaneous ventilations, proceed to Neonatal Resuscitation Guideline.

Clamp the cord at 6” and 8” from the infant’s body, 45 seconds after the birth (or when cord stops pulsating);
Cut between the clamps with the sterile scalpel from OB kit. Check the cord ends for bleeding.
If no sterile scalpel available, leave cord clamped, uncut. Place infant on mother’s abdomen for transport.

Obtain 1 minute APGAR score (see below). If score is 6 or less, refer to Neonatal Resuscitation Guideline.
If respiratory rate <40, assist ventilations with 21% oxygen/neonatal BVM.
Proceed to Neonatal Resuscitation Guideline.

Obtain 5 minute APGAR score (see below).

<table>
<thead>
<tr>
<th>APGAR Assessment</th>
<th>0</th>
<th>1</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>Blue or pale</td>
<td>Blue hands or feet</td>
<td>Entirely pink</td>
</tr>
<tr>
<td>Pulse</td>
<td>Absent</td>
<td>&lt;100</td>
<td>≥ 100</td>
</tr>
<tr>
<td>Grimace (reflex irritability)</td>
<td>Absent</td>
<td>Grimace</td>
<td>Cough or sneeze</td>
</tr>
<tr>
<td>Activity (muscle tone)</td>
<td>Limp</td>
<td>Some extremity flexion</td>
<td>Active motion</td>
</tr>
<tr>
<td>Respirations (resp. effort)</td>
<td>Absent</td>
<td>Weak cry, RR &lt;40</td>
<td>Strong cry</td>
</tr>
</tbody>
</table>

Document the following:
- Date and time of delivery.
- Whether or not umbilical cord was wrapped around the neck. If so, note how many times.
- Appearance of amniotic fluid (if known), especially if green, brown, or tinged with blood.
- APGAR scores at 1 minute and 5 minutes.
- Any infant resuscitation initiated and response.
- Time placenta delivered and whether or not it appeared intact.

Transport infant and mother together if possible and with each restrained appropriately. However, these are two separate patients, and if one should require resuscitation, a second ambulance should be requested.
All Providers

**BLEEDING IN PREGNANCY:** Threatened Miscarriage, Placenta Previa or Placental abruption.

♦ Position patient on *left side*.
♦ **Oxygen** 10-15L/NRM if patient is ill.
♦ Note type, color, and amount of vaginal bleeding or discharge. If tissue passed, collect and transport to hospital with the patient.

**PRE-ECLAMPSIA or HYPERTENSION OF PREGNANCY:**
Elevated BP with additional signs including, but not limited to: moderate to severe fluid retention/edema; headache; double vision; and/or altered mental status.

♦ Anticipate seizures.
♦ Minimal CNS stimulation: DO NOT check pupillary light reflex.

Paramedics

**BLEEDING IN PREGNANCY:**

♦ **Establish IV.**
  - Anticipate need for 2 large-bore IVs.
  - If presence or potential for shock:
  - **IV fluid** challenge of Normal Saline in consecutive *500 ml increments* to maintain SBP greater than 90 mmHg.

**PRE-ECLAMPSIA OR HYPERTENSION OF PREGNANCY:**

♦ **Establish IV.**
♦ If seizure occurs:
  - Check **finger stick glucose** and if less than 60mg/dL treat according to Hypoglycemia Guideline.
  - Treat according to Seizure Guideline.
All Providers

- Placenta should deliver in 20-30 minutes. If delivered, collect in plastic bag from OB kit and transport to hospital for inspection. DO NOT pull on cord to facilitate delivery of the placenta.

- **DO NOT DELAY TRANSPORT AWAITING PLACENTAL DELIVERY.**

- Mother may be shivering. Cover with blanket.

- If perineum torn and/or bleeding, apply direct pressure with sanitary pads and have mother bring her legs together. Apply cold pack (ice bag) to perineum (over pad) for comfort and to reduce swelling.

- If significant blood loss:
  - **Massage top of uterus** (fundus) until firm.
  - Breast feeding may increase uterine tone.

Paramedics

- If significant blood loss:
  - **Establish IV.**
  - Fluid challenge of **Normal Saline** in consecutive 500 ml increments to maintain SBP greater than 90 mmHg.
SPECIAL CONSIDERATIONS:
- A child is defined as any patient not reaching puberty as marked by presence of breasts in females and axillary hair in males.
- Children have different responses to blood volume loss. They often maintain their systolic BP until a 30% volume loss has occurred, then crash rapidly.
- Children are also prone to heat loss and cold stress, which results in acidosis, hypoxia, and bradycardia.
- Gastric dilation develops from crying, which leads to ventilatory impairment.

FORMULA FOR ESTIMATING NORMAL WEIGHT IN CHILDREN (KG)
(Ideally use Braselow Tape)
<<12 months \[\text{Age (months)}/2\] + 4 = Weight (kg)
1 to 10 years \[\text{Age (years) x 2} + 10\] = Weight (kg)

<table>
<thead>
<tr>
<th>Age</th>
<th>Typical Systolic BP [Age (years) x 2 + 90]</th>
<th>Lower Limits of SBP [Age (years) x 2 + 70]</th>
<th>Hypotension</th>
<th>Awake Pulse (Range)</th>
<th>Asleep Pulse</th>
<th>Resp Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neo-3 mo.</td>
<td>90</td>
<td>70</td>
<td>SBP &lt;70</td>
<td>140 (85-205)</td>
<td>80-160</td>
<td>30-60</td>
</tr>
<tr>
<td>3 mo-2 yr.</td>
<td>90-92</td>
<td>70-72</td>
<td>SBP &lt;70 + age x 2</td>
<td>130 (100-190)</td>
<td>75-160</td>
<td>24-40</td>
</tr>
<tr>
<td>2-10 years</td>
<td>94-110</td>
<td>74-90</td>
<td>SBP &lt;70 + age x 2</td>
<td>80 (60-140)</td>
<td>60-90</td>
<td>18-30</td>
</tr>
<tr>
<td>&gt;10 years</td>
<td>&gt;110</td>
<td>90</td>
<td>SBP &lt;90</td>
<td>75 (60-100)</td>
<td>50-90</td>
<td>12-16</td>
</tr>
</tbody>
</table>

PEDIATRIC GLASGOW COMA SCALE

<table>
<thead>
<tr>
<th>Eye Opening</th>
<th>Best Verbal Response Age &gt;5 Years</th>
<th>Best Verbal Response Age 2-5 Years</th>
<th>Best Verbal Response Age &lt;2 Years</th>
<th>Best Motor Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spontaneous</td>
<td>Oriented/converses 4</td>
<td>Approp. words/phrases 5</td>
<td>Smiles, coos, cries appropriately</td>
<td>Moves spontaneously and purposefully 6</td>
</tr>
<tr>
<td>To Speech</td>
<td>Disoriented/converses 3</td>
<td>Inappropriate words 4</td>
<td>Cries; is consolable 4</td>
<td>Localizes pain; withdraws to touch 5</td>
</tr>
<tr>
<td>To Pain</td>
<td>Inappropriate words 2</td>
<td>Cries/screams 3</td>
<td>Persistent screaming, crying; inconsolable 3</td>
<td>Withdraws to pain 4</td>
</tr>
<tr>
<td>None</td>
<td>Incomprehensible 1</td>
<td>Moans/grunts to pain 2</td>
<td>Moans/grunts to pain 2</td>
<td>Abnormal flexion 3</td>
</tr>
<tr>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>Abnormal extension 2</td>
</tr>
<tr>
<td></td>
<td>None</td>
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</tr>
</tbody>
</table>

All Providers
# CPR MODIFICATIONS FOR CHILDREN AND INFANTS

<table>
<thead>
<tr>
<th>Technique</th>
<th>Child (up to puberty)</th>
<th>Infant &lt;1 Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Airway Opening</td>
<td>Modified head tilt/chin lift</td>
<td>Slight head tilt/chin lift</td>
</tr>
<tr>
<td>Breathing</td>
<td>Mouth-to-mouth</td>
<td>Mouth-to-mouth-and-nose</td>
</tr>
<tr>
<td>Foreign body airway obstruction</td>
<td>Abdominal Thrusts</td>
<td>Back slaps/Chest thrusts</td>
</tr>
<tr>
<td>Ventilation Rate Without</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Compressions</td>
<td>20 per minute/every 3 seconds</td>
<td></td>
</tr>
<tr>
<td>Ventilation Rate with CPR &amp;</td>
<td></td>
<td>8-10 breaths/minute</td>
</tr>
<tr>
<td>advanced airway</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Circulation (compression point)</td>
<td>Lower 1/3 of sternum (same as adult)</td>
<td>Lower 1/3 sternum (below nipple line)</td>
</tr>
<tr>
<td>Compress With</td>
<td>Heel of one hand, add second hand on top as needed to push fast and hard</td>
<td>2-3 fingers</td>
</tr>
<tr>
<td>Compression Depth</td>
<td>At least ⅓ the depth of the chest</td>
<td></td>
</tr>
<tr>
<td>Compression Rate</td>
<td>100 per minute</td>
<td></td>
</tr>
<tr>
<td>Compression-to-Ventilation Ratio</td>
<td>15:2</td>
<td></td>
</tr>
</tbody>
</table>
INTRAOSSEOUS (IO) INFUSION GUIDELINE

Patients must meet ALL of these criteria

<table>
<thead>
<tr>
<th>Presentation</th>
<th>Sensorium</th>
<th>Peripheral IV Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shock, arrest, impending arrest</td>
<td>Unconscious, not responsive to verbal stimuli</td>
<td>2 attempts (≤ 2 min) unsuccessful; no peripheral veins readily apparent</td>
</tr>
</tbody>
</table>

NOTES:
- If child does not meet all criteria and situation appears to require an IO, contact Medical Control for orders.
- Only two IO attempts should be made in the field.

SUGGESTED SIZES FOR ET TUBES, BLADES, SUCTION CATHETERS

<table>
<thead>
<tr>
<th>Age averages</th>
<th>Newborn</th>
<th>6 months</th>
<th>18 months</th>
<th>3 years</th>
<th>5 years</th>
<th>6 years</th>
<th>8 years</th>
<th>12 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>ET Tube</td>
<td>3.0</td>
<td>3.0</td>
<td>3.5</td>
<td>4.0</td>
<td>4.5</td>
<td>5.0</td>
<td>6.0</td>
<td>6.0</td>
</tr>
<tr>
<td>Blade Size</td>
<td>0-1</td>
<td>1</td>
<td>1.5</td>
<td>2</td>
<td>2</td>
<td>2 str or crvd</td>
<td>3 str or crvd</td>
<td></td>
</tr>
<tr>
<td>Suction Cath</td>
<td>6 Fr</td>
<td>6 Fr</td>
<td>8 Fr</td>
<td>8 Fr</td>
<td>10 Fr</td>
<td>10 Fr</td>
<td>10 Fr</td>
<td>10 Fr</td>
</tr>
</tbody>
</table>

NOTES:
- Select tube size based on size of the child, not his/her chronological age.
- Prepare additional tubes one size larger and one size smaller than the one you initially select.
- Fast References: Match tube size to size of nail on patient’s little finger; or Calculate using formula \[16 + \text{age in years} / 4\] - 0.5 (for cuffed tubes)

RESUSCITATION MEDICATION DOSAGES

<table>
<thead>
<tr>
<th>Age</th>
<th>Weight</th>
<th>ET Size</th>
<th>Epinephrine 1:10,000 0.01 mg/kg IVP/IO</th>
<th>Epinephrine 1:1,000 0.2 mg/kg ET</th>
<th>Atropine 0.02 mg/kg IVP/IO</th>
<th>Amiodarone 5mg/kg IVP/IO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Newborn</td>
<td>3 kg / 7 lb</td>
<td>3 mm</td>
<td>0.03 mg (0.3 cc)</td>
<td>0.6 mg (0.6 cc)</td>
<td>0.1 mg (1 cc)</td>
<td>15 mg</td>
</tr>
<tr>
<td>1 month</td>
<td>4 kg / 8 lb</td>
<td>3 mm</td>
<td>0.04 mg (0.4 cc)</td>
<td>0.8 mg (0.8 cc)</td>
<td>0.1 mg (1 cc)</td>
<td>20 mg</td>
</tr>
<tr>
<td>3 months</td>
<td>5 kg / 11 lb</td>
<td>3 mm</td>
<td>0.05 mg (0.5 cc)</td>
<td>1 mg (1 cc)</td>
<td>0.1 mg (1 cc)</td>
<td>25 mg</td>
</tr>
<tr>
<td>6 months</td>
<td>7 kg / 15 lb</td>
<td>3 mm</td>
<td>0.07 mg (0.7 cc)</td>
<td>1.4 mg (1.4 cc)</td>
<td>0.14mg (1.4 cc)</td>
<td>35 mg</td>
</tr>
<tr>
<td>1 year</td>
<td>10 kg / 22 lb</td>
<td>3.5 mm</td>
<td>0.1 mg (1 cc)</td>
<td>2 mg (2 cc)</td>
<td>0.2 mg (2 cc)</td>
<td>50 mg</td>
</tr>
<tr>
<td>2 years</td>
<td>12 kg / 26 lb</td>
<td>3.5 mm</td>
<td>0.12 mg (1.2 cc)</td>
<td>2.4 mg (2.4 cc)</td>
<td>0.24 mg (2.4 cc)</td>
<td>60 mg</td>
</tr>
<tr>
<td>3 years</td>
<td>14 kg / 31 lb</td>
<td>4 mm</td>
<td>0.14 mg (1.4 cc)</td>
<td>2.8 mg (2.8 cc)</td>
<td>0.28 mg (2.8 cc)</td>
<td>70 mg</td>
</tr>
<tr>
<td>4 years</td>
<td>16 kg / 35 lb</td>
<td>4.5 mm</td>
<td>0.16 mg (1.6 cc)</td>
<td>3.2 mg (3.2 cc)</td>
<td>0.32 mg (3.2 cc)</td>
<td>80 mg</td>
</tr>
<tr>
<td>5 years</td>
<td>18 kg / 40 lb</td>
<td>4.5 mm</td>
<td>0.18 mg (1.8 cc)</td>
<td>3.6 mg (3.6 cc)</td>
<td>0.36 mg (3.6 cc)</td>
<td>90 mg</td>
</tr>
<tr>
<td>6 years</td>
<td>20 kg / 44 lb</td>
<td>5 mm</td>
<td>0.2 mg (2 cc)</td>
<td>4 mg (4 cc)</td>
<td>0.4 mg (4 cc)</td>
<td>100 mg</td>
</tr>
<tr>
<td>7 years</td>
<td>22 kg / 48 lb</td>
<td>5 mm</td>
<td>0.22 mg (2.2 cc)</td>
<td>4.4 mg (4.4 cc)</td>
<td>0.44 mg (4.4 cc)</td>
<td>110 mg</td>
</tr>
<tr>
<td>8 years</td>
<td>25 kg / 55 lb</td>
<td>6 mm</td>
<td>0.25 mg (2.5 cc)</td>
<td>5 mg (5 cc)</td>
<td>0.5 mg (5 cc)</td>
<td>125 mg</td>
</tr>
<tr>
<td>9 years</td>
<td>28 kg / 63 lb</td>
<td>6 mm</td>
<td>0.28 mg (2.8 cc)</td>
<td>5.6 mg (5.6 cc)</td>
<td>0.5 mg (5 cc)</td>
<td>140 mg</td>
</tr>
<tr>
<td>10 years</td>
<td>34 kg / 75 lb</td>
<td>6 mm</td>
<td>0.34 mg (3.4 cc)</td>
<td>6.8 mg (6.8 cc)</td>
<td>0.5 mg (5 cc)</td>
<td>170 mg</td>
</tr>
</tbody>
</table>

NOTES:
1. IVP/IO flush drugs with 5 cc Normal Saline.
2. ET dilute drugs with 2 cc Normal Saline.
3. Double the IVP/IO dose when administering via ET.
### All Providers
- Determine responsiveness and ability to speak.
  - Conscious and able to speak:
    - Do NOT interfere with the patient’s own attempts to clear airway.
  - Conscious and unable to speak/cry:
    - 1 Year or older: Perform Heimlich Maneuver.
      - 5 Abdominal thrusts with patient standing or sitting.
      - Repeat until successful or patient becomes unconscious.
    - Less than 1 year old.
      - 5 back blows followed by 5 chest thrusts.
      - Repeat until successful or patient becomes unconscious.
- Unconscious
  - Perform tongue lift/jaw thrust, clear any obvious foreign material, and attempt to ventilate.
  - If remains obstructed
    - Perform abdominal/chest thrusts with patient supine, or
    - Visualize airway with laryngoscope and attempt to clear using forceps and/or suction.
  - Reposition head and attempt to ventilate again.
  - If remains obstructed, continue attempts to clear airway with abdominal/chest thrusts and visualization.

### Paramedics
- If above fails, intubate and attempt to push foreign body into right mainstem bronchus. Then pull tube back slightly to ventilate both lungs.
- If still obstructed and unable to ventilate, perform cricothyrotomy only if definite anatomic landmarks are recognizable.
Allergic reactions span a continuum from minor to life threatening. Angioedema with significant swelling of the tongue increases the risk of obstructed airway but also makes RSI technically more difficult and therefore relatively contraindicated.

### All Providers
- Identify and **remove causative allergen** if possible.
- **Oxygen** per Oxygen Therapy Guideline.
- Apply **ice/cold pack** to bite or injection site, if applicable.
- If wheezing, administer **Duoneb** via nebulizer. May repeat as needed.
- If patient has his own epinephrine auto-injector and is complaining of respiratory distress or signs and symptoms of shock, **administer patient’s epinephrine auto-injector**.
  - Verify that the auto-injector belongs to the patient.
  - Bare and cleanse the patient’s lateral thigh.
  - Press auto-injector firmly into lateral thigh and hold for several seconds.

### Paramedics
Determine severity of reaction.
- **Mild reaction** (alert and oriented with localized signs, normal blood pressure, normal skin, and clear lungs)
  - Consider:
    - **Benadryl 1mg/kg (max 50mg) IV/IM**
    - **SoluMedrol 2mg/kg (max125mg) IV/IM**
- **Moderate reaction** (alert and oriented, systemic signs and symptoms, but normotensive, skin warm and mild wheezing)
  - In addition to above treatment
  - **Cardiac monitor**
  - **Establish IV** if not already established
  - Be prepared to administer **Epinephrine (1:1000) 0.01mg/kg (max 0.3mg) IM** if worsening.
  - **Duoneb** via nebulizer if wheezing. May repeat as needed.
- **Severe reaction/anaphylaxis** (multi-system reaction with signs of hypoperfusion, hypotension or altered mental status; nausea/vomiting; or signs of airway constriction including stridor, air hunger, wheezing, and/or rales.)
  - In addition to above treatment
  - **Normal Saline bolus 20mL/kg, repeat once as needed.**
  - **Epinephrine (1:1000) 0.01mg/kg (max 0.3mg) IM.**
Altered mental status can encompass any number of emergencies. It is also important to recognize that while most interventions address a patient with a depressed altered mental status, patients that are agitated or otherwise acting differently are considered to have altered mental status. Any patient with altered mental status should be monitored closely for any decompensation which may lead to cardio-pulmonary arrest. Consider potential causes of AMS- hypoxia, chemical or drug intoxication, toxic exposure, head injury, infection, seizure.

### All Providers
- Ensure safety of scene and the crew.
- Attempt to identify components of history of present illness, past medical history, and social history that may identify reason for altered mental status.
- Obtain **fingertip glucose** reading.
  - If glucose less than 60 mg/dL, go to PEDS: Hypoglycemia Guideline.
- Administer **Oxygen** per Oxygen Therapy Guideline.
- Consider waving one broken ammonia inhalant capsule under patient’s nose as appropriate.
- Restrain as appropriate (see Restraint Guideline).
- Maintain child’s body temperature

### Paramedics
- Further attempt to identify cause of altered mental status and go to appropriate guideline (i.e. Drug Overdose or Poisoning).
- If other guideline not appropriate:
  - Maintain airway as appropriate.
  - Establish IV, Normal Saline TKO vs 20mL/kg as appropriate.
  - Initiate and maintain cardiac monitoring.
  - If decreased level of consciousness affecting ability of patient to protect airway, carefully consider Naloxone **0.05 to 0.1mg/kg IV/IM/IN** (Max dose: 2mg)
  - Consider **12-lead EKG**.

### Notes:
- Naloxone should only be used to avoid the need for endotracheal intubation.
- The dose should be titrated only enough to maintain respiratory drive.
- Patients with narcotic overdose receiving Naloxone may go into withdrawal or lose their “high,” both of which can lead to agitation and violence which can be dangerous for the patient, the EMS providers, and bystanders.
Remember: the absence of wheezing may be indicative of extreme airflow obstruction. All hypoxic patients should be given enough oxygen therapy to reverse their hypoxia (SpO$_2$ ≥ 90%).

♦ DuoNeb is our pharmacological treatment of choice. This formulation contains both albuterol sulfate (2.5mg) which is an adrenergic bronchodilator and ipratropium bromide (0.5mg) which is an anticholinergic bronchodilator. Regardless of how much DuoNeb is put in the nebulizer chamber, the dose received is directly related to the patient’s respiratory rate, tidal volume, and compliance with medication administration. Therefore, regardless of age, place 1 or 2 vials of DuoNeb into the nebulizer as initial treatment. Nebulized DuoNeb should be repeated as needed for respiratory distress and/or wheezing. When clear, regardless of medication left in the nebulizer, therapy can stop.

For children, it may be appropriate to have a parent hold the nebulizer mask near the child’s face as opposed to forcing the mask onto the child’s face.

<table>
<thead>
<tr>
<th>All Providers</th>
</tr>
</thead>
<tbody>
<tr>
<td>♦ Oxygen per Oxygen Therapy Guideline.</td>
</tr>
<tr>
<td>♦ DuoNeb via nebulizer.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Paramedics</th>
</tr>
</thead>
<tbody>
<tr>
<td>♦ Consider initiation of IV.</td>
</tr>
<tr>
<td>♦ If no response to DuoNeb and in moderate to severe distress or if patient initially in severe distress, <strong>Epinephrine 1:1,000 0.01mg/kg (max 0.3mg) IM</strong> and <strong>initiate IV</strong> and <strong>monitor</strong>.</td>
</tr>
<tr>
<td>♦ Consider <strong>SoluMedrol 2mg/kg (max 125mg) IV</strong>.</td>
</tr>
</tbody>
</table>

**Notes:**
♦ DuoNeb may be administered via nebulizer/mouthpiece, nebulizer/mask, or for intubated patients, utilizing an in-line nebulizer.
♦ Administering medication via nebulizer is best done by creating a very fine mist. This is accomplished by adjusting the oxygen flow to a level where the medication just starts to mist. This occurs usually at a flow of 6-8L of oxygen. Too high of a flow will deplete the medication too quickly, wasting it.
Persistent asystole has a very poor prognosis. PEA however can range from a slow and wide agonal rhythm with equally poor prognosis to a narrow, organized rhythm that may represent cardiac activity which is just too weak to generate a palpable pulse. The presence of a “normal” appearing rhythm without a pulse should prompt the paramedic to aggressively think about reversible causes of PEA. An increased end-tidal CO₂ reading may be an indicator of otherwise indiscernible perfusion.

All Providers

- See PEDS Cardiac Arrest Guideline and concentrate on good quality CPR with hard and fast chest compressions.

Paramedics

- **Epinephrine 1:10,000 0.01mg/kg IV/IO.** Repeat **every 3-5 minutes** if remains pulseless.
- Confirm true asystole in 2 or more leads.
- Attempt to identify and correct potential causes as listed below.
- If no response to treatment after 3 rounds of ACLS and 15 minutes of CPR, contact medical control to consider termination of resuscitation.
- Transport should not be considered until after ROSC or at least 15 minutes of ACLS.
- If transport indicated, it should be done slowly and safely to allow for the safe provision of quality CPR.

### Causes of Asystole/PEA

<table>
<thead>
<tr>
<th>Causes of Asystole/PEA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hypoglycemia</td>
</tr>
<tr>
<td>Hypothermia</td>
</tr>
<tr>
<td>Hypovolemia</td>
</tr>
<tr>
<td>Hypoxia</td>
</tr>
<tr>
<td>Hydrogen Ion (acidosis)</td>
</tr>
<tr>
<td>Hypo/Hyperkalemia</td>
</tr>
<tr>
<td>Toxins</td>
</tr>
<tr>
<td>Tamponade (cardiac)</td>
</tr>
<tr>
<td>Tension Pneumothorax</td>
</tr>
<tr>
<td>Thrombosis (PE)</td>
</tr>
<tr>
<td>Thrombosis (cardiac)</td>
</tr>
<tr>
<td>Trauma</td>
</tr>
</tbody>
</table>
Bradycardia in a child is often evidence of respiratory distress and hypoxia, acidosis, or hypothermia. Primary concern should be airway and breathing. Nonetheless, close cardiac monitoring and transport is appropriate. Very serious cases of bradycardia include those in association with overdose on beta-blockers or calcium channel blockers (one pill may be deadly in children).

All Providers
- Obtain history of present illness and list of medications that the child may have had access to (particularly blood pressure medications including beta blockers and calcium channel blockers).
  - **Oxygen** 10-15L/NRM and assist with **BVM as necessary**.

Paramedics
- Apply **monitor** and determine rhythm.
- If unresponsive, start CPR if pulse less than 60 and not improving with oxygenation/ventilation.
- **Establish IV**. (If patient unresponsive and cannot establish IV, establish IO)
- If signs of hypotension, **Normal Saline, 20mL/kg IV**.
- If unresponsive and pulse remains less than 60 despite aggressive airway management
  - **Epinephrine (1:10,000) 0.01mg/kg IV/IO**
    - Repeat every 3 to 5 minutes as needed
  - **Atropine 0.02mg/kg (min dose 0.1mg) IV/IO**
    - May repeat once as needed
- For unstable patients not responding to above initiate **transthoracic pacing**.
  - Initiate at 100 bpm and adjust to clinical condition. Start at lowest mA setting, gradually increasing mA until capture occurs.
  - **Fentanyl 2mcg/kg (max 25mcg) IV** for pain. May repeat once.
- Consider **Glucagon 0.5mg (1mg if greater than 20kg) IV** for beta-blocker or calcium channel blocker overdose.
- Consider **Calcium Chloride 20mg/kg (0.2ml/kg) 10% CaCl IV over 5-10 minutes** for beta-blocker or calcium channel blocker overdose.
- Contact medical control if hyperkalemia is suspected or patient has end stage renal disease.

Notes:
- While conventional teaching contraindicates Atropine in type II second degree and third degree blocks, this is based on theoretical concerns and has no clinical basis. Paramedics should not withhold treatment if they are having difficulty defining an unstable bradycardia.
Survival from sudden cardiac death will be maximized by quick implementation of CPR with focus on quality chest compressions as soon as possible followed by defibrillation as appropriate. Before anything else, quality chest compressions should be started focusing on pushing hard and pushing fast. **NOTHING is more important than proper chest compressions; without them, blood flow stops.** Any movement of the patient such as from the residence to the ambulance or during transport to the hospital will negatively impact the provision of quality chest compressions. However in pediatric cardiac arrest, often the inciting event is a respiratory issue. Therefore, airway management and ventilation are very important and should be incorporated into the resuscitation efforts immediately.

### All Providers

- **Initiate chest compressions** regardless of rhythm if pulseless. Focus on providing quality chest compressions with minimal interruptions.
  - Compressions should be initiated and continued where patient is found
  - Move patient only as far as necessary to get into a position effective for resuscitation or safety of crew
- **Ventilate with 100% oxygen** using bag-valve-mask and OP or NP airway.
- If hypothermic, follow Cold Emergencies Guideline.
- **After initiation of CPR, apply AED** and analyze for shockable rhythm.
- If shock advised, shock once and immediately resume chest compressions for an additional 2 minutes unless patient wakes up.
- If paramedic not available, prepare to transport only after at least 15 minutes of resuscitative efforts.
  - Consider calling medical control for Termination of Resuscitation if 1) Arrest not witnessed by EMS, 2) No ROSC after 3 rounds of CPR and 3) No AED shocks delivered

### Paramedics

- **Apply monitor** and determine rhythm.
- **Establish IV.** If IV cannot be established within 2 attempts in less than 2 minutes, an IO should be established.
- See appropriate guideline based on rhythm (**Asystole/PEA; Ventricular Fibrillation/Pulseless Ventricular Tachycardia**).
- Consider endotracheal intubation.
  - Intubation should be done in such a way to minimize interruption of chest compressions.
  - The preferred route of medication is IV/IO; ET route used **ONLY** if IV/IO absolutely cannot be established.

### Notes:

- A cardiac arrest victim may exhibit multiple rhythms throughout the resuscitation. It is imperative that the paramedic knows each guideline and be able to move between them effortlessly.
The following should be warning signs of possible abuse/neglect:

♦ Environmental factors that could adversely affect a child’s welfare.
♦ If child's interactions with parents/guardians unusual.
♦ Discrepancies in the history obtained from the child and caregivers.
♦ Any signs of intentional injury or neglect.
♦ Injury patterns that do not correlate:
  • with the history obtained from the child and caregivers; or
  • anticipated motor skills based on the child’s growth and developmental stage.

All Providers

♦ Treat injuries/complaints per appropriate guideline.
♦ Transport.
  • If parent/guardian refuses transport and abuse/neglect is suspected or child needs care, remain at the scene and request the police to respond and place child into protective custody.
  • Notify receiving hospital of suspected abuse/neglect (in person at hospital).

Suspicions of child abuse or neglect MUST be reported to the Department of Children and Family Services (DCFS) through the KYDS Crisis Center Counselor 24 hours a day.

♦ Reports must be made by KFD providers even if they believe the hospital will also be reporting the incident.
♦ Request Kenosha Joint Services Dispatch to call the appropriate number and request that a staff member respond to the emergency department of the receiving hospital.
♦ Thoroughly document:
  • History and physical exam.
  • Relevant circumstances and facts leading to suspicion.
  • Date and time of DCFS notification.
All children with upper respiratory complaints should be considered serious and monitored closely. Patients with upper respiratory complaints are at risk of sudden worsening, particularly if they are further agitated or if direct irritation occurs from airway manipulation.

<table>
<thead>
<tr>
<th>All Providers</th>
</tr>
</thead>
<tbody>
<tr>
<td>♦ Initial medical care.</td>
</tr>
<tr>
<td>♦ All attempts should be made to <strong>keep patient calm</strong> and comfortable.</td>
</tr>
<tr>
<td>♦ Avoid separating child from parent.</td>
</tr>
<tr>
<td>♦ If patient having respiratory distress, and parent provides comfort, this is one situation in which it would be appropriate to have parent hold child during a careful transport.</td>
</tr>
<tr>
<td>♦ DuoNeb via nebulizer only if child is wheezing. DuoNeb is not effective for stridor (inspiratory upper airway noise).</td>
</tr>
<tr>
<td>♦ <strong>Airway manipulation should be avoided</strong> if possible.</td>
</tr>
<tr>
<td>♦ Assist with BVM only in unstable child.</td>
</tr>
<tr>
<td>♦ Airway adjuncts (OP/NP) only if unable to ventilate without them.</td>
</tr>
<tr>
<td>♦ <strong>Consider humidified oxygen</strong> (place 6mL of Normal Saline into nebulizer).</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Paramedics</th>
</tr>
</thead>
<tbody>
<tr>
<td>♦ <strong>If unstable, consider Epinephrine (1:1000) 3mg via nebulizer.</strong></td>
</tr>
<tr>
<td>♦ Only consider advanced airway if basic airway techniques do not allow for any ventilation.</td>
</tr>
<tr>
<td>♦ Any intubation attempt may make airway worse and ventilation impossible.</td>
</tr>
</tbody>
</table>
Hyperglycemia often times represents an underlying problem such as infection or new onset diabetes. It can be representative of diabetic ketoacidosis (DKA) or non-ketotic hyperosmolar hyperglycemia (NKHH), both of which can be deadly. DKA is often marked with profound dehydration and electrolyte abnormalities including potassium alteration. NKHH can lead to coma and brain swelling.

<table>
<thead>
<tr>
<th>All Providers</th>
<th>♦ Obtain medication history including time and amount of last dose.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>♦ Obtain time and amount of last oral intake.</td>
</tr>
<tr>
<td></td>
<td>♦ Check finger stick blood glucose.</td>
</tr>
<tr>
<td></td>
<td>• If sugar less than 60mg/dl:</td>
</tr>
<tr>
<td></td>
<td>▪ If patient awake and able to protect airway, administer Oral Glucose or have patient drink juice with added sugar or non-diet soda.</td>
</tr>
<tr>
<td></td>
<td>▪ If patient unable to safely take oral sugar, consider Glucagon</td>
</tr>
<tr>
<td></td>
<td>• If less than 20 kg (44 lbs –typical 5 y/o) Glucagon 0.5mg IM</td>
</tr>
<tr>
<td></td>
<td>• If 20 kg (44 lbs) or greater, Glucagon 1mg IM</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Paramedics</th>
<th>♦ Establish IV if cannot take oral sugar or patient remains symptomatic.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>♦ If sugar greater than 180mg/dl and signs of dehydration:</td>
</tr>
<tr>
<td></td>
<td>• Administer Normal Saline 20mL/kg bolus.</td>
</tr>
<tr>
<td></td>
<td>• Limit fluid bolus to once.</td>
</tr>
<tr>
<td></td>
<td>• Initiate and maintain cardiac monitoring.</td>
</tr>
<tr>
<td></td>
<td>♦ If sugar less than 60mg/dl, and not previously treated:</td>
</tr>
<tr>
<td></td>
<td>• Administer Dextrose 10% (D10) 5ml/kg up to 250ml.</td>
</tr>
<tr>
<td></td>
<td>▪ DO NOT USE D50</td>
</tr>
<tr>
<td></td>
<td>• If unable to establish IV, Glucagon as above if not previously administered.</td>
</tr>
<tr>
<td></td>
<td>♦ Recheck glucose level 5-10 minutes after any intervention and repeat treatment as outlined above.</td>
</tr>
<tr>
<td></td>
<td>♦ It is acceptable to give Dextrose after glucagon treatment if glucose remains low.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Notes:</th>
<th>♦ EMS providers shall never assist any patient in administering insulin.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>♦ All pediatric patients with a diabetic emergency should be transported to the hospital. If parent refuses transport, every attempt should be made to encourage them to let the patient go to the hospital. If they still refuse, follow patient refusal guidelines and consider involving police. Patient should be instructed to eat a meal as the treatment provided by this guideline is only temporizing.</td>
</tr>
</tbody>
</table>
Seizures are often in patients with a known seizure disorder (epilepsy). They are usually self-limited requiring no more than supportive care. However, you must consider other causes, especially in patients with first time seizure. These include hypoglycemia, hypoxia, head injury, poisoning/overdose as well as other causes. In young children, a fever is often a benign cause of seizure.

<table>
<thead>
<tr>
<th>All Providers</th>
<th>Move patient to area where he will not injure himself during seizure activity.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Never do anything to physically restrain seizure activity.</td>
</tr>
<tr>
<td></td>
<td>Never place anything in the mouth of an actively seizing patient.</td>
</tr>
<tr>
<td></td>
<td>Administer Oxygen 15L/NRM and assist ventilations with BVM as necessary.</td>
</tr>
<tr>
<td></td>
<td>Obtain finger stick blood glucose.</td>
</tr>
<tr>
<td></td>
<td>If glucose less than 60mg/dl, see PEDS: Hypoglycemia Guideline</td>
</tr>
<tr>
<td></td>
<td>Do not administer anything by mouth.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Paramedics</th>
<th>Establish IV.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>If low glucose not previously treated, see PEDS: Hypoglycemia Guideline</td>
</tr>
<tr>
<td></td>
<td>If grand mal (total motor) seizure activity is present on EMS arrival or if seizures become recurrent, administer Midazolam (Versed) 0.2mg/kg IM (max 5mg), IV (max 2mg) or IN (max 10 mg [5 mg per each nostril]).</td>
</tr>
<tr>
<td></td>
<td>May repeat as necessary to stop seizure activity.</td>
</tr>
<tr>
<td></td>
<td>If more than 2 doses needed, contact medical control.</td>
</tr>
<tr>
<td></td>
<td>If febrile seizure, should expect the seizure to spontaneously end within 5 minutes</td>
</tr>
<tr>
<td></td>
<td>Treat with Midazolam if lasting longer than 5 minutes</td>
</tr>
<tr>
<td></td>
<td>Active cooling is not necessary</td>
</tr>
</tbody>
</table>

**Notes:** Be aware of occult trauma.
Supraventricular Tachycardia (SVT): A narrow complex tachycardia has a QRS with a duration of 0.09 seconds or less and a rate greater than 180 beats per minute (greater than 220 for infants). If QRS between 0.09 and 0.12 seconds, may be SVT, but need to consider ventricular tachycardia (VT). Any QRS greater than 0.12 seconds should be assumed VT. Any narrow complex tachycardia without rate variability and without a discernable p-wave can be considered an SVT. Regardless, you need to consider the possible causes of any narrow complex tachycardia and treat appropriately. These include heart failure, hypovolemia or other causes of shock, drug effects, fever, and pain. While considering possible causes, you need to determine whether a patient is stable or unstable. Unstable patients are those that exhibit altered mental status, are hypotensive, or are having other significant signs of hypoperfusion. Patients often complain of a racing heartbeat, palpitations, shortness of breath, or chest discomfort.

### All Providers
- **Oxygen** per **Oxygen Therapy Guideline**.
- Assist patient into position of comfort.
- Apply and maintain **cardiac monitor**.
- **Establish IV** in proximal vein, large-bore, in right AC if possible.
- If stable:
  - Obtain **12 lead EKG**.
  - **Valsalva maneuver**.
    - Child - Have patient cough forcefully or increase intrathoracic pressure by bearing down, or blow through obstructed tubing (ETT, O2 tubing, straw, blow up a glove like a balloon).
    - Infant – cold/ice packs to the face. Apply over eyes and bridge of nose.
    - If above doesn’t work, perform right-sided carotid sinus massage for 15 seconds.
  - If no response, **Adenosine 0.1mg/kg (max 12mg) rapid IV** push followed immediately by **10mL of Normal Saline**.
  - If no response, contact medical control to consider **Adenosine 0.2mg/kg (max 12mg) rapid IV** push.
- If unstable:
  - **Synchronized Cardioversion**.
    - Start at **1 joule/kg (max 100 joules)**. If no response, proceed to **2 joules/kg (max 200 joules)**.
    - **Consider Midazolam (Versed) 0.1mg/kg (max 2mg) IV** prior to cardioversion, but do not delay cardioversion.

### Notes:
- Adenosine may slow the rate enough to confirm the underlying rhythm which may be sinus tachycardia. If identified, no further adenosine is indicated.
- Adenosine has a very quick onset and short period of action, thus it needs to be administered very quickly in a proximal vein immediately followed by a bolus of 10mL of Normal Saline.
- If there is any doubt about the width of the QRS, use the Wide-complex Tachycardia Guideline.
Ventricular Fibrillation (V-Fib): Patients who are in ventricular fibrillation as their presenting rhythm after sudden cardiac death have the best chance of survival. However, improved survival is directly related to initiation of CPR as soon as possible and timely defibrillation. In a witnessed arrest, if an AED or defibrillator is immediately available, a rescue shock should be delivered as soon as possible. For cardiac arrests that are not witnessed or if there is a delay in obtaining a defibrillator, patients should receive 2 minutes of CPR including high quality chest compressions prior to the first shock.

<table>
<thead>
<tr>
<th>All Providers</th>
<th>See <a href="#">PEDS: Cardiac Arrest Guideline</a> and concentrate on good quality CPR with hard and fast chest compressions and timely use of the AED. Adult pads are used for any age infant or child</th>
</tr>
</thead>
</table>
| Paramedics   | Defibrillate at 2 J/kg.  
  - Resume CPR immediately after defibrillation.  
  - Do not check pulse or hold compressions to evaluate the rhythm after defibrillation.  
  - Epinephrine (1:10,000) 0.01mg/kg IV/IO. Repeat every 3-5 minutes if patient remains pulseless.  
  - Check for pulse and rhythm every 2 minutes.  
  - If remains in ventricular fibrillation or pulseless ventricular tachycardia, defibrillate at 4J/kg every 2 minutes.  
  - If patient does not convert after second shock, or if patient has recurrent v-fib/v-tach, administer Amiodarone 5mg/kg IV/IO push.  
    - Amiodarone can be repeated once at 5mg/kg IV/IO push for continued pulseless v-fib/v-tach. |

**Notes:** Pulseless Ventricular Tachycardia should be treated as V-Fib.
Wide complex tachycardias have a QRS duration greater than 0.09 seconds. Although some wide complex tachycardias develop from supraventricular tachycardias, prehospital providers should always assume that wide complex rhythms are ventricular tachycardia (VT). Like narrow complex tachycardias, the paramedic must first determine if the patient is stable or unstable. Unstable patients are those that exhibit altered mental status, are hypotensive, or are having other significant signs of hypoperfusion.

| All Providers | ♦ Oxygen per Oxygen Therapy Guideline. |
|               | ♦ Assist patient into position of comfort. |
| Paramedics    | ♦ Apply and maintain cardiac monitor. |
|               | ♦ Establish IV. |
|               | ♦ If stable: |
|               |   • Obtain 12 lead EKG. |
|               |   • Contact medical control to consider Amiodarone 5mg/kg over 20 minutes. |
|               | ♦ If unstable: |
|               |   • Synchronized cardioversion. |
|               |     ▪ Start at 1 joule/kg (max 100 joules). If no response, proceed to 2 joules/kg (max 200 joules). |
|               |     ▪ Consider Midazolam (Versed) 0.1mg/kg IV (max 2mg) prior to cardioversion. |

Notes:
♦ Treat pulseless ventricular tachycardia as ventricular fibrillation.
♦ Don’t confuse an idioventricular rhythm as “slow” ventricular tachycardia. Ventricular tachycardia should have a rate of at least 150 bpm. Treating an idioventricular rhythm with cardioversion and/or Amiodarone can be deadly.
Annual Changes Sept. 2018

These changes approved by Ben Weston, MD, MPH, Medical Director

Format

Added hyperlinks between PCGs, Skill Standards and new Medication Resource tool. Removed Version in upper left hand corner of all PCGs and added Back to PCG TOC. Removed lower middle footer with file name on all PCGs and added Back to Master TOC. Approved/Reviewed to Approved September 2018. Replaced KFD logo with updated version on all PCGs. Started with table of contents. Removed addendum 1: Dextrose and integrated into medication tool. Removed EMT Naloxone Pilot PCG. Changed all PCGs to “Approved by Ben Weston, MD, MPH, Medical Director”.

General

Removed Plavix from all PCG documentation (I.7 and II.4). I.7.6.3 changed “concerned with” to “assessing” in top paragraph. I.8 added main bullet point after 7th stating “Consider non-narcotic analgesia”; added sub-bullet Ketorolac (adults and ped); sub-bullet added Adult: 15mg IV/IO or 30mg IM; sub-bullet 0.5 mg/kg IV/IO (max 10 mg); added another equal bullet 1mg/kg IM (max 30mg). I.8 changed 8th bullet to read “For severe pain, consider narcotic analgesia”. I.8 main bullet 9- removed “and in whom fentanyl has failed”; changed IV/IO dosing to 0.1-0.2mg/kg; changed IN dosing to 0.5mg/kg. I.9 changed language to STEMI alert, Neuro alert and Trauma alert. I.10 third bullet added “If using 2 point, apply to opposite sides: both hands, left hand and right foot, right hand and left foot, etc.”.

Cardiac

II.1 removed atropine bullet. II.3 12 lead ECG for ROSC patients. II.4 added 12 lead ECG within 10 minutes of chest pain. II.4 removed end of sentence about daily use aspirin contraindication (“or who otherwise…”). II.8 in first paragraph: changed to care is “likely” futile; added “TOR criteria must include ALL of the following: nonwitnessed arrest, asystole throughout, no environmental hypothenmia, patent or established airway, high quality CPR, appropriately low or descending ETCO2. II.9 added at end main bullet point “For persistent VF/VT without response to amiodarone and 3 defibrillation attempts; added first sub-bullet “limit epinephrine to 3 doses” and added another equal sub-bullet “apply second pad in the anterior/posterior orientation and deliver remaining shocks in this orientation.”

Pulmonary

III.3 rearranged Viagra comment to be second sub-bullet of fourth bullet.

Medical

IV.4 added main bullet at very end stating “Consider cyanide exposure and cyanokit use via patient care guideline.” IV.19 hours for stroke alerts changed to 24 hours and changed wording of first bullet point to “Must determine last known…” IV.11 Narcan dose changed to 0.5mg.

Trauma

V.3 removed sentences “Recent literature…” and “While no study….” V.7. Removed 2012 from first paragraph and added sentence “As outlined below, helicopter transport should be initiated based more on patient status or injuries, not on mechanism of injury alone”. V.5 PCG retitled and completely revised.

OB

VI.6 removed last sentence “Transport…” and changed third to last sentence “Transport infant and mother together if possible and with each restrained appropriately.”

Pediatrics

VII.8 added sixth bullet point indent: “Consider calling medical control for TOR if…” and removed parenthesis comment at end. VII.12 changed midazolam dosing to say “Midazolam 0.2mg/kg IV, IM or IN.

VII.11 changed PEDS dose D10 5ml/kg up to 250ml.
Format

Changed all recently reviewed/revised PCG’s to approved by “Tom Grawey, DO, Medical Director”. Changed recently reviewed/revised PCG’s lower left corner to read “June 2019.” Fixed broken links in table of contents.

General

1.7.6.3 Under Notes, third bullet change sentence to read “Use on-line medical control liberally for high risk situations, including all psychiatric refusals.”

Cardiac

Pulmonary

Medical

IV.11 Add “Monitor Pulse-oximetry” to all providers as a bullet point after the bullet point “Support ventilation/maintain airway” and removed “IV” from “Naloxone 0.5-2mg – IV/IM/IN”.

IV.19 Updated overview text of Stroke PCG. Removed bullet point for “Again, priority is ABCs and expeditious transport for patients with symptom onset less than 24 hours.” Removed bullet point for “Perform neurologic exam including pre-hospital stroke scale and GCS.” Added new Stroke Guideline flow chart. Paramedic bullet point “Have someone who knows the patient...” removed. Under “Paramedic” bullet point “If SBP greater than 220...” changed to read “if SBP greater than 220 mmHg on 2 consecutive readings, administer Labetalol 20mg IV” (added word “consecutive”). Updated stroke guideline flowchart from "stroke alert LVO positive" and "stroke alert LVO negative" to "Neuro alert LVO positive" and "Neuro alert LVO negative."

Trauma

V.1.2 Under history, “S” changed from “Social” to Signs and “Symptoms.”

V.5 Updated overview text and flowchart for Spinal Movement Precautions.

OB

VI.5.2 In box “Provide positive-pressure ventilation” changed the wording to “provide positive pressure-ventilation at a rate of 40-60 breaths per minute.” In box “Continue positive-pressure ventilation and consider...” changed the wording to “provide chest compressions at 3:1 breath/compression ratio.” Added the phrase “Reassess HR every 60 seconds” on the next line.

Pediatrics

Medication Reference

Nitroglycerin Under contraindication, changed bullet point about sildenafil to read "past 48 hours" instead of 24.

Skills Category

C.3 Procedure Point #1, changed “180” bpm to “150” bpm.
MEDICATIONS

ADENOSINE (Adenocard)  FENTANYL (Sublimaze)
AMIODARONE (Cordarone)  GLUCAGON (Glucagen)
AMMONIA INHALANTS  KETAMINE (Ketalar)
ASPIRIN (Acetylsalicylic Acid)  LABETALOL (Normodyne)
ATROPINE (Atropine Sulfate)  MIDAZOLAM (Versed)
BENADRYL (Diphenhydramine)  NARCAN (Naloxone)
CALCIUM CHLORIDE  NITROGLYCERIN
CYANOKIT (Hydroxocobalamin)  ORAL GLUCOSE (Insta-Glucose)
DEXTROSE  ROCURONIUM (Zemuron)
DUONEB (Albuterol/Ipratropium)  SODIUM BICARBONATE
EPINEPHRINE (Adrenalin)  SOLU-MEDROL (Methylprednisolone)
EPINEPHRINE (1:1000-Nebulized)  TORADOL (Ketorolac)
ETOMIDATE (Amidate)  ZOFRAN (Ondansetron)
This Medication Resource Tool
was created by the
BRT Class of 2018

Pedro Villa * Nick Moss * David Wade
Michael Schmitz * Matthew Price * Andrew Heiler
# Adenosine (Adenocard)

**Approved July 2018**

**Classification:** Antiarrhythmic

**Actions:**
- Transiently blocks conduction through the AV node
- Interrupts reentry pathways through the AV node

**Indications:**
- SVT (supraventricular tachycardia, AVNRT atrioventricular nodal reentry tachycardia)
- Consider while preparations are made prior to cardioversion.

**Contraindications:**
- Allergy to the drug
- Heart block
- Drug-induced tachycardia’s (e.g. from cocaine)
- Atrial flutter and Atrial fibrillation

**Precautions:**
- Very short duration of action; must reach the heart within 10-20 sec

**Concentrations:**
- 12mg/4ml prefilled syringe, 12mg/4ml vial

**Adult Dosage:**
- 1st dose: 12 mg rapid IV push with 10 mL flush
- 2nd dose: 12 mg rapid IV push with 10 mL flush

**Pediatric Dosage:**
- 1st dose: 0.1 mg/kg rapid IV push (maximum dose 6 mg) with 10 mL flush
- 2nd dose: 0.2 mg/kg rapid IVP (maximum dose 12 mg) with 10 mL flush (Requires medical control)

**Side Effects:**
- Cardiac Stand-still
- Headache
- Facial flushing
- Chest pressure
- Nausea

**Key Points:**
- Half life less than 10 seconds
- Consider diluting small medication volume of pediatric dosages with 5 mL normal saline, followed by 5-10 mL flush
- Continuous ECG and attempt to capture conversion on ECG paper
- Vital signs before and within 5 minutes after administration
- Position patient supine, consider elevation of legs

**PCG Use:**
- II.7 Supraventricular
- VII.13 Tachycardia PEDS: SVT
### AMIODARONE (Cordarone)

#### Approved July 2018

<table>
<thead>
<tr>
<th>CLASSIFICATION</th>
<th>Antiarrhythmic</th>
</tr>
</thead>
</table>
| ACTIONS        | • Slows sinus rate  
                 | • Prolongs refractory period  
                 | • Prolongs PR & QT intervals  
                 | • Has alpha and beta-adrenergic blocking properties |
| INDICATIONS    | • **Pulseless rhythms:**  
                 | o Persistent or recurrent V-Fib/V-Tach  
                 | • **Rhythms with a pulse:**  
                 | o Stable V-Tach  
                 | o Wide complex unknown rhythm  
                 | o Supraventricular Tachycardia  
                 | o Wide complex Atrial Fibrillation / Atrial Flutter |
| CONTRAINDICATIONS | • Second/Third degree heart blocks  
                      | • Bradycardia  
                      | • Neonates, infants  
                      | • Known or suspected drug-induced dysrhythmia (e.g. from cocaine)  
                      | • Tricyclic drug usage (any sodium channel blocking agent) |
| PRECAUTIONS    | • Do not administer concurrently with other medications that prolong QT interval |
| CONCENTRATIONS | 150 mg/3 ml |
| ADULT DOSAGE   | Pulseless Vtach/Vfib:  
                 | • 300mg IV/IO bolus; repeat 150mg: max 450 mg  
                 | Wide Complex Tachycardia with a pulse:  
                 | • 150 mg IV/IO diluted in 100ml 0.9NS over 10 mins; May repeat once if no change |
| PEDIATRIC DOSAGE | Pulseless Vtach/Vfib:  
                       | • 5mg/kg IV/IO bolus (Max 300mg), repeat once.  
                       | Wide Complex Tachycardia with a pulse:  
                       | • 5mg/kg IV/IO diluted in 100ml NS over 20 minutes. |
| SIDE EFFECTS   | • Bradycardia  
                 | • Hypotension  
                 | • Congestive heart failure  
                 | • Heart block |
| KEY POINTS     | • Continuous ECG  
                 | • Vital signs within 5 min before and after administration  
                 | • Treatment of occasional runs of VT should be discussed with on medical control. |
| PCG USE        | II.4 Chest Pain  
                 | II.6 Implanted Defibrillator  
                 | II.9 V-fib/V-Tach  
                 | II.10 Wide Complex Tachycardia (Ventricular Tachycardia)  
                 | VII.14 PEDS: V-Fib  
                 | VII.15 PEDS: Wide-Complex Tachycardia |
# AMMONIA INHALANTS

**CLASSIFICATION**: Olfactory stimulant

**ACTIONS**: Irritant

**INDICATIONS**: Altered mental status after other physical / medical causes have been ruled out

**CONTRAINDICATIONS**: Medical cause has been established and is being treated

**PRECAUTIONS**
- Irritation of mucous membranes
- May precipitate a combative response

**CONCENTRATIONS**: Unit dose capsule

**ADULT DOSAGE**: One capsule broken and waved under patient’s nose

**PEDIATRIC DOSAGE**: One capsule broken and waved under patient’s nose

**SIDE EFFECTS**: Mucous membrane irritation

**KEY POINTS**
- Rule out all medical and traumatic causes for altered level of consciousness before using ammonia
- Do not insert ammonia inhalant into any orifice or place under oxygen mask

**PCG USE**: IV.3 Altered Mental Status
# ASPIRIN (Acetylsalicylic Acid)

**Approved July 2018**

<table>
<thead>
<tr>
<th>CLASSIFICATION</th>
<th>Platelet inhibitor</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACTIONS</td>
<td>Inhibits platelet aggregation</td>
</tr>
<tr>
<td>INDICATIONS</td>
<td>Suspected cardiac chest pain or angina equivalent</td>
</tr>
</tbody>
</table>
| CONTRAINDICATIONS | • Not alert / Unable to follow commands  
                  • Children  
                  • Active life-threatening bleeding |
| PRECAUTIONS    | • Prescribed daily blood thinner is NOT a contraindication for administration  
                  • Unlikely, but may precipitate asthma related problems with known history of asthma |
| CONCENTRATIONS | 81mg tabs |
| ADULT DOSAGE   | 324mg PO |
| PEDIATRIC DOSAGE | N/A |
| SIDE EFFECTS   | • Nausea  
                  • Gastrointestinal bleeding  
                  • Rash |
| KEY POINTS     | • Vital signs within 5 minutes after administration  
                  • Be sure patient has had a total of at least 324mg today  
                  • Reassess pain |
| PCG USE        | II.4 Chest Pain |
**ATROPINE (Atropine Sulfate)**

**CLASSIFICATION**  Anticholinergic  
**ACTIONS**  blocks acetylcholine receptors  
**INDICATIONS**  
- Adult:  
  - Symptomatic bradycardia  
  - Organophosphate poisoning (OP)  
- Pediatric:  
  - Symptomatic bradycardia  
  - Be prepared to use if bradycardia during RSI  
**CONTRAINDICATIONS**  
- Hypothermia unless bradycardia persists after re-warming  
**PRECAUTIONS**  
- May not be effective in 2nd or 3rd degree blocks  
**CONCENTRATION**  1mg/10ml prefilled syringe  
**ADULT DOSAGE**  
- Symptomatic Bradycardia  
  - 0.5 mg IV/IO q3min for bradycardia (maximum of 3mg)  
- Organophosphate poisoning  
  - 1mg IV/IO and doubling dose every 5 minutes until signs of atropinization (no max dose)  
**PEDIATRIC DOSAGE**  
- Symptomatic Bradycardia  
  - 0.02 mg/kg IV/IO (min dose 0.1mg) may repeat x1  
- Organophosphate poisoning  
  - 0.02mg/kg IV/IO (min dose 0.1mg) q3 minutes until signs of atropinization (no max dose)  
**SIDE EFFECTS**  
- Palpitations  
- Tachycardia  
- Blurred vision  
- Dry mouth  
- Elevated blood pressure  
**KEY POINTS**  
- Pulse rate before and after administration  
- Vital signs within 5 minutes after administration  
- Continuous ECG  
**PCG USE**  
- II.2 Bradycardia  
- IV.11 Overdose  
- IV.14 Organophosphate Poisoning  
- V.5 Spinal Movement Precautions  
- VII.7 PEDS: Bradycardia
# BENADRYL (Diphenhydramine)

**Approved July 2018**

<table>
<thead>
<tr>
<th>CLASSIFICATION</th>
<th>Antihistamine</th>
</tr>
</thead>
</table>
| ACTIONS        | Blocks histamine’s effect on smooth muscle in the respiratory, circulatory and gastrointestinal systems.  
Benadryl also has anticholinergic and sodium channel blocking properties |
| INDICATIONS    | Allergic reactions  
Anaphylaxis |
| CONTRAINDICATIONS | Newborns |
| PRECAUTIONS    | Monitor change in level of consciousness  
Watch for tachycardia |
| CONCENTRATIONS | 50mg/ml |
| ADULT DOSAGE   | 50 mg IV/IM |
| PEDIATRIC DOSAGE | 1 mg/kg IV/IM (max 50 mg) |
| SIDE EFFECTS   | Drowsiness, confusion  
Seizures  
Tachycardia  
Blurred Vision  
Nausea, vomiting |
| KEY POINTS     | Vital signs within 5 minutes after administration  
When taken in overdose, expect tachycardia, dilated pupils seizures, and combative behavior  
2 paramedics required for administration |
| PCG USE        | I.11 Single Paramedic  
IV. 2 Allergic Reaction  
VII.3 PEDS: Allergic Reaction |
# CALCIUM CHLORIDE

**Approved July 2018**

<table>
<thead>
<tr>
<th>CLASSIFICATION</th>
<th>Electrolyte</th>
</tr>
</thead>
</table>
| ACTIONS        | • Cardiac stimulant, increases force of contraction  
• Calcium as an element is required for many physiological activities |
| INDICATIONS    | • Calcium channel blocker overdose  
• Elevated potassium (hyperkalemia)  
• Beta Blocker Overdose  
• After first dose of epinephrine in ESRD patients in cardiac arrest |
| CONTRAINDICATIONS | • Hypercalcemia  
• Patient taking digitalis (Use with caution) |
| PRECAUTIONS    | • Do not use routinely in cardiac arrest |
| CONCENTRATIONS | 1gm/10ml |
| ADULT DOSAGE   | ESRD patient in Asystole, PEA, persistent/recurrent VTach or Vfib  
• 1gm IV/IO push  
Calcium channel/beta blocker overdose  
• 1mg (10mL) over 5-10 minutes  
• May repeat as needed supplied in 10 ml over 5-10 minutes |
| PEDIATRIC DOSAGE | ESRD patient in Asystole, PEA, persistent/recurrent VTach or Vfib  
• 20 mg/kg IV/IO (max 1gm) push  
Calcium channel/beta blocker overdose  
• 20 mg/kg IV/IO (max 1gm) over 5-10 minutes  
• May repeat as needed |
| SIDE EFFECTS   | • Bradycardia  
• Arrhythmias  
• Syncope |
| KEY POINTS     | • After giving Calcium flush line with NS to prevent forming insoluble precipitate in the catheter  
• Maintain continuous ECG monitoring  
• Vital signs before and within 5 minutes after administration  
• Contact medical control if hyperkalemia is suspected or patient has end stage renal disease. |
| PCG USE        | II.1 Asystole/PEA  
II.2 Bradycardia  
II.9 V-Fib/Pulseless V-Tach  
IV.11 Overdose  
VII.7 PEDS: Bradycardia |
## Cyanokit (Hydroxocobalamin)

### CLASSIFICATION
Antidote

### ACTIONS
Hydroxocobalamin binds to cyanide molecules and is converted to cyanocobalamin, which is then eliminated from the body in the urine.

### INDICATIONS
Known or suspected cyanide poisoning

### CONTRAINDICATIONS
Known allergy to the drug

### PRECAUTIONS
- Hydroxocobalamin is incompatible for administration in the same IV with numerous medications, including fentanyl and nitroglycerine. Initiate a second IV exclusively for administration of hydroxocobalamin.

### CONCENTRATIONS
- Cyanokit Contains:
  - One glass vial containing 5g hydroxocobalamin for injection
  - 200 mL of 0.9% Sodium Chloride (not included) needs to be transferred into the vial
  - Repeatedly invert the vial for 60 seconds to mix. Don't shake.
  - Use vented intravenous tubing, hang, and infuse over 15 minutes.
  - One 5g vial is a complete starting dose.

### ADULT DOSAGE
5g IV over 15 minutes

### PEDIATRIC DOSAGE
70mg/kg, max 5g

### SIDE EFFECTS
- Elevated blood pressure
- Headache
- Nausea and vomiting
- Infusion site reaction, generalized rash and or “flushing” reaction
- Potential for anaphylactic type reactions
- Red urine

### KEY POINTS
- Initiate continuous cardiac and pulse oximetry monitoring
- Vital signs every 10 to 15 minutes
- Report and document any adverse reactions or significant change in patient clinical status, or, significant deviations in vital signs or cardiac rhythm

### PCG USE
IV.13 Poisoning Cyanide
# DEXTROSE

<table>
<thead>
<tr>
<th>CLASSIFICATION</th>
<th>Carbohydrate</th>
</tr>
</thead>
</table>
| ACTIONS        | • Provides calories for metabolic needs  
                • Short term osmotic diuresis |
| INDICATIONS    | Hypoglycemia (less than 60mg/dl); consider treatment if less than 80mg/dl and symptomatic |
| CONTRAINDICATIONS | None |
| PRECAUTIONS    | • D50 May cause tissue necrosis if IV infiltration occurs |
| CONCENTRATIONS | D10 : 250ml bag (100mg/ml)  
                D50 : 50ml (500mg/ml) |
| ADULT DOSAGE   | • 25 grams of Dextrose D10 or D50 IV/IO |
| PEDIATRIC DOSAGE | • 5ml/kg up to 250ml IV/IO D10  
                • Do not use D50 |
| SIDE EFFECTS   | Hyperglycemia |
| KEY POINTS     | • Assess for changes in level of consciousness  
                • Blood sugar before and after treatment  
                • Vital signs within 5 minutes after administration  
                • Watch carefully for infiltration |
| PCG USE        | IV.8 Hypoglycemia/Hyperglycemia  
                IV.16 Seizure  
                VII.11 PEDS: Hypoglycemia/Hyperglycemia |
### DUONEB (Albuterol/Ipratropium)

**Approved July 2018**

<table>
<thead>
<tr>
<th>CLASSIFICATION</th>
<th>Bronchodilator, Anticholinergic</th>
</tr>
</thead>
</table>
| ACTIONS        | **Albuterol** - Selective beta-2 agonist that stimulates adrenergic receptors of the sympathomimetic nervous system resulting in smooth muscle relaxation in the bronchial tree and peripheral vasculature  
**Ipratropium** - Blocks the action of acetylcholine at parasympathetic sites in bronchial smooth muscle, resulting in bronchodilation |
| INDICATIONS    | • EMT  
  o Wheezing (Allergic Reaction, Asthma/COPD, Croup)  
• Paramedic  
  o Pneumonia  
  o Renal failure (dialysis) patient in persistent cardiac arrest |
| CONTRAINDICATIONS | None |
| PRECAUTIONS    | • Severe cardiac disease; tachyarrhythmia  
• Monitor patients with cardiovascular disease |
| CONCENTRATIONS | 3mg total (2.5mg Albuterol & 0.5mg Ipratropium) / 3mL unit dose vial |
| ADULT DOSAGE   | 3-6mg nebulized (can be repeated as necessary) |
| PEDIATRIC DOSAGE | 3-6mg nebulized (can be repeated as necessary) |
| SIDE EFFECTS   | • Headache  
• Tachycardia  
• Hypertension  
• Tremors |
| KEY POINTS     | • Monitor ECG in patients with cardiac history  
• Vital signs within 5 minutes of completion of treatment  
• Train patient to inhale deeply and exhale slowly |

**PCG USE**

II.1 Asystole/PEA  
II.9 V-Fib/Pulseless V-Tach  
III.2 Asthma/COPD  
III.4 Pneumonia  
IV.2 Allergic Reaction  
VII.3 PEDS: Allergic Reaction  
VII.5 PEDS: Asthma  
VII.10 PEDS: Croup
# Epinephrine (Adrenalin)

**Classification**: Catecholamine, vasopressor, inotrope, bronchodilator

**Actions**
- Increases heart rate and force
- Vasconstriction
- Bronchodilation

**Indications**
- Epi 1:1000 IM Injection
  - Anaphylaxis
  - Asthma (Paramedic only)
- Epi 1:10,000 IV Bolus (Paramedic only)
  - Asystole
  - PEA
  - V-Fib / Pulseless V-Tach

**Contraindications**: None

**Precautions**: Tissue ischemia and necrosis may result if IV infiltrates

**Concentrations**
- 1:1,000 (1mg/1ml)
- 1:10,000 (1mg/10ml)

**Adult Dosage**
- Anaphylaxis/Asthma (1:1,000)
  - 0.3mg IM
- Cardiac Arrest (1:10,000)
  - 1mg IV/IO q 3-5 minutes

**Pediatric Dosage**
- Anaphylaxis/Asthma (1:1,000)
  - 0.01mg/kg IM
- Cardiac Arrest (1:10,000)
  - 0.01mg/kg IV/IO q 3-5 minutes

**Side Effects**
- Headache
- Palpitations
- Hypertension
- Tachycardia

**Key Points**
- Breath sounds, vital signs within 5 minutes after administration
- Effect on heart rate
- Continuous ECG monitoring
- Don’t mix with alkaline solutions (sodium bicarbonate)

**PCG Use**
- II.1 Asystole/PEA
- II.9 V-Fib/Pulseless V-Tach
- III.2 Asthma/COPD
- IV.2 Allergic Reaction
- V.5 SMP
- VI.5.1 Neonatal Resuscitation
- VII.3 PEDS: Allergic Reaction
- VII.5 PEDS: Asthma
- VII.6 PEDS: Asystole/PEA
- VII.7 PEDS: Bradycardia
- VII.14 PEDS: V-Fib/Pulseless V-Tach
# EPINEPHRINE 1:1000—NEBULIZED

## BACK TO MED TOC

<table>
<thead>
<tr>
<th>CLASSIFICATION</th>
<th>Alpha and beta adrenergic</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACTIONS</td>
<td>Stimulates alpha and beta receptors causing vasoconstriction and bronchodilation</td>
</tr>
</tbody>
</table>
| INDICATIONS    | • Severe croup with inspiratory stridor and accessory muscle use  
                  • Not indicated if the only symptom is a barky cough |
| CONTRAINDICATIONS | None |
| PRECAUTIONS   | May potentially lead to rebound worsening |
| CONCENTRATIONS | • 1:1000, 1mg/1ml |
| ADULT DOSAGE  | • 3ml of Epi 1:1,000 nebulized, consider diluting with 3ml of saline |
| PEDIATRIC DOSAGE | • 3ml of Epi 1:1,000 nebulized, consider diluting with 3ml of saline |
| SIDE EFFECTS  | • Tachycardia  
                  • Elevated BP  
                  • Nausea |
| KEY POINTS    | • Will require longer patient observation in the ED so be sure to provide via verbal report that it was given  
                  • Monitor vital signs before and at completion of treatment  
                  • Using normal EMS epinephrine (L-epi) is as effective as racemic epinephrine |
| PCG USE       | VII.10 Peds: Croup/Epiglottitis |
### ETOMIDATE (Amidate)

**CLASSIFICATION**
- Sedative

**ACTIONS**
- Non-barbiturate hypnotic, sedative
- Onset of action within 60 seconds, duration of action 3-5 min

**INDICATIONS**
- Short acting anesthesia as premedication for:
  - Endotracheal intubation for RSI

**CONTRAINDICATIONS**
- Labor, delivery

**PRECAUTIONS**
- Use with caution in elderly patients

**CONCENTRATIONS**
- 40mg/20ml syringe

**ADULT DOSAGE**
- 30mg IV/IO

**PEDIATRIC DOSAGE**
- 0.3 mg/kg IV/IO

**SIDE EFFECTS**
- Nausea and vomiting
- Hypotension
- Tachycardia and/or bradycardia, arrhythmias
- Respiratory depression
- Involuntary muscle movements (severe myoclonus)

**KEY POINTS**
- Continuous ECG
- Vital signs before and within 5 minutes after administration
- May lower BP be cautious in hypotensive patients

**PCG USE**
- I.11 Single Paramedic
- A.12 RSA skill (KFD Skill Standards)
## FENTANYL (Sublimaze)

### CLASSIFICATION
- Synthetic Opioid

### ACTIONS
- Short acting narcotic analgesic
- Central Nervous System depressant

### INDICATIONS
- Moderate to Severe pain
- Chest pain of cardiac origin
- Adjunct to rapid sequence intubation (RSI)
- Premedication prior to
  - Cardioversion
  - Pacing
- Agitation caused by pain (i.e. Head injury)

### CONTRAINDICATIONS
- Hypotension (if less than 90mm Hg or greater than 60mm Hg below baseline consider contacting medical control)

### PRECAUTIONS
- Controlled substance (DEA regulations apply), addictive, abused
- Can be reversed with Naloxone
- Combined use of narcotic with benzodiazepine can increase the risk of respiratory depression and possibly respiratory arrest.

### CONCENTRATIONS
- 100mcg/2ml

### ADULT DOSAGE
- 25-150mcg IV/IO/IN/IM over 2 minutes

### PEDIATRIC DOSAGE
- 0.5-1mcg/kg IV/IO over 2 minutes

### SIDE EFFECTS
- Respiratory depression
- Dizziness
- Altered level of consciousness
- Bradycardia

### KEY POINTS
- Monitor vital signs, response to medication
- Contact medical control for total doses beyond 300 mcg
- Contact medical control for PEDS additional dose totaling over 100mcg
- Typical range is 50-150mcg for adult patient
- Onset is 3 minutes and duration is less than 30 minutes

### PCG USE
- I.8 Pain Management
- VII.7 PEDS: Bradycardia
- A.12 RSA skill (KFD Skill Standards)
### GLUCAGON (Glucagen)

#### CLASSIFICATION
- **Hormone**

#### ACTIONS
- Stimulates hepatic production of glucose from glycogen stores

#### INDICATIONS
- Hypoglycemia
- Beta-blocker overdose or Calcium channel blocker overdose (paramedic only)

#### CONTRAINDICATIONS
- Allergy to drug

#### PRECAUTIONS
- Drug is supplied in a powdered form and must be reconstituted in the solution supplied with the powder
- Patient needs to eat carbohydrates as soon as awake and able to swallow safely

#### CONCENTRATIONS
- 1mg/1ml

#### ADULT DOSAGE
- **Hypoglycemia**
  - 1 mg glucagon IM (SQ-Second preferred)
  - Beta blocker or Calcium Channel blocker overdose
  - 1-2mg IV
    - Repeat as needed based on response

#### PEDIATRIC DOSAGE
- **Hypoglycemia**
  - Less than 20kg/44lbs (typically 5 y/o)
    - 0.5 mg IM
  - Greater than 20kg/44lbs
    - 1mg IM
  - Beta blocker or Calcium Channel blocker overdose
    - 0.5mg IV/IO
    - Repeat as needed based on response

#### SIDE EFFECTS
- Hypotension
- Nausea, vomiting
- Respiratory distress

#### KEY POINTS
- IV and IM are primary routes, SQ is acceptable/alternative route
- Recheck glucose level 5-10 minutes after any intervention and repeat treatment as outlined above
- Assess for changes in level of consciousness
- Blood sugar before and after administration
- In the patient who can safely eat or drink; juice, non-diet soda, or oral glucose replacement is preferred

### PCG USE
- II.2 Bradycardia
- IV.8 Hypoglycemia/Hyperglycemia
- IV.11 Overdose
- IV.16 Seizure
- VII.7 PEDS: Bradycardia
- VII.11 PEDS: Hypoglycemia/Hyperglycemia
## KETAMINE (Ketalar)

### CLASSIFICATION
Analgesic / amnesic / sedative

### ACTIONS
Dissociative anesthetic with hypnotic, analgesic and amnesic effects, stimulates central nervous system

### INDICATIONS
- Chemical restraint of a violent individual, (suspected excited delirium)
- Pain management for extremely painful condition that may not be effectively treated with opiates
- Sedative/induction agent for RSI

### CONTRAINDICATIONS
Significant Hypertension

### PRECAUTIONS
- Onset: ~30 secs IV ~4 min IM
- Duration: ~ 10 min IV, ~ 25 mins IM

### CONCENTRATIONS
500mg/10ml,

### ADULT DOSAGE
**Pain Management**
- 0.1-0.2mg/kg IV/IO
- 0.5mg/kg IN
**Sedation / induction prior to intubation**
- 2mg/kg IV/IO
**Chemical Restraint**
- 1-2mg/kg IV/IO 3-5mg/kg IM

### PEDIATRIC DOSAGE
**Pain Management**
- 0.1-0.2mg/kg IV/IO
- 0.5mg/kg IN
**Sedation / induction prior to intubation**
- 2mg/kg IV/IO
**Chemical Restraint**
- 1-2mg/kg IV/IO 3-5mg/kg IM

### SIDE EFFECTS
- Tachycardia
- Hypertension
- Respiratory depression, (short period of apnea following administration if administered IV rapidly)
- Salivation
- Laryngospasm
- Hallucinations (as drug is wearing off)

### KEY POINTS
- Continuous ECG and Oxygen Saturation monitoring
- Vital Signs before and within 5 minutes after administration

### PCG USE
- I.8 Pain Management
- I.10 Patient Restraint
- A.12 RSA (KFD Skill Standards)
# Labetalol (Normodyne)

<table>
<thead>
<tr>
<th>CLASSIFICATION</th>
<th>Selective Alpha-1 and nonselective beta blocker</th>
</tr>
</thead>
</table>
| ACTIONS            | • Slows heart rate  
                      | • Decreases systemic arterial blood pressure and vascular resistance  
                      | • Has alpha-1 and beta-adrenergic blocking properties |
| INDICATIONS        | • Hypertensive emergency  
                      | • Used to control blood pressure in the stroke patient for TPA administration |
| CONTRAINDICATIONS  | • Obstructive airway disease including asthma  
                      | • Sick sinus syndrome without permanent pacemaker  
                      | • All heart blocks besides 1st degree heart block  
                      | • Severe bradycardia |
| PRECAUTIONS        | N/A |
| CONCENTRATIONS     | 20mg/4ml |
| ADULT DOSAGE       | 20 mg IV |
| PEDIATRIC DOSAGE   | N/A |
| SIDE EFFECTS       | • Bradycardia  
                      | • Hypotension  
                      | • Dizziness  
                      | • Nausea  
                      | • Bronchospasms |
| KEY POINTS         | • If SBP remains above 220mmHg on 2 manual blood pressure readings |
| PCG USE            | I.11 Single Paramedic  
                      | IV.7 Hypertension  
                      | IV.19 Stroke |
**MEDICATIONS**

**MIDAZOLAM (Versed)**

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<th>Approved July 2018</th>
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</table>

<table>
<thead>
<tr>
<th>CLASSIFICATION</th>
<th>Benzodiazepine</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACTIONS</td>
<td>Activates GABA receptors in the brain, causing CNS depression</td>
</tr>
</tbody>
</table>
| INDICATIONS    | - Sedation / Restraint  
- Anxiety Relief / Agitation  
- Seizure  
- Transthoracic Pacing (Bradycardia)  
- Cardioversion (SVT, Wide Complex Tachycardia) |
| CONTRAINDICATIONS | Hypotension |
| PRECAUTIONS    | - Controlled substance (DEA regulations), addictive, abused  
- Combined use of benzodiazepine with narcotic greatly increases the risk of respiratory depression and potentially hypotension |
| CONCENTRATIONS | 5mg/5ml |

### ADULT DOSAGE

**Restraint/Agitation/Cardioversion/Pacing**
- 1-2mg IV/IM/IN  
  - For restraint or agitation, may repeat to 10mg  
  - Must be given IV if cardiac issue  
  - Seizure  
  - 4mg IV/IN or 10mg IM, repeat to stop seizure up to 10mg

### PEDIATRIC DOSAGE

**Seizure**
- 0.2mg/kg IM (max 5mg), or  
- IV (max 2mg), or  
- IN (max 10mg [5 mg per each nostril])  
  *If more than two doses needed, contact medical control*

**Cardioversion/Pacing**
- 0.1mg/kg (max 2mg) IV

### SIDE EFFECTS

Hypotension, respiratory depression, bradycardia, disinhibition resulting in agitation

### KEY POINTS

- Continuous ECG and oxygen saturation monitoring  
- Vital signs before and within 5 minutes after administration

### PCG USE

<table>
<thead>
<tr>
<th>I.10 Restraints</th>
<th>IV.16 Seizure</th>
</tr>
</thead>
<tbody>
<tr>
<td>II.2 Bradycardia</td>
<td>V.3 Head Injury</td>
</tr>
<tr>
<td>II.6 Implanted Defib</td>
<td>VII.12 Peds: Seizure</td>
</tr>
<tr>
<td>II.7 SVT</td>
<td>VII.13 Peds: SVT</td>
</tr>
<tr>
<td>II.10 Wide Complex</td>
<td>VII.15 Peds: Wide Complex</td>
</tr>
<tr>
<td>Tachycardia</td>
<td>Tachycardia</td>
</tr>
<tr>
<td>IV.11 Overdose</td>
<td>A.12 RSA Skill (KFD Skill Standards)</td>
</tr>
</tbody>
</table>
## NARCAN (Naloxone)

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<thead>
<tr>
<th>CLASSIFICATION</th>
<th>Opioid antagonist</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACTIONS</td>
<td>Blocks effects of opioids</td>
</tr>
</tbody>
</table>
| INDICATIONS   | • Suspected narcotic/opiate overdose  
• Respiratory rate less than 8 per minute |
| CONTRAINDICATIONS | • Alteration of consciousness or respiratory depression of presumed traumatic etiology  
• Do not use on patients with an established advanced airway |
| PRECAUTIONS   | • May induce narcotic withdrawal in chronic user (Nausea, vomiting, diaphoresis, tachycardia, hypertension)  
• Duration of action of naloxone may be shorter than the narcotic and the patient may relapse  
• Consider physical restraints prior to Narcan administration |
| CONCENTRATIONS | 2mg/2ml prefilled syringe |
| ADULT DOSAGE  | 0.5-2mg IV/IO/IN/IM  
• If no improvement after 5 minutes, repeat procedure up to max dose of 2mg |
| PEDIATRIC DOSAGE | 0.05-0.1mg/kg IV/IM/IN  
• If no improvement after 5 minutes, repeat procedure up to max dose of 2mg |
| SIDE EFFECTS  | • Tremors  
• Tachycardia  
• Nausea, vomiting  
• Hypertension  
• Ventricular arrhythmias |
| KEY POINTS    | • Narcan should only be used to avoid the need for advanced airway  
• The does should be titrated only enough to maintain respiratory drive  
• Patients with narcotic overdose receiving Narcan may go into withdrawal or lose their “high”, both of which can lead to agitation and violence which can be dangerous for the patient, the EMS providers, and bystanders |
| PCG USE       | IV.3 | Altered Mental Status  
IV.11 | Overdose  
VII.4 | PEDS: Altered Mental Status Syncope/Near Syncope |

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<table>
<thead>
<tr>
<th>CLASSIFICATION</th>
<th>Vasodilator</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACTIONS</td>
<td>Causes vasodilation (stronger effect on the veins) which leads to decreased preload on the heart</td>
</tr>
</tbody>
</table>
| INDICATIONS   | • Acute congestive heart failure (ideally with hypertension)  
• Chest pain of cardiac origin |
| CONTRAINDICATIONS | • Hypotension (systolic pressure less than 100 mm/Hg)  
• Use of sildenafil (Viagra) within the past 48 hours  
• Use of tadalafil (Cialis) or vardenafil (Levitra) within past 48 hours  
• Sepsis (i.e. Pneumonia) |
| PRECAUTIONS   | • Watch patient’s BP closely  
• Drug is sensitive to light and moisture  
• IV access should be established prior to administration of nitroglycerine unless vital signs are stable and you are assisting the patient in taking his/her own medication  
• May worsen ischemia if given to patients with CP or MI who are tachycardic |
| CONCENTRATIONS | 0.4 mg tablets |
| ADULT DOSAGE  | • 0.4 mg sublingually, every 5 minutes up to 3 doses for chest pain.  
• 0.4-0.8 mg sublingually every 3-5 minutes as long as SBP remains over 100 for CHF/Pulmonary Edema |
| PEDIATRIC DOSAGE | N/A |
| SIDE EFFECTS  | • Headache  
• Hypotension (systolic pressure less than 100 mm/Hg)  
• Tachycardia |
| KEY POINTS    | • Vital signs and pain assessment within 5 minutes after administration  
• Blood pressure before and after administration |
| PCG USE       | II.4 Chest Pain  
III.3 CHF/Pulmonary Edema |
**ORAL GLUCOSE (Insta-Glucose)**

<table>
<thead>
<tr>
<th>CLASSIFICATION</th>
<th>Monosaccharide Carbohydrate</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACTIONS</td>
<td>Increases blood glucose</td>
</tr>
</tbody>
</table>
| INDICATIONS          | • Hypoglycemia with intact gag reflex with altered mental status  
 |                       | • Blood glucose less than 60 mg/dl |
| CONTRAINDICATIONS    | • Unresponsive patient or responsive patient who is unable to swallow adequately |
| PRECAUTIONS          | • Assess the patient’s ability to swallow without airway compromise |
| CONCENTRATIONS       | 15-37.5g in single use tube |
| ADULT DOSAGE         | 15-37.5g PO                 |
| PEDIATRIC DOSAGE     | 5-37.5g PO                  |
| SIDE EFFECTS         | Nausea                      |
| KEY POINTS           | • If patient is awake and able to protect airway, administer oral glucose or have patient drink juice with added sugar or non-diet soda  
 |                       | • Recheck glucose level 5-10 minutes after any intervention and repeat treatment as outlined above  
 |                       | • Blood sugar before and after administration  
 |                       | • For patient refusal and PEDS refusal, refer to PCG |

<table>
<thead>
<tr>
<th>PCG USE</th>
</tr>
</thead>
<tbody>
<tr>
<td>IV.8</td>
</tr>
<tr>
<td>VII.11</td>
</tr>
<tr>
<td>Hypoglycemia/Hyperglycemia</td>
</tr>
<tr>
<td>PEDS: Hypoglycemia/Hyperglycemia</td>
</tr>
</tbody>
</table>
**ROCURONIUM (Zemuron)**

**Approved July 2018**

<table>
<thead>
<tr>
<th>CLASSIFICATION</th>
<th>Paralytic</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACTIONS</td>
<td>Non-depolarizing neuromuscular blocker, paralysis of muscle fibers</td>
</tr>
</tbody>
</table>
| INDICATIONS    | • Muscle relaxation to facilitate endotracheal intubation  
                 • To extend period of paralysis after intubation |
| CONTRAINDICATIONS | None |
| PRECAUTIONS    | • Should not be administered unless personnel are confident they will be able to intubate  
                 • An alternate airway should be immediately available in case you are unable to intubate  
                 • Lidocaine, beta blockers, magnesium sulfate and other neuromuscular blockers enhance the blocking action  
                 • Paralytic action does not affect the level of consciousness nor pain sensation, **patients receiving the drug must also receive sedation**  
                 • If not refrigerated must be exchanged every 60 days |
| CONCENTRATIONS | • 100mg/10ml |
| ADULT DOSAGE   | o 1 mg/kg IV/IO  
                 *Onset of paralysis in 1-2 minutes lasts 40-50 minutes |
| PEDIATRIC DOSAGE | o 1 mg/kg IV/IO  
                         *Onset of paralysis in 1-2 minutes lasts 40-50 minutes |
| SIDE EFFECTS   | • Wheezing  
                 • Apnea  
                 • Arrhythmias (bradycardia, sinus arrest)  
                 • Hypotension |
| KEY POINTS     | o Closely monitor vital signs including; end tidal co2, pulse oximetry, respiratory and cardiovascular status  
                 o Use in conjunction with etomidate and ensure patient is fully sedated  
                 o Rocuronium lasts longer than etomidate and ketamine. Sedation medications need to be redosed throughout transport to ensure patient is comfortable |
| PCG USE        | I.II Single Paramedic  
                 A.12 RSA skill (KFD Skill book) |
**SODIUM BICARBONATE**

<table>
<thead>
<tr>
<th>CLASSIFICATION</th>
<th>Alkalinizing agent, electrolyte</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACTIONS</td>
<td>Neutralizes acids</td>
</tr>
</tbody>
</table>
| INDICATIONS   | • Indicated for use in cardiac arrest or unstable patient with:  
|               |   o Sodium channel blocker overdose (TCA)  
|               |   o Renal (dialysis) patients not responsive to first dose of Epinephrine  
|               |   o Hyperkalemia (very wide QRS) |
| CONTRAINDICATIONS | None                          |
| PRECAUTIONS   | None                            |
| CONCENTRATIONS | 8.4% 50meq/50ml                |
| ADULT DOSAGE  | • Renal patients in Asystole/PEA/V-fib/Pulseless V-tach  
|               |   o 50 mEq IV/IO  
|               | • TCA Overdose  
|               |   o 1 mEq/kg IV / IO when Sodium Channel blocker OD (ie. Cocaine, cyclic antidepressants) |
| PEDIATRIC DOSAGE | N/A                          |
| SIDE EFFECTS  | • Alkalosis  
|               | • Additional adverse effects listed in PALS |
| KEY POINTS    | • Changes in level of consciousness  
|               | • ECG changes  
|               | • Vital signs within 5 minutes after administration  
|               | • Irrigate IV/IO tubing with NS before and after infusion due to precipitation with many medications |
| PCG USE       | I.11 Single Paramedic  
|               | II.1 Asystole/PEA  
|               | II.9 V-fib/Pulseless V-tach  
|               | IV.11 Overdose |
# SOLU-MEDROL (Methylprednisolone)

**Approved July 2018**

<table>
<thead>
<tr>
<th>CLASSIFICATION</th>
<th>Corticosteroid</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACTIONS</td>
<td>Suppresses inflammation and the normal immune response</td>
</tr>
</tbody>
</table>
| INDICATIONS    | • Anaphylaxis  
                • Asthma/COPD |
| CONTRAINDICATIONS | None |
| PRECAUTIONS    | • Provided in a Mix-O-Vial. Follow manufacturer’s recommendations to reconstitute 
                • Patients with a history of peptic ulcer, congestive heart failure, liver or kidney disease, diabetes mellitus, and GI bleed |
| CONCENTRATIONS | 125 mg / 2ml |
| ADULT DOSAGE   | 125 mg IV/IM/IO |
| PEDIATRIC DOSAGE | 2 mg/kg IV/IO (Max of 125mg) |
| SIDE EFFECTS   | • Heartburn  
                • Increased susceptibility to infection  
                • Hyperglycemia  
                • Headache  
                • Hypertension  
                • Hypokalemia |
| KEY POINTS     | • Continuous ECG  
                • Vital signs before and within 5 minutes after administration |

**PCG USE**

- I.11 Single Paramedic
- III.2 Asthma/COPD
- IV.2 Allergic Reaction
- VII.5 PEDS: Asthma
**Toradol (Ketorolac)**

**CLASSIFICATION**
- NSAID- Nonsteroidal anti-inflammatory

**ACTIONS**
- Inhibits cyclooxygenase, reducing prostaglandin and thromboxane synthesis

**INDICATIONS**
- Pain management in patients >50kg
- Moderate pain, consider for “colic” pain or known kidney stones

**CONTRAINDICATIONS**
- Pregnancy
- Known/suspected bleeding
- Blood thinner use
- Renal Failure

**PRECAUTIONS**
- Avoid use with other NSAID’s
- Avoid use in those who have experienced severe trauma

**CONCENTRATIONS**
- 30mg in 1ml

**ADULT DOSAGE**
- 15mg IV/IO
- 30mg IM

**PEDIATRIC DOSAGE**
- 0.5mg/kg (max dose 10mg) IV/IO
- 1mg/kg (max dose 30mg) IM

**SIDE EFFECTS**
- Edema, nausea, dizziness, drowsiness, diarrhea, and pain at injection
- Very low risk at one time dosing, however; GI bleed and acute kidney failure have resulted from routine use

**KEY POINTS**
- Can be used in place of opioid administration for pain in mild to moderate pain
- Low risk of side effects
- Consider other means of pain management if pain is severe
- Consider other means of pain management if severe trauma exists

**PCG USE**
- I.8 Pain Management
# Zofran (Ondansetron)

**Approved July 2018**

<table>
<thead>
<tr>
<th><strong>CLASSIFICATION</strong></th>
<th>Antiemetic</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ACTIONS</strong></td>
<td>Blocks serotonin to treat nausea</td>
</tr>
<tr>
<td><strong>INDICATIONS</strong></td>
<td>Nausea and vomiting</td>
</tr>
<tr>
<td><strong>CONTRAINDICATIONS</strong></td>
<td>• Known long QT</td>
</tr>
</tbody>
</table>
| **PRECAUTIONS**    | • Zofran is not effective in preventing motion-induced nausea and vomiting  
|                    | • Avoid in those on multiple anti-depressants, or those who may have overdosed on anti-depressants |
| **CONCENTRATIONS** | 4mg/2 ml |
| **ADULT DOSAGE**   | 4 mg IV/IO/IM (give over 30 seconds) |
| **PEDIATRIC DOSAGE** | 0.15 mg/kg IV/IO/IM Max 4mg (give over 30 seconds) |
| **SIDE EFFECTS**   | • Headache  
|                    | • Constipation  
|                    | • Sensation of flushing or warmth |
| **KEY POINTS**     | • Consider continuous cardiac monitoring  
|                    | • Vital signs before and within 5 minutes after administration |
| **PCG USE**        | I.7.5 Nausea & Vomiting |
A. AIRWAY

C. CARDIAC

ME. MEDICATION ADMINISTRATION

MI. MISCELLANEOUS

O. ORTHOPEDIC

S. SOFT TISSUE INJURIES
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- **A.2** CPAP
- **A.3** Cricothyrotomy
- **A.4** End Tidal CO₂ Monitoring
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- **A.8** Laryngoscope and Magill Forceps
- **A.9** Nasopharyngeal Airway
- **A.10** Needle Chest Decompression
- **A.11** Oropharyngeal Airway
- **A.12** Rapid Sequence Airway (RSA)
- **A.13** Suctioning
- **A.14** Tracheostomy Care
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## C. Cardiac

- **C.1** Automated External Defibrillation
- **C.2** ECG – 12Lead
- **C.3** Valsalva Maneuver

## ME. Medication Administration

- **ME.1** Auto-Injector Administration
- **ME.2** Cyanokit
- **ME.3** Endotracheal Administration
- **ME.4** Intramuscular Administration
- **ME.5** Intranasal Administration
- **ME.6** Intraosseous Infusion
- **ME.7** IV - Administration
- **ME.8** IV - Changing a Bag
- **ME.9** IV - Discontinuing
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- **ME.12** Medication Preparation
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**Kenosha Fire Department**
**Emergency Medical Services**
**Skill Standards**

These standards approved by Ben Weston, MD, MPH, Medical Director

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<td>ME.14</td>
<td>Nebulizer Administration</td>
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<tr>
<td>ME.15</td>
<td>Oral / Sublingual Administration</td>
</tr>
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<td>ME.16</td>
<td>Piggyback Administration</td>
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<tr>
<td>ME.17</td>
<td>Saline Lock</td>
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**MI. Miscellaneous**

| MI.1     | Blood Glucose Monitoring      |
| MI.2     | Gastric Tube Placement        |
| MI.3     | Pulse Oximetry                |
| MI.4     | Temporal Artery Thermometry   |
| MI.5     | Universal Precautions         |
| MI.6     | Vital Sign Assessment         |

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Last updated: September 2018
Bag-Valve Mask Ventilation

Patients with no respiratory drive, or those whose ventilatory effort is not adequate for proper oxygenation, need external mechanical assistance. Using a bag-valve mask (BVM), in addition to proper airway adjuncts, EMS providers are able to provide safe, efficient respiratory support to a patient for the duration of prehospital care.

**Provider level: ALL PROVIDERS**

**Indications**
- A patient with inadequate, or absent, respiratory drive

**Contraindications**
- There are no absolute contraindications.

**Precautions**
- Appropriate C-spine considerations should be taken when managing potential spinal injuries. For these patients use the jaw thrust maneuver to open the airway.
- Be prepared to suction the patient who has fluids in the mouth or pharynx.

**Procedure**
1. Suction the patient as necessary, and insert the appropriate oral or nasal airway.
2. Select the proper BVM (adult/child/infant) and select the appropriate size transparent face mask to cover the area between the bridge of the patient’s nose and the indentation beneath the patient’s lower lip.
3. Position self at the top of the patient’s head, grasp the patient’s mandible with your left hand, and lift the jaw anteriorly. NOTE: use two-rescuer technique whenever possible.
4. Place the nose end of the face mask over the ridge of the patient’s nose and then place the chin end over the patient’s lower lip.
5. Using one hand, firmly press the face mask against the patient’s face while continuing to lift the jaw anteriorly. Maintain an airtight seal.
6. Compress the BVM with the other hand with enough speed and force to cause the chest to rise over a two-second period.
7. Monitor chest rise and fall with each compression of the bag. Readjust equipment or technique if necessary.
8. Continue to ventilate at a rate of 12 breaths per minute for an adult patient, or 20 breaths per minute for a pediatric patient. (8-10 breaths per minute in cardiac arrest)

**Discontinuation**
- Patient redevelops respiratory effort that ensures sufficient oxygenation

**Notes:**
- Document procedure and results, including any unusual circumstances and/or difficulties encountered.
Continuous positive airway pressure (CPAP) can rapidly improve gas exchange and dyspnea by decreasing the work of breathing. CPAP is appropriate for use in patients with CHF, COPD, and pneumonia. However, CPAP should not interfere with other treatment such as a DuoNeb nebulizer or nitroglycerine therapy.

**Provider level: ALL PROVIDERS**

**Indications**
- Patient awake, cooperative
- Age 12 years and older
- Patient able to maintain open airway
- SBP greater than 90 mmHg
- At least two of the following:
  - Respiratory rate greater than 25/minute
  - Pulse oximeter reading less than 92%
  - Retractions, accessory muscles use, or significant respiratory distress

**Contraindications**
- Respiratory arrest / Unresponsiveness
- Pneumothorax
- Tracheostomy
- Vomiting

**Precautions**
- Impaired mental state (difficulty cooperating)
- Nausea and/or excessive oral secretions
- Poor respiratory drive
- Facial deformity or questionable ability to maintain tight-fitting mask
- Don’t use portable oxygen that cannot deliver large amounts of oxygen (i.e. using a tank that is less than ½ full).

**Procedure**
1. Explain the procedure to the patient and ensure adequate oxygenation.
2. Connect the nebulizer chamber every time, regardless of planned use for meds.
3. Connect device to the unrestricted high-flow oxygen port.
4. Connect the nebulizer port to oxygen, beginning at a flow rate of 10 lpm.
5. Place mask over mouth and nose; Secure with straps.
6. Adjust PEEP to 5cm H₂O and titrate up, based on patient’s response.
7. Check for air leaks and fix as appropriate.
8. Monitor and document patient response, including frequent vital signs.
9. May give Versed 1-2mg IV/IM for anxiety (PARAMEDIC only). CAUTION: watch for sedation and additional respiratory compromise.

**Discontinuation:**
- Discontinue only if:
  - Patient cannot tolerate the procedure/equipment
  - Patient deteriorates (treat with ET intubation or i-gel® airway)
Cricothyrotomy should be considered a procedure of last resort. It is not an easy procedure and is often necessary under the most stressful and chaotic conditions. It is not always successful and may be nearly impossible in obese patients and those with other anatomic challenges. Never consider cricothyrotomy as a primary airway procedure.

**Provider level: PARAMEDIC**

**Indications**
- Patients with an absolute failure to ventilate

**Contraindications**
- No absolute contraindications

**Precautions**
- Ensure proper location of landmarks. Improper insertion may affect nearby blood vessels and cause bleeding.
- If bleeding occurs, use suction and proceed. Insertion of the cricothyrotomy unit will protect the patient from the hazard of blood in the airway. Direct pressure can then be used on the area.
- The pediatric cricoid cartilage is susceptible to injury which can lead to loss of integrity of the trachea

**Procedure**

<table>
<thead>
<tr>
<th>ADULT PATIENTS</th>
<th>PEDIATRIC PATIENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assemble components of the commercial Control-Cric kit: Cric-Knife, Cric-Key w/ tracheal hook, stabilizing strap, and 10cc syringe.</td>
<td>Assemble KFD pediatric cricothyrotomy kit: 14ga angiocath attached to a 3ml syringe and ET tube connector from a 7.0mm ET tube.</td>
</tr>
<tr>
<td>If c-spine injury is not suspected, hyperextend the patient's neck in order to stretch the skin of the neck and facilitate the identification of the laryngeal structures.</td>
<td></td>
</tr>
<tr>
<td>Steady the larynx with one hand. With the other, palpate the cricothyroid membrane between the thyroid cartilage (Adam's apple) and cricoid cartilage.</td>
<td></td>
</tr>
<tr>
<td>Disinfect the skin at the insertion site.</td>
<td></td>
</tr>
<tr>
<td>Use the Cric-Knife to make a vertical incision from mid-thyroid cartilage to the cricoid cartilage.</td>
<td>Place the angiocath needle assembly in the midline and perforate the soft tissues of the neck at a right angle.</td>
</tr>
<tr>
<td>Through the incision, palpate the cricothyroid membrane once again.</td>
<td>Pull back on the attached 3mL syringe while advancing the assembly into the trachea. Loss of vacuum on the syringe indicates entry of the airway.</td>
</tr>
</tbody>
</table>
**Cricothyrotomy**

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<table>
<thead>
<tr>
<th>Action</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Turn the Cric-Knife</td>
<td>to a horizontal position over the cricothyroid membrane. Push the blade downward, perpendicular to the trachea, until the blade is fully inserted and the airway is entered.</td>
</tr>
<tr>
<td>Angle the unit</td>
<td>towards the patient’s head at an angle of 45° and advance the needle portion of the assembly 3-5mm further inferiorly into the trachea.</td>
</tr>
<tr>
<td>While maintaining downward force</td>
<td>slide the tracheal hook down the handle with your thumb until the hook is felt to enter the trachea, and it disengages from the handle.</td>
</tr>
<tr>
<td>Advance the plastic angiocath</td>
<td>gently until the hub meets the skin and then remove the needle.</td>
</tr>
<tr>
<td>Grab the tracheal hook</td>
<td>with the non-dominant hand, lifting up on the thyroid cartilage.</td>
</tr>
<tr>
<td>Insert the Cric-Key</td>
<td>through the incision. Confirm placement by moving the device along the anterior wall of the trachea to feel for the tracheal rings.</td>
</tr>
<tr>
<td>While maintaining downward force</td>
<td>Secure the cannula to the patient’s neck with tape.</td>
</tr>
<tr>
<td>Once placement has been confirmed</td>
<td>advance the Cric-Key tube to the flange, then remove the tracheal hook by rotating it towards the patient’s shoulder.</td>
</tr>
<tr>
<td>Stabilize the Cric-Key tube and remove the introducer</td>
<td>Inflate the cuff until resistance is met. Secure with stabilizing strap. Attach to the BVM.</td>
</tr>
<tr>
<td>Remove the plunger from the 3mL syringe and attach the 7.0ET tube adapter to the open end of the syringe. Attach to the BVM.</td>
<td></td>
</tr>
<tr>
<td>Ventilate the patient</td>
<td>to get chest rise and confirm placement by auscultation of both lungs and end tidal CO₂ monitoring.</td>
</tr>
</tbody>
</table>
Notes

♦ Be careful of overventilation as lungs may easily become distended with this procedure.
♦ End-tidal CO₂ is likely to rise after several minutes as exhalation may be limited.
Monitoring exhaled carbon dioxide is an accurate method by which to determine the overall adequacy of ventilation. The numeric value (capnometry) and the graphical waveforms (capnography) are valuable tools used to confirm ET tube placement, manage ventilations, and aid in etiology and differential diagnosis in the pre-hospital setting.

**Provider level: PARAMEDIC**

**Indications**
- Continuous, non-invasive monitoring of end tidal carbon dioxide:
  - In all patients with an advanced airway in place
  - In some non-intubated patients to determine adequacy of ventilation and potential need for an advanced airway

**Contraindications**
- None

**Precautions**
- When using the nasal FilterLine, if one or both nostrils are partially or completely blocked, or the patient is breathing through the mouth, the displayed EtCO₂ values may be inaccurate.
- Fluids introduced into the detector can increase airway resistance, impede a proper reading, and affect ventilation. Discard accessory if this occurs.

**Procedure**
1. Connect the CO₂ FilterLine to the monitor by sliding down the compartment door, inserting the fitting into the CO₂ inlet port, and turning the fitting clockwise.
2. Properly position the device.
   - For a non-intubated patient, place the nasal FilterLine on the patient as you would a standard nasal cannula.
   - For a patient with an advanced airway, place the airway adaptor on the end of the airway, then attach the BVM to the adaptor.
3. Press the [CO₂] soft key on the cardiac monitor to activate the internal pump and initiate the capnometry/capnograph on the primary monitoring screen. Confirm the presence of the proper waveform and numerical reading.
4. If no apparent waveform is present, assume that ventilation has failed and immediately reassess the patient.

**Discontinuation**
- Once in place, continue the use of the monitoring device unless it inhibits the patient’s respirations or rescuer’s ventilations.

**Notes:**
- Common capnometry readings are as follows:
  - 0 mmHg..........................Unsuccessful intubation
  - 0-10 mmHg.................................Cardiac arrest
  - 35-45 mmHg.................................Normal reading
  - > 45 mmHg...............................ROSC; Hypoventilation; Obstructed ventilation
End Tidal CO\textsubscript{2} Monitoring

<table>
<thead>
<tr>
<th>Skill Standard</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal Capnography</td>
<td><img src="image1.png" alt="Graph of normal capnography" /></td>
</tr>
<tr>
<td>Hyperventilation</td>
<td><img src="image2.png" alt="Graph of hyperventilation" /></td>
</tr>
<tr>
<td>Hypoventilation</td>
<td><img src="image3.png" alt="Graph of hypoventilation" /></td>
</tr>
<tr>
<td>Loss of Alveolar Plateau (asthma, COPD, or airway obstruction)</td>
<td><img src="image4.png" alt="Graph of loss of alveolar plateau" /></td>
</tr>
<tr>
<td>Apnea/Loss of Waveform (check for sudden cardiac arrest or equipment problem)</td>
<td><img src="image5.png" alt="Graph of apnea/loss of waveform" /></td>
</tr>
<tr>
<td>Esophageal Intubation</td>
<td><img src="image6.png" alt="Graph of esophageal intubation" /></td>
</tr>
<tr>
<td>Elevating Baseline (incomplete exhalation may indicate asthma or COPD)</td>
<td><img src="image7.png" alt="Graph of elevating baseline" /></td>
</tr>
</tbody>
</table>

These standards approved by Ben Weston, MD, MPH, Medical Director.
ET Extubation

The decision to use an advanced airway in order to stabilize a patient comes with much thought, planning, preparation, and skill. The same diligence must be exercised when electing to safely remove that airway. Focus should be directed toward preventing/removing the discomfort and agitation caused by leaving the airway in place, balanced with the need to maintain a controlled airway.

Provider level: PARAMEDIC

Indications

♦ A patient who shows evidence of all of the following:
  o Intact gag reflex
  o Adequate ventilation on his/her own with consistent end tidal CO₂ values of 35-45mmHg.
  o Appropriate mental status
  o Cardiovascular stability

Contraindications

♦ Absent gag reflex
♦ Patient unable to adequately ventilate or protect his/her own airway

Precautions

♦ This procedure may precipitate laryngospasm. If the patient develops stridor immediately after extubation, consider Epinephrine (1:1000) 3mg via nebulizer.
♦ Equipment and personnel necessary for reintubation of the patient must be readily available.

Procedure

1. Explain the procedure to the patient.
2. Ventilate and preoxygenate the patient for one minute.
3. Using a soft tip suction catheter, suction all secretions within the endotracheal tube above the cuff.
4. Using a Yankauer tip, suction the mouth and oropharynx.
5. Instruct the patient to take in a deep breath.
6. Using a 10-12mL syringe, deflate the cuff and have the patient cough as the tube is gently removed from the airway.
7. Instruct the patient to cough and take deep breaths using high-flow oxygen via NRM for the duration of the prehospital care.

Discontinuation

♦ If patient develops respiratory distress, be prepared to reintubate.

Notes:

♦ Document procedure and results, including any unusual circumstances and/or difficulties encountered.
Endotracheal intubation involves direct visualization of the vocal cords with a laryngoscope and placement of a tube into the trachea. It provides definitive airway maintenance in patients with potential or actual airway impairment. This method of airway access provides optimal protection from mechanical obstruction by saliva, blood, vomitus, loose teeth, and the tongue or epiglottis. It permits a route for mechanical ventilation and oxygenation, facilitates suctioning of the trachea and bronchi, and decreases gastric distention associated with BVM ventilation.

**Provider level: PARAMEDIC**

**Indications**
- Apnea
- Inability to protect airway
- Patients with airway burns or hazardous material exposure with potential or actual airway impairment

**Contraindications**
- No absolute contraindications

**Precautions**
- Additional consideration should be given prior to attempting a “difficult” intubation. Patients presenting with the following may require an alternate means of securing the airway:
  - Short, muscular neck with a full set of teeth
  - Receding lower jaw with obtuse mandibular angles
  - Protruding upper incisor teeth with overgrowth of the maxilla
  - Long, high-arched palate associated with a long, narrow mouth
  - Small glottic opening
  - Poor mobility of the cervical vertebra
- Avoid trauma to the teeth, lips, oropharynx, and vocal chords by visual confirmation of each movement during the procedure.
- Prevent hypoxia by minimizing prolonged attempts.
- Passing the tube into the right mainstem bronchus is the most common error.
- Observe for indications of esophageal intubation:
  - Abdominal distention with ventilation
  - Absent breath sounds across lung fields
  - Lack of appropriate end tidal CO$_2$ waveform
- In-line techniques or i-gel® airway placement should be used if cervical spine injury is suspected.

**Procedure**
1. Oxygenate the patient for a minimum of 30 seconds before intubation attempt.
2. Apply oxygen via NC at *high flow* and keep on during entire airway procedure.
3. Select and prepare all necessary equipment:
   - Manual or Storz video laryngoscope blade and handle; Ensure that light is bright. Children under 4 years old need the straight blade only.
ET tube - Adult females: 7.0; Adult males: 8.0 (average)
- 10-12mL syringe; Check cuff for leaks. Leave syringe attached.
- Lightly lubricate distal end of tube, including cuff area, with water-soluble gel.
- Confirm stylet tip is 1-2mm proximal to Murphy eye (optional).
- Suction, tube holder, and tape.
- Bougie ET tube introducer
- i-gel® airway as a back-up
- Monitor: connect pulse oximetry and ETCO₂

4. Position patient
   a. Ramp patient as necessary to align ear canal with sternum
   b. Except for patients with a C-spine injury, slightly extend the patient’s head and place into a “sniffing position.”

5. Remove dentures and suction airway (if necessary).

6. Hold laryngoscope in the left hand and insert the blade along the right side of the mouth, sweeping the tongue to the left. Advance to the base of the tongue to expose the vallecula and epiglottis.

7. Lift laryngoscope forward and upward, avoiding using the teeth as a fulcrum.

8. Visualize the glottic opening and vocal cords. If visualization is difficult, slight exterior pressure to the cricoid cartilage (Sellick's maneuver) can be applied.

9. With the right hand, insert the tube from the right side of the mouth, through the larynx, until the cuff just disappears 1cm beyond the cords. Take note of the tube markings at the corner of the mouth.

10. Remove the laryngoscope, inflate the cuff, remove the stylet, and attach the EtCO₂ sensor adaptor port.

11. Attach the BVM and ventilate the patient. Assure proper tube placement immediately and frequently during transport by confirming:
   a. Bilaterally equal lung sounds, chest expansion, absence of epigastric sounds
   b. Observation of persistent condensation in the tube with exhalation
   c. Proper EtCO₂ capnography waveform and capnometry readings

12. Secure the tube with commercial ET tube holder (preferred) or tape.

13. Evaluate the patient’s response to the airway. Evaluate the potential for self-extubation and the need for physical restraint and/or chemical sedation.

Discontinuation
- The initial rescuer should make only two intubation attempts. A second rescuer may make a third attempt. Unsuccessful intubation should result in the selection of an alternate, non-visualized airway.
- If patient develops a gag reflex, evaluate the need for continued intubation. The rescuer should make the decision to extubate the patient or proceed with sedation and/or paralytics.
Notes

♦ Maintain vigilance for signs of improper placement or accidental extubation such as poor EtCO₂ readings, coughing, cyanosis, unequal lung sounds, etc.

♦ All intubation attempts should be thoroughly documented including the time, name of the rescuer, equipment used, difficulties encountered, and final outcome.
**Provider level: ALL PROVIDERS**

**Indications**
- Cardiac arrest from any cause
- Respiratory arrest
- Unconscious patient with inadequate respirations and no gag reflex
- As a rescue airway in a failed endotracheal intubation
- As a primary airway for use by paramedics in place of endotracheal intubation at the paramedic’s discretion

**Contraindications**
- Active gag reflex
- Disrupted laryngeal anatomy

**Precautions**
- The i-gel® does not provide definitive airway protection.
- Providers should be ready to suction and clear airway as necessary.

**Procedure**
1. Prepare all necessary equipment:
   a. Appropriately-sized i-gel® and suction catheter
   b. Suction (portable or vehicle-mounted)
   c. End tidal CO₂ monitor (Paramedic)
2. Lubricate tube with water-soluble lubricant.
3. Inspect patient’s airway and remove any obstructions, including dentures.
4. Position patient’s head in a “sniffing” or neutral position (C-spine precautions as appropriate)
5. Hold the i-gel® in dominant hand grasping it by the integral bite-block, and so that the cuff outlet is facing towards the chin of the patient.
6. Gently press down on the chin to open the mouth.
7. Glide the device downwards along the hard palate with a continuous but gentle push until a firm and definitive resistance is felt.
8. DO NOT FORCE – if tube does not insert easily, withdraw and reattempt once.
9. When placed appropriately, the teeth should be resting on the integral bite-block.
10. Confirm tube placement by auscultating breath sounds bilaterally and auscultating over the abdomen to rule out insufflation of the stomach.
11. Paramedics should also confirm placement with continuous end tidal CO₂ monitoring.
12. If breath sounds are absent, remove the device. In addition:
   a. Suction as necessary
   b. Control airway with OP or NP airway and ventilate with BVM

**Discontinuation**
- Simply remove and be prepared to suction
Foreign body aspiration may not always be relieved by external mechanical means. When the patient loses consciousness, the focus changes to a more direct approach. If forced ventilations with a BVM and chest/abdominal thrusts in the supine position are not successful, the rescuer must attempt to remove the object using direct visualization and extraction.

**Provider level: ALL PROVIDERS**

### Indications
- Unconscious patient with an airway obstruction due to a foreign body
- Unsuccessful removal of the foreign body by:
  - Patient’s own attempts
  - Abdominal/chest thrusts
  - Forced ventilation using a BVM

### Contraindications
- Conscious patient
- Foreign body is below the level of the vocal cords

### Precautions
- Use skillful technique to avoid causing oral or pharyngeal trauma.

### Procedure
1. Prepare all equipment and ensure proper function.
2. Place the patient’s head in a slightly extended position if no cervical injury is suspected. For patients with potential for cervical injury, in-line stabilization, with the head in a neutral position, must be maintained by another rescuer.
3. Holding the laryngoscope in the left hand, insert the blade into the right side of the patient’s mouth and move it gently toward the left, moving the tongue to the left and out of the way.
4. Place the tip of the curved blade in the vallecula, and the tip of the straight blade over the epiglottis.
5. Lift upward and anteriorly with the laryngoscope and visualize the vocal cords. Avoid any leverage on the patient’s teeth.
6. Suction as necessary and locate the foreign body.
7. Holding the Magill forceps in the right hand, insert the tip into the patient’s mouth, grasp and remove the foreign body.
8. Ventilate the patient for 5-6 breaths and monitor closely for respiratory effort.

### Discontinuation
- If removal is unsuccessful, **PARAMEDIC** intervention with intubation or cricothyrotomy may be necessary.

### Notes:
- Document procedure and results, including any unusual circumstances and/or difficulties encountered.
The nasopharyngeal airway is a soft, flexible tube that is inserted through the nose and extends to the posterior pharynx just above the glottis. This is the basic airway adjunct of choice for conscious patients, as it does not commonly stimulate the gag reflex, and is easily inserted and secured.

<table>
<thead>
<tr>
<th>Provider level: ALL PROVIDERS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Indications</strong></td>
</tr>
<tr>
<td>♦ Semi-conscious or arousable patients with decreased control of the upper airway, but with an intact gag reflex</td>
</tr>
<tr>
<td>♦ Patients for which an oropharyngeal airway is contraindicated</td>
</tr>
<tr>
<td><strong>Contraindications</strong></td>
</tr>
<tr>
<td>♦ Nasal obstruction, maxillofacial trauma, upper airway burns, or nasal deformities</td>
</tr>
<tr>
<td>♦ Patients receiving anticoagulant therapy, or those with clotting disorders or sepsis</td>
</tr>
<tr>
<td>♦ Children less than 4 years of age</td>
</tr>
<tr>
<td><strong>Precautions</strong></td>
</tr>
<tr>
<td>♦ May cause epistaxis. Use water-soluble lubrication and caution when inserting.</td>
</tr>
<tr>
<td>♦ Avoid pushing against any nostril tissue. If resistance is met, remove the airway and attempt reinsertion in the other nostril.</td>
</tr>
<tr>
<td>♦ An airway that is too long may cause gastric distention, inadvertent pharyngeal stimulation, gagging, and possibly vomiting.</td>
</tr>
<tr>
<td><strong>Procedure</strong></td>
</tr>
<tr>
<td>1. Explain the procedure to the patient and place patient in supine position.</td>
</tr>
<tr>
<td>2. Measure the distance from the selected nostril to the same side earlobe plus one inch. Select an airway slightly smaller in diameter than the patient’s nostril.</td>
</tr>
<tr>
<td>3. Lubricate with water-soluble jelly. Insert into nare with bevel facing septum.</td>
</tr>
<tr>
<td>4. Advance airway using a rotational movement along inferior floor of the nasal passage until the flange end touches the patient’s nostril.</td>
</tr>
<tr>
<td>5. To confirm placement:</td>
</tr>
<tr>
<td>♦ Conscious patient.................. exhale with mouth closed and feel for air passage</td>
</tr>
<tr>
<td>♦ Unconscious patient.................. visually inspect oropharynx for presence of airway tip behind uvula; close patient’s mouth and feel for air movement.</td>
</tr>
<tr>
<td>♦ Auscultate breath sounds bilaterally.</td>
</tr>
<tr>
<td>6. Suction as necessary to clear secretions.</td>
</tr>
<tr>
<td><strong>Discontinuation</strong></td>
</tr>
<tr>
<td>♦ Patient has difficulty tolerating the airway and begins gagging/vomiting</td>
</tr>
<tr>
<td>♦ Airway exacerbates epistaxis and prevents effective suctioning or ventilation</td>
</tr>
<tr>
<td><strong>Notes:</strong></td>
</tr>
<tr>
<td>♦ Document procedure and results, including any unusual circumstances and/or difficulties encountered.</td>
</tr>
</tbody>
</table>
A pneumothorax occurs when a lung is punctured, either through penetrating trauma or from fractured rib sustained in blunt trauma, and air becomes trapped between the pleura and the lung. Sometimes this can occur spontaneously in otherwise healthy patients or those with asthma and/or COPD. A pneumothorax becomes a tension pneumothorax when enough air accumulates to apply pressure to the heart and great vessels of the thorax creating shock. Signs and symptoms of pneumothorax include trouble breathing, diminished or absent breath sounds on affected side, hypotension with a narrowing pulse pressure, jugular vein distension, and tracheal deviation (a very late sign not easily recognized).

Provider level: PARAMEDIC

Indications
- Known or suspected trauma to the chest
- Systolic BP less than 90mmHg or other signs of significant shock
- Any sign or symptom attributable to a pneumothorax
- In the medical patient, the patient should be in extremis (code or near code).

Contraindications
- No absolute contraindications

Precautions
- The intercostal vessels run below the ribs. Needle entry should be just above the rib to avoid damaging these vessels
- Performing the procedure on a patient that has not been properly assessed may actually create a pneumothorax.

Procedure
1. If the patient is conscious, explain the procedure to the patient.
2. Select the site: Identify the second intercostal space on the anterior chest at the mid-clavicular line on the same side as the injury.
3. Cleanse the site with antimicrobial solution
4. Remove the red cap with a twisting motion and remove the 14 gauge Air Release System (ARS) from the case.
5. Insert the ARS into the skin over the superior border of the third rib, mid-clavicular line, and direct it into the intercostal space at a 90-degree angle to the chest wall. Ensure ARS entry into the chest is not medial to the nipple line and not directed toward the heart (refer to illustrations on Page 2).
6. Insert the ARS into the pleural space. Listen for the sudden escape of air as the tension pneumothorax is decompressed.
7. Remove the needle portion of the ARS and leave the catheter in place. Secure the catheter to the chest with tape. There is no need to create a “flutter valve” or attach a three-way stopcock to this device.
8. Frequently reevaluate the patient. If progressive respiratory distress develops and shock recurs, assume that the catheter is no longer effectively ventilating the pneumothorax. The rescuer may attempt to clear the catheter with a sterile saline flush, or repeat the procedure with another ARS placed adjacent to the first ARS.
9. If patient condition worsens, reassess for other potential causes.

Notes:
- A standard 14 gauge needle is not long enough to enter the pleural space of a significant portion of patients, thus the ARS should be used.
The oropharyngeal airway is the basic airway of choice for the unconscious patient. It should be inserted prior to using a BVM in order to hold the tongue away from the posterior pharynx, improve mechanical ventilation, and reduce the potential for gastric inflation.

**Provider level: ALL PROVIDERS**

**Indications**
- Unconscious patients with actual/potential airway impairment without a gag reflex; Meant for short-term use only.
- In the absence of a commercial ET tube holder, can be used as a bite block.

**Contraindications**
- Presence of a gag reflex
- Patients with an oropharyngeal anomaly such as trauma or a laryngectomy

**Precautions**
- May stimulate a gag reflex and potentiate vomiting. Suction should be available.
- Improper airway placement/size may cause oral trauma, tongue displacement, swelling of the epiglottis, and/or a subsequent increase in airway obstruction.
- Use a jaw thrust without head tilt for patients with possible cervical spine injury.

**Procedure**
1. Select the appropriate airway. Hold it against the side of the cheek with the flange parallel to the front teeth. Distal tip should extend to the angle of the patient’s jaw.
2. Use appropriate manual methods to open the airway. Suction if necessary.
3. Insert the airway with the proper technique based on the patient’s age:
   - Older than four years old
     a. Insert distal end of airway with tip pointing to roof of mouth or cheek.
     b. Gently advance airway until tip is past uvula.
     c. Move the tongue out of the way and gently rotate airway so tip is pointing downwards. The flange should rest on the patient’s lips.
   - Four years old and younger
     a. Depress tongue with tongue blade.
     b. Guide airway over back of tongue following natural curvature.
4. Do not tape airway in place. Suction as necessary to clear secretions.

**Discontinuation**
- If patient gags at any time during insertion, remove airway and prepare to suction.
- Frequently assess proper positioning by evaluating airway patency and air movement. If airway remains impaired, prepare intubation/non-visualized airway.

**Notes:**
- Document procedure and results, including any unusual circumstances and/or difficulties encountered.
Rapid sequence airway (RSA) management requires the use of sedation and paralysis. Once paralysis is induced, a patient has absolutely no ability to protect his/her own airway. Therefore, it is essential that the paramedics are near-certain that they will be able to successfully secure an airway in the patient for whom they choose RSA. A low GCS is NOT an indication for RSA. In fact, some studies suggest that RSA in the field for head injury may lead to worse outcomes. Therefore, RSA is only indicated if needed to ensure an adequate airway.

**Provider level: PARAMEDIC**

**Indications**
- Facial trauma with loss of airway
- Severe closed head injury with a GCS less than 8 AND inability to maintain airway
- Conscious or semi-conscious medical patients with impending respiratory arrest
- Any patient with the inability to ventilate adequately using basic techniques
- Patients who require immediate airway control, but are too awake to permit it.

**Contraindications**
- Neck deformity such as goiter, tumor, swelling, hematoma, or other that could prevent successful intubation
- Known history of malignant hyperthermia in patient or patient's family
- Only one paramedic at patient (this procedure requires two paramedics)
- Less than 1 year old (should avoid RSA in all pediatric patients if possible)

**Required Equipment**
- IV supplies
- Cardiac monitor
- Pulse oximeter
- End tidal CO₂ monitor
- Bag-valve mask
- Endotracheal tube
- 10mL syringe
- Laryngoscope
- Stethoscope
- Suction
- Rescue airway equip.
- i-gel® airway

**Procedure**
1. Two paramedics must be at the patient’s side. Discuss indications for RSA and assess the patient, identifying potential problems.
2. Pre-oxygenate with NRM/BVM (minimize bagging to avoid insufflating stomach).
3. Perform neuro assessment, including GCS and patient movement in extremities.
4. Administer **Etomidate 30mg IV (peds: 0.3mg/kg)** or **Ketamine 2mg/kg IV/IO** for sedation/induction.
5. Gently apply cricoid pressure.
6. Administer **Rocuronium 1mg/kg IV** (same dose for peds 1 year and older).
7. Intubate patient (no more than 2 attempts, each no longer than 30 seconds).
8. Assess and document tube placement (visualization, lung sounds, absent epigastric sounds, end tidal CO₂ waveform).
9. Secure tube and document, noting the position of the tube.
10. Once the airway is secure, continue sedation with **Fentanyl 50-100mcg IV (peds: 0.5-1 mcg/kg)** or **Midazolam 2-5mg IV (peds: 0.1mg/kg)**
Notes

♦ If endotracheal intubation fails after two attempts, immediately move to a rescue airway:
  o Preferably a non-visualized airway
  o Cricothyrotomy only if not able to ventilate by any other means
  o May use non-visualized airway primarily or after only one failed attempt
♦ All patients must be immediately and continuously monitored for end tidal CO₂.
♦ An intubation “attempt” is defined as any time an endotracheal tube is passed beyond the teeth/gum line.
  o A paramedic may adjust curvature of the stylet once during a defined attempt.
  o Attempting to visualize, clear and suction the airway for 30 seconds or longer is also considered an attempt.
  o The purpose of this strict definition is to protect the patient from hypoxia and hypoventilation during prolonged, repeated attempts at ET intubation.
  o If ET intubation is not successful within two attempts, a rescue airway should be used.
♦ The onset of Rocuronium is 1-2 minutes.
♦ The duration of Rocuronium is likely 30-40 minutes or longer.
♦ The duration of Rocuronium is such that the effect of Etomidate or Ketamine is likely to wear off before the Rocuronium does, making the need for empiric sedation essential once the patient is intubated.
♦ Fentanyl is the preferred agent for post-intubation sedation as there is likely a component of pain/discomfort with intubation and this medication is less likely than Midazolam to alter hemodynamics.
Providing effective ventilation and oxygenation to a patient is difficult with foreign material present in mouth, pharynx, or artificial airway. Proper suctioning must be employed to ensure that the patient’s airway remains clear and the risk of aspiration, and subsequent infection, is kept to a minimum.

**Provider level: ALL PROVIDERS**

**Indications**
- Foreign material in the upper airway, artificial airway, tracheostomy or stoma

**Contraindications**
- None

**Precautions**
- Prolonged suctioning may cause hypoxia. Limit suctioning to 15 seconds or less between ventilation intervals of 5-6 breaths with supplemental oxygen.
- Suctioning may result in vagal stimulation followed by bradycardia and/or hypotension. Cardiac monitoring should be conducted in conjunction with suctioning. This is especially important for pediatric patients.
- The rigid Yankauer tip may cause oral and pharyngeal trauma, and should therefore not be used in a moving vehicle.
- May stimulate vomiting

**Procedure**
1. Protect the airway prior to suctioning by turning the patient to the side, if possible.
2. Pre-oxygenate with 5-6 breaths of supplemental oxygen.
3. Select the proper suctioning device for the conditions present:
   - Liquids present in the mouth and pharynx
     a. Measure suction catheter from the corner of the mouth to the earlobe.
     b. Open the mouth using the cross-finger technique.
     c. Insert catheter tip into the area of the mouth/pharynx to be suctioned.
     d. Apply suction as the catheter is withdrawn from the mouth.
   - Liquids present in the tracheostomy, stoma, or ET tube, or artificial airway
     a. Use sterile technique and a new, sterile catheter for each suctioning event.
     b. Insert the catheter down the tube, or into the stoma opening, until it reaches the area where secretions/foreign matter is present.
     c. Apply suction to the catheter as it is withdrawn from the tube/stoma.
     d. If thick material is present, 2.5-5mL of NS may be instilled into the tube/stoma prior to suctioning to help liquefy the secretions.
   - Large particles in the oral pharynx
     a. Open the mouth using the cross-finger technique.
     b. Visualize the Yankauer tip, and apply suction as it is moved across the area to be suctioned.
     c. Limit suctioning to no more than 15 seconds at a time.
Suctioning

Procedure (cont.)  o  Infants in need of suctioning
   a. Suction the mouth first, then the nose.
   b. Squeeze air from the bulb syringe prior to insertion.
   c. Gradually reduce pressure on the bulb to provide suction while removing it from the mouth or nose.

Discontinuation  ♦  Patient begins to gag, cough, or is able to protect their own airway
♦  Using the cardiac monitor, maintain vigilance for bradycardia or hypoxia due to prolonged suctioning episodes.

Notes  ♦  Document procedure and results, including any unusual circumstances and/or difficulties encountered.
Patients suffering from disease of the upper airway, or those that require prolonged ventilatory support, may undergo a surgical procedure to create an alternate opening through which ventilation can more easily be achieved. Emergency care of a temporary tracheostomy, or a permanent tracheostomy (stoma) focuses on maintaining a patent airway and adequate oxygenation. EMS providers may find it necessary to remove or replace a tracheostomy tube should ventilation/oxygenation become compromised.

**Provider level: PARAMEDIC**

**Indications**
- Inadequate oxygenation or ventilation of a patient with a tracheostomy tube or stoma due to displacement, obstruction, or equipment failure.

**Contraindications**
- Patients with adequate oxygenation, whose tracheostomy tube/stoma is functioning properly.

**Precautions**
- Unrecognized misplacement of the tube may result in hypoxia and/or subcutaneous emphysema.
- Improper position of the tube may result in intubation of only the right mainstem bronchus.
- Insertion of the tube may cause soft tissue damage. Overinflation may cause barotraumas to the lungs.
- Suctioning removes air as well as secretions. Hyperventilate with supplemental oxygen after each procedure.

**Procedure**
- **With tracheostomy tube:**
  1. As needed, suction through inner cannula. 2.5-5mL of NS may be introduced prior to suctioning if secretions are very thick.
  2. If inner cannula is blocked or displaced, remove it and as needed, suction through tracheostomy tube.
  3. If tracheostomy tube is blocked or displaced and suctioning does not restore patency, remove the tube and see below (this should be a last resort).
  4. To ventilate through a patent tracheostomy tube, attach the bag-valve directly to the tube. An adapter off an ET tube may be needed to make the connection.

- **Without tracheostomy tube:**
  1. As needed, suction through the opening in the neck. 2.5-5mL of NS may be introduced prior to suctioning if secretions are very thick.
  2. If needed, intubate using an ET tube the appropriate size for the neck opening, usually size 6 or smaller.
    a. Pass the tube just until the balloon enters the trachea. Avoid placing the tube too deeply.
    b. Inflate the ET tube cuff with 6-8mL of air.
c. The ET tube can be cut to a shorter length, but only to the point where the cuff inflation line separates from the tube.

d. Intubation should be confirmed with auscultation and end-tidal CO₂ monitoring.

e. Secure the ET tube with tape.

Notes

♦ Patients with a temporary tracheostomy may also be intubated through the upper airway structures, however this may be difficult. If done, ensure that the cuff is placed below the opening in the neck and that the opening is blocked during ventilation through the ET tube.

♦ Document the procedure, position of the tube, and any unusual circumstances/difficulties.
Video Laryngoscopy (C-MAC® PM)

Endotracheal intubation provides a patient a secure and definitive airway. ET intubation is not always necessary to maintain an adequate airway and ventilate patients, but may be the ideal choice for select patients. ET intubation is one of the most complex psychomotor skills a paramedic practices and is associated with risk. While ET intubation can be very beneficial to a patient in need, its attempt can also be detrimental to a patient’s well being if complications are not minimized, recognized, and immediately addressed. Therefore, all available resources should be utilized to ensure successful airway management. This includes using the C-MAC® PM Video Laryngoscope whenever practical.

Provider level: PARAMEDIC

Indications
♦ Any patient for which endotracheal intubation is indicated and attempted
♦ Any patient for which direct visualization of the airway is needed to remove a foreign body

Contraindications
♦ None

Precautions
♦ No one tool can make intubation fail safe.

Procedure
1. Ensure that the battery is properly attached to the back of the C-MAC® PM screen.
2. Select the appropriate blade, line up the orientation pin, and connect the C-MAC® PM screen to the laryngoscope handle.
3. Ensure that both the screen and the blade light are illuminated.
4. Rotate the screen so that it may be viewed by both the intubating and assisting paramedics.
5. To capture a single image: briefly press down the multifunction BlueButton.
6. To begin video recording: press and hold the BlueButton for 2 seconds.
7. Proceed with intubation utilizing traditional direct laryngoscopy.
8. Assisting paramedic should watch screen and provide cricoid pressure as needed to assist in providing a clear view of the cords.
9. Endotracheal intubation will be confirmed by:
   a. Intubating paramedic visualizes tube passing through cords
   b. Assisting paramedic visualizes tube passing through cords on monitor
   c. Absent sounds over stomach
   d. Equal breath sounds
   e. Appropriate end-tidal CO₂ waveform
10. After intubation, to stop video recording: briefly press down the multifunction BlueButton.
11. Blade should be cleansed per standard operating procedure.

Notes:
♦ Intubation with this device should be routine.
♦ Intubation should routinely be a 2-paramedic skill.
♦ If there is difficulty with direct laryngeal visualization, the intubating paramedic should utilize the screen for a better view.
Early defibrillation is the single most important factor in determining survival from acute ventricular fibrillation and cardiac arrest. The AED may be applied and used by all KFD EMS personnel, allowing lifesaving intervention prior to the arrival of ALS care. Effective deployment and placement of the device is a skill that must be maintained in order for a defibrillating shock to be delivered in a timely fashion.

Provider level: ALL PROVIDERS

Indications
- Patients who are unconscious, apneic, and pulseless

Contraindications
- Patients who are conscious, breathing, or have a pulse

Precautions
- Always rely on signs and symptoms to determine patient’s status.
- Never rely on an electronic or mechanical device to determine the presence or absence of a pulse.
- Electrode pads intended for defibrillation should be attached only to pulseless, non-breathing patients.

Procedure
1. Turn on defibrillator, connect defibrillation pads to the device, and attach defibrillation pads to the patient as indicated on the packaging. NOTE: The exact position of the pads is not important as long as the heart is between them. Do not place over a pacemaker or medication patch.
2. After 2 minutes of CPR, stop CPR and direct everyone to stand clear of the patient.
3. Initiate rhythm analysis.
4. If shockable, give one shock and resume CPR immediately.
5. If not shockable, resume CPR immediately for 2 minutes. Check rhythm every 2 minutes.
6. Continue until arrival of ALS providers or the victim starts to move.

Discontinuation
- Consider termination of resuscitation and call medical control if:
  o Patient was provided with 20 minutes of resuscitative efforts
  o Arrest was not witnessed by EMS
  o No return of spontaneous circulation (ROSC) after 3 rounds of CPR
  o No AED shocks were delivered

Notes
- There are no age restrictions to the use of this device.
- Continue using a public-access defibrillator if it is attached to the patient prior to EMS arrival.
- If paramedic ALS care is not available, consider transporting the patient only after at least 15 minutes of resuscitative efforts.
- Document findings and operation of the AED, including any unusual circumstances and/or difficulties encountered.
During certain cardiac events the 12-lead ECG can provide the rescuer with specific information regarding the location and extent of cardiac damage. Although prehospital treatment of this patient is not based on the ECG alone, it allows all medical providers to create a timeline of the entire event, and to direct care accordingly.

**Provider level: PARAMEDIC**

### Indications
- Patients experiencing bradycardia, implanted defibrillator difficulty, SVT, wide-complex tachycardia, or any other medical condition that may affect the cardiovascular system.
- Patients with chest pain or any other symptom that may indicate cardiac ischemia (dyspnea, nausea, diaphoresis, etc.)

### Contraindications
- N/A

### Precautions
- Treat the patient, not the monitor.
- Reduce artifact by considering/eliminating potential causes
  - Poor electrode placement or contact with the skin
  - Cold patient
  - Patient tremors and movement

### Procedure
- 12-Lead ECG Placement
  1. Patient should be in semi-recumbent position
  2. Bare enough of the patient’s chest to ensure proper electrode placement while maintaining patient modesty.
  3. Prepare the patient’s skin by removing perspiration, roughing the skin, or shaving excess chest hair.
  4. Apply the leads to the patient in the following manner (refer to Figure 1 Figure 2 on Page 2:
     - V1 – Fourth intercostal space at the right sternal border
     - V2 – Fourth intercostal space at the left sternal border
     - V3 – Midway between V2 and V4
     - V4 – Fifth intercostal space, mid-clavicular line
     - V5 – Midway between V4 and V6
     - V6 – Horizontal plane of V4, mid-axillary line
     - LA – Left arm on the deltoid muscle
     - RA – Right arm on the deltoid muscle
     - LL – Left leg on the thigh or calf muscle
     - RL – Right leg on the thigh or calf muscle
12-Lead Acquisition
1. Connect the 12-lead cable to the 5-lead ECG cable
2. Press the 12-Lead soft key.
3. Instruct the patient to remain still as ECG baseline stabilizes.
4. Press the 12-Lead Capture soft key
5. Enter patient’s age and sex. This information must be entered in order for it to appear on the 12-lead report that is recorded.
6. “Acquiring 12-Lead” is then displayed. Ensure that the patient remains still while the 12-lead is being acquired.
7. Once the acquisition is complete, ECG analysis begins and is accompanied by the message “Saving 12-Lead Snapshot.” The patient need not be still during this time.

12-Lead Transmission to the Hospital
1. Press the 12-Lead Send (envelope) soft key.
2. Using the navigation buttons, select the destination hospital from the configured list.
3. Using the navigation buttons, select “Transmit.”

Accessing Stored 12-Lead Reports
2. Using the Navigation buttons, select the desired 12-lead.
3. Follow procedure above for transmission to the hospital
4. To print the desired 12-lead, press the 12-Lead Print (paper roll) soft key.
Discontinuation

♦ When the patient’s condition no longer warrants cardiac monitoring, press the green *Power* button and remove the cables from the electrodes. Leave the electrodes/pads in place on the patient in the event that the need for prehospital or emergency room monitoring/defibrillation/cardioversion arises again.

Notes

♦ Document findings from the cardiac monitor, including any unusual circumstances and/or difficulties encountered.
♦ Any time that the cardiac monitor is used to evaluate a patient’s cardiac rhythm the data must be uploaded to the *Elite Field*® medical report.
Valsalva Maneuver

Provider level: PARAMEDIC

Indications
♦ A patient experiencing a supraventricular tachyarrhythmia

Contraindications
♦ Patient unable to follow instructions
♦ Patient is hemodynamically unstable

Precautions
♦ Patients with unstable supraventricular tachycardias (patients who show signs of compromised cardiac output) should be treated with medication or synchronized cardioversion.

Procedure
1. Confirm that the ECG shows a narrow complex tachycardia with a rate of greater than 150 bpm.
2. Instruct the patient to take a deep breath and hold it.
3. Instruct patient to tighten all abdominal muscles as much as possible in a manner like having a bowel movement.
4. Alternate techniques may include asking the patient to:
   o blow through a straw
   o blow through the tip of a 10mL syringe in an attempt to move the plunger
5. Monitor patient carefully for ECG changes

Discontinuation
♦ The patient must be monitored during the procedure and the effort terminated immediately when the heart slows or if ectopic beats appear.
Auto-Injector Administration

Provider level: ALL PROVIDERS

Indications
♦ A patient who is:
  o In possession of their own, prescribed epinephrine auto-injector, AND...
  o Experiencing an allergic/anaphylactic reaction, AND...
  o Complaining of respiratory distress (bronchospasm), or signs and symptoms of shock (hypotension)

Contraindications
♦ There are no absolute contraindications to epinephrine administration in life-threatening emergencies.
♦ Infection in the area of injection (relative).

Precautions
♦ Monitor for the possibility of inadvertent injection into a blood vessel.
♦ Absorption may be delayed in a poor-perfusion state. For an anaphylactic patient, consider IV/IO route (PARAMEDIC) if patient is in shock and does not rapidly improve with IM epinephrine.

Procedure
1. Explain the procedure to the patient and place in a position of comfort.
2. Verify that the auto-injector belongs to the patient and confirm dosage, type, and route of medication administration.
3. Bare and cleanse the patient’s mid-anterolateral thigh.
4. Remove the safety cap from the auto-injector and place the tip of the auto-injector against the injection site.
5. Support the thigh with a free hand and press auto-injector firmly against the patient’s thigh until the injector activates.
6. Hold injector in place until medication is injected (approximately 10 seconds).
7. Withdraw the auto-injector and dispose of it in an appropriate manner.
8. Gently massage injection site to distribute medication and to speed absorption.

Notes:
♦ PARAMEDIC – IV fluid resuscitation should be initiated for all hypotensive patients.
♦ Document procedure and results, including any unusual circumstances and/or difficulties encountered.
Cyanokit

Provider level: PARAMEDIC

Indications
♦ Suspected or known cyanide poisoning with:
  o Altered mental status
  o Seizures
  OR
  o Other signs of hypoperfusion/shock, including cardiac arrest
  AND
  o Was in a closed space fire or had a known exposure to cyanide

Contraindications
♦ Awake patient

Precautions
♦ Patients may have allergic reaction
♦ Patients may have an increase in blood pressure
♦ Should be administered through a dedicated IV line
♦ Cyanokit is not compatible with many other medications

Required Equipment
♦ Established dedicated IV line
♦ Cyanokit
♦ 1 vial Hydroxocobalamin, 5mg
♦ Transfer spike
♦ IV tubing
♦ 250mL normal saline

Procedure
1. Reconstitute medication
   a. Add 250mL NS to vial using transfer spike. Fill to line on vial, keeping vial in upright position.
   b. Gently rock or rotate vial for 30-60 seconds to thoroughly mix solution. Do not shake.
2. Infuse vial over 15 minutes using vented IV tubing (which can be accomplished with the line wide open)
3. Peds: 70mg/kg is the total dose (maximum of 5gm)

Notes:
♦ Document procedure and results, including any unusual circumstances and/or difficulties encountered.
After exhausting all other medication route options, or when establishing another route has been difficult or impossible, endotracheal administration of certain medications is indicated. Rescuers must remember that absorption, and subsequent effects, of medications may be delayed.

**Provider level: PARAMEDIC**

**Indications**
- A need to administer certain medications when other options have been exhausted

**Contraindications**
- Medication not approved for endotracheal administration
- Medications may not be administered via the igel® airway.

**Precautions**
- Large quantities of medications administered in this fashion may damage lung tissue.
- Minimize the time that the patient is not receiving ventilations by having all equipment/medications/flushes prepared prior to removing the bag-valve device.
- Only the following medications may be administered (per KFD PCGs):
  - Atropine
  - Epinephrine
  - Narcan

**Procedure**
1. Stop ventilating (and chest compressions if in progress), and disconnect the bag-valve device.
2. Inject the medication into the endotracheal tube.
   - < 5mL medication ....................... uncuffed ET tube.......................flush with 5mL NS
   - < 5mL medication .......................cuffed ET tube.......................flush with 10mL NS
   - > 5mL medication ......................any ET tube .........................no flush necessary
3. Reconnect the bag-valve device and slowly ventilate 5x, then continue to ventilate per AHA guidelines.

**Discontinuation**
- If another, more secure/direct route of medication administration has been attained.

**Notes:**
- Medication doses must be 2 – 2.5 times the IV/IO dose.
- Document procedure and results, including any unusual circumstances and/or difficulties encountered.
Intramuscular administration of medication is used for the delivery of certain drugs not recommended for other routes of administration, such as intravenous, oral, or subcutaneous. The intramuscular route offers a faster rate of absorption than the subcutaneous route, and muscle tissue can often hold a larger volume of fluid without discomfort. In contrast, medication injected into muscle tissues is absorbed less rapidly and takes effect more slowly than medication that is injected intravenously. This is favorable for some medications.

Provider level: ALL PROVIDERS

Indications
♦ Patients requiring administration of medications through the muscle tissue

Contraindications
♦ No absolute contraindications

Precautions
♦ IM administration of medication should not be used if the patient is lacking the muscle mass needed to promote absorption and circulation of the medication.

Procedure
1. Draw up appropriate amount of medication, leaving approximately 1/10mL of air in the syringe to facilitate removal of all the medication from the syringe.
2. Choose injection site based on patient’s muscle density, type of medication, and patient preference. See diagrams on the following page.
3. Prepare site for injection by briskly rubbing with alcohol prep pad.
4. Spread the skin and insert needle with a firm thrust at a 90-degree angle, bevel up.
5. Release skin and inject the medication slowly.
6. Withdraw the needle, press alcohol prep over the puncture site, massage the area, and ensure patient comfort.
7. Dispose of needle and syringe in appropriate container.

Notes:
♦ Document procedure and results, including any unusual circumstances and/or difficulties encountered.
♦ Per CDC, because there are no large blood vessels in the recommended sites, aspiration is not necessary
♦ Medication volume should be limited to:
  o Deltoid: 1mL
  o Thigh & Hip: 2 - 5mL

  NOTE: In emergent administration of Ketamine, 10mL may be administered in one shot
Intramuscular Injection Sites

- **HIP**: Anterior Iliac Crest
- **THIGH**: Side Line, Top Center Line, Top of Knee
- **DELTOID**: Acromion Process, Blood Vessels
There are many instances during patient care when attaining IV/IO access can prove to be difficult or place EMS providers in an unsafe position. By eliminating the need to establish an IV, the nasal-mucosal atomization device (MAD) delivers certain medications in a fine mist, which enhances absorption and improves bioavailability for fast and effective drug delivery.

**Provider level: PARAMEDIC**

**Indications**
- Patient condition requires administration of Fentanyl, Midazolam, or Naloxone
- Establishing IV access is difficult or unsafe

**Contraindications**
- Epistaxis
- Nasal congestion or discharge

**Precautions**
- Nasal administration may not be effective for every patient.
- Proximity to the nose and face of a combative patient may place EMS providers in a position from which a patient may bite or spit. Use caution in this situation.
- Nasal administration is less likely to be effective if the patient has been abusing inhaled vasoconstrictors such as cocaine.

**Procedure**
1. Explain the procedure to the patient.
2. Draw up appropriate volume of solution and eliminate remaining air.
3. Connect the MAD to the syringe.
4. Place the MAD tip in the nostril.
5. Compress the syringe plunger briskly to spray atomized solution into the nasal cavity. Administer a maximum of 1mL of solution in each nostril.
6. Repeat in the opposite nostril if necessary.

**Discontinuation**
- If a combative patient continues to place EMS providers in jeopardy, reevaluate medication administration route options.

**Notes:**
- Document procedure and results, including any unusual circumstances and/or difficulties encountered. This is especially important for situations in which physical/chemical restraint techniques are used.
Intraosseous (IO) infusion is another tool by which rescuers may administer medications when other routes prove to be difficult or impossible.

**Provider level: PARAMEDIC**

**Indications**
- An IO infusion should be used only when at least one IV attempt has been made and IV/IO medications are a necessary intervention to prevent death or disability.

**Contraindications**
- An IO infusion should **not** be established if:
  - An IV can be established in less than 2 minutes with 2 attempts
  - Patient is stable
  - No life-preserving medications are going to be infused through it
- Fracture suspected in target bone
- Artificial limb or joint (knee or shoulder replacement)
- Infection over the desired site
- IO, or attempted IO insertion, in the same bone within the last 48 hours
- Inability to definitively locate landmarks

**Precautions**
- Due to the anatomy of the IO space, flow rates may differ from those achieved with IV catheters.
- Approximate flow rates:
  - Tibia: 1L/hour (greater than some 24ga IVs)
  - Proximal humerus: 5L/hour

**Procedure**
1. Assemble all equipment, including syringes, flushes, and pressure infuser.
2. Identify the site (see the following page for diagrams):
   - Proximal tibia - anteromedial surface, 1-2cm below the tibial tuberosity
   - Distal tibia - anteromedial surface, 1-2cm above the medial maleollus
   - Proximal humerus - most prominent aspect of the greater tubercle, 1-2cm above the surgical neck
3. Prep the site with an alcohol prep pad.
4. Stabilize the extremity. Gently push the needle set through the soft tissue at the insertion site until the needle set tip touches the bone. Direct away from the growth plate. Inspect to ensure that at least one black line is visible above the skin. If no black line is visible, consider a longer needle set or alternative site.
5. Penetrate the bone cortex by squeezing driver's trigger and applying gentle, consistent, steady pressure. Allow the driver to do the work.
6. Release the driver’s trigger and stop the insertion process when:
   - In adult patients – the hub is almost flush with the skin
   - In pediatric patients – you feel a decrease in resistance indicating the needle set has entered the medullary space. Stop when you feel the **pop** or **give**.
7. Remove the stylet. The needle should feel firmly seated in the bone (1st confirmation of correct placement). Immediately dispose of stylet in appropriate sharps container.

8. Place EZ-Stabilizer dressing over the needle hub. Attach EZ-Stabilizer dressing by pulling the tabs to expose the adhesive and adhere to skin.

9. Attach primed EZ-Connect extension set to the needle hub. Firmly secure by twisting clockwise.

10. Flush catheter vigorously with 5-10mL NS (adults), 2-mL NS (infant/child). (2nd confirmation of correct placement).

11. Place a pressure bag on the solution being infused and monitor site and limb for extravasation or other complications.

12. NOTE: Absence of blood or inability to withdraw aspirate at the catheter hub does not mean the insertion was unsuccessful. Site placement can also be confirmed by the ability to administer pressurized fluids, as well as noting the pharmacologic effects of medication administration after flow is established.

**Discontinuation**

- Infiltration, excessive bleeding, redness, swelling, or other abnormal conditions

**Notes:**

- Document procedure and results, including any unusual circumstances and/or difficulties encountered.

---

**Intraosseous Infusion Sites**

- **PROXIMAL TIBIA**
- **DISTAL TIBIA**
- **HUMERUS HEAD**
The best method by which to deliver medication directly into the bloodstream is an IV bolus. The medication can then be distributed to the entire body in the shortest amount of time possible.

**Provider level: PARAMEDIC**

### Indications
- Whenever an immediate drug effect is necessary, or to achieve peak drug levels in the bloodstream in patients with impaired absorption
- Administration of drugs that can’t be diluted
- Administration of drugs which can’t be given IM because they are toxic to muscle tissue

### Contraindications
- Infiltration of the IV
- Injury to, or blockage of, the venous system proximal to the injection site

### Precautions
- IV medications are delivered directly into the circulatory system and can produce an immediate effect. Signs of an acute allergic reaction, or anaphylaxis, can develop rapidly.

### Procedure
1. Explain the procedure to the patient and confirm allergies.
2. Check the compatibility of the medication with the IV solution and other medications.
3. Expel the air from the syringe.
4. Close the roller clamp on the IV tubing and wipe the injection port with alcohol prep.
5. Attach the syringe to the Luer-Lok med port and inject the drug at the appropriate rate.
6. Open the roller clamp and readjust IV flow rate.
7. Observe for drug effects immediately after drug administration.

### Discontinuation
- Watch for signs of extravasation. If it occurs, stop the injection and estimate the amount of infiltration.

### Notes
- Document procedure and results, including any unusual circumstances and/or difficulties encountered.
During long transport times, or when administering large amounts of fluid, the entire contents of the patient’s primary IV bag may be used. Additional fluids may be administered via the primary IV line after exchanging the empty IV bag with a new one. The primary concern during this procedure is maintaining the sterility of the equipment as well as avoiding the introduction of contaminants/air into the IV set.

**Provider level: PARAMEDIC**

**Indications**
- A patient who requires additional IV solution beyond the original IV bag

**Contraindications**
- None

**Precautions**
- Use sterile technique, and avoid the introduction of contaminants/air into the IV set.

**Procedure**
1. Shut off the flow of fluid, using the roller clamp on the primary IV line, to prevent air from entering the IV tubing as the solution is being changed.
2. Invert the nearly empty bag to prevent any remaining fluid from running out and remove the IV tubing spike from the bag.
3. Use extreme care to ensure that the IV tubing spike does not touch anything to contaminate the sterile field.
4. Insert the IV tubing spike into the IV port of the new bag by pushing and twisting the spike until it punctures the seal of the port.
5. Squeeze the drip chamber as necessary to fill it approximately half full of fluid.
6. Reestablish the proper drip rate by adjusting the roller clamp.

**Discontinuation**
- If patient no longer requires IV therapy, see the *IV - Discontinuing* skill standard.

**Notes:**
- Document procedure and results, including any unusual circumstances and/or difficulties encountered.
## IV - Discontinuing

Any patient no longer requiring IV therapy (medications or fluids) may elect to have their IV removed and the therapy discontinued. An IV site is a potential port of entry for infection, and should be treated and dressed as would be any wound.

### Provider level: PARAMEDIC

<table>
<thead>
<tr>
<th>Indications</th>
<th>♦ A patient who no longer requires IV medications or fluids, and who does not have the potential for needing medications or fluids to treat their acute condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contraindications</td>
<td>♦ Patients who may need medications/fluids in the near future, even if their current condition may seem stable.</td>
</tr>
<tr>
<td>Precautions</td>
<td>♦ Use sterile technique and treat the IV site as an open wound.</td>
</tr>
</tbody>
</table>

### Procedure

1. Stop the flow of fluid by closing the roller clamp.
2. Gently remove the tape securing the IV tubing, and the transparent dressing covering the catheter to expose the venipuncture site.
3. Cover the venipuncture site with a gauze square and apply gentle pressure as the catheter is removed.
4. Inspect the catheter to ensure it is complete, noting any abnormalities.
5. Affix an adhesive bandage that will continue to apply pressure until bleeding has stopped.
6. Properly dispose of all biohazard materials/sharps and monitor patient for bleeding.

### Discontinuation

♦ N/A

### Notes

♦ Document procedure and results, including any unusual circumstances and/or difficulties encountered.
Intravenous access is important to many of the patients encountered in the prehospital setting. Once IV access is obtained, the rescuer is then able to give IV medications, provide fluid requirements, maintain blood pressure, and maintain or restore electrolyte balance.

**Provider level: PARAMEDIC**

**Indications**
- Any patient in need of, or that may potentially need, fluids and/or medications

**Contraindications**
- Infection in the area of insertion

**Precautions**
- Complications may include hematoma formation, cellulitis, thrombosis, phlebitis, sepsis, and embolism. Proper and careful technique must be used to minimize potential complications.

**Procedure**
- Assemble and prepare the IV administration set.
  1. Inspect the IV solution.
  2. Open the administration set, maintaining sterility of the end caps/connectors.
  3. Slide the roller clamp to close off the IV tubing.
  4. Hang the IV bag and remove the plastic cap from the port.
  5. Insert the spike into the port by pushing and twisting the spike until it punctures the seal of the port.
  6. Squeeze and release the drip chamber as necessary to fill it half full of fluid.
  7. Keeping the protective cap in place, open the roller clamp and allow the fluid to completely fill the line. Remove air bubbles by “flicking” the line.
  8. Once the line is completely filled with fluid, and any larger air bubbles have been removed, close the roller clamp and place the primed line in a position for use.

- Establish IV access
  1. Explain the procedure to the patient and obtain consent if appropriate.
  2. Select a site and apply tourniquet 4-8 inches above the site.
  3. Select a vein based on structure, location, and medication to be administered.
  4. Maintaining sterility, inspect the end of the needle and catheter. Slightly twist the catheter on the needle to ensure the catheter moves freely on the needle.
  5. Cleanse the selected site with an alcohol prep.
  6. Using your non-dominant hand, stabilize the vein at the site.
  7. Insert the needle, bevel side up, either next to or over the vein.
  8. Advance the needle and catheter until a “flash” is seen in the blood chamber. Continue to advance the needle slightly to ensure that the tip of the catheter is seated completely inside of the vein.
  9. Advance the catheter along the needle until the hub meets the patient’s skin.
  10. Occlude the vessel with direct pressure just proximal to the end of the catheter.
11. Push the button to retract the needle and dispose of it appropriately.
12. Attach the IV tubing and secure the Luer-Lok.
13. Remove the tourniquet.
14. Open the roller clamp and observe the flow of fluid into the drip chamber.
15. If the IV does not flow properly:
   o Ensure that the tourniquet is not still in place
   o Slowly withdraw the catheter slightly. The tip may be occluded by a valve or the side of the vein.
16. Before securing, inspect the site for signs of infiltration and determine proper flow.
   o If IV cannot be made to flow properly or infiltration is observed:
     • Discontinue IV immediately
     • Begin the process anew using another site.
   o If IV is observed to flow properly use a gauze pad or alcohol prep pad to wipe away fluid or blood that may be present in order to dry the site sufficiently that tape will adhere.
17. Cover insertion site with transparent dressing and secure IV tubing to patient’s extremity.
18. Monitor patient for fluid overload or other complications.

Discontinuation
♦ Infiltration, redness, swelling.

Notes
♦ Document procedure and results, including any unusual circumstances and/or difficulties encountered.
The very critical issues of medical errors and patient safety have received a great deal of attention. In November 1999, the Institute of Medicine (IOM) released a report estimating that as many as 98,000 patients die as the result of medical errors in hospitals each year. These same sorts of errors can, and do, occur in the pre-hospital setting as well.

A major Federal initiative has been launched to reduce medical errors and improve patient safety. A major component of this initiative is to identify all real and potential errors (near-misses). The purpose of this identification is not intended to be punitive, but rather as a tool to develop process and procedure to minimize error.

**Provider level: ALL PROVIDERS**

**Indications**
- Errors in drug choice, dosage, and/or route including administration of medication to which a patient is known to be allergic

**Precautions**
- Documentation in the patient care report should be factual and objective
- Do not document in the patient care report assessment of error, excuse, or blame

**Procedure**
1. Upon patient delivery, verbally notify the RN or physician staff at the receiving facility if an error impacts or has a potential to impact patient care.
   - This verbal report shall be factual and not include any type of admission of guilt or conjecture regarding reason for error or blame.
   - If an error is discovered after patient delivery, provide a verbal report to the receiving physician or RN as soon as possible.
2. The written patient care report should accurately reflect which medicine was given, including dose and route, but no comment should be made as to whether it was an error or not.
3. Within 24 hours of the error, send a written report to KFD EMS administration.
   - Documentation shall include verification of verbal reports as identified above.
   - Information relating to the error should at no time be included in the patient care record beyond the objective, factual documentation of which medication was administered.
4. If the error has the potential to cause significant patient harm, KFD EMS administration must be notified immediately.
   - Depending on the potential severity of the impact, KFD EMS administration will contact the Medical Director.

**Notes:**
- In the spirit of process improvement, near-misses are to be reported as well.
Medications are delivered to prehospital patients by a variety of methods, each with their own nuance. Proper care when preparing the medication for delivery to the patient will minimize the likelihood of contamination, unnecessary waste, and medication errors.

Provider level: ALL PROVIDERS

Indications ♦ Any patient in need of medications provided by KFD EMS personnel

Contraindications ♦ N/A

Precautions ♦ Prior to preparing and administering any medication, confirm the “6 Rights”:
  o Patient
  o Medication (per PCG; Is it expired?; Is it contaminated in any way?)
  o Dose
  o Time (rate of administration/proper sequence in PCG)
  o Route
  o Documentation
♦ Select the appropriate size syringe, able to contain the volume necessary.
♦ Select a needle of the appropriate size and length.
♦ Maintain sterile field when attaching the needle to the syringe.

Procedure ♦ Syringe and Vial
  1. Remove the protective cap from the vial and wipe the rubber stopper with alcohol prep.
  2. Remove needle protector from the needle and draw in a volume of air equivalent to the volume of fluid to be withdrawn from the vial.
  3. Insert the needle through the stopper and depress the plunger of the syringe to inject the air into the vial.
  4. Keeping the needle in the fluid, pull back gently on the plunger to draw slightly more than the ordered amount of medication into the syringe.
  5. Withdraw the needle, direct it upward, and tap the syringe to move any air bubbles to the top.
  6. Depress the plunger of the syringe until only the desired amount of medication remains in the syringe.

♦ Syringe and Ampule
  1. Hold the ampule upright and gently “flick” it to move any medication trapped in the head of the ampule.
  2. Use a gauze square to grasp the head of the ampule and break the head from the base.
  3. Using a filter needle and syringe, withdraw slightly more medication than is ordered for administration. Discard any remaining medication and dispose of
4. Remove the filter needle used to withdraw the medication from the ampule and replace it with a needle that is appropriate for administration. If using a Luer-Lok, a new needle is not needed.

5. Direct the syringe upward, and tap it to move any air bubbles to the top.

6. Depress the plunger of the syringe until only the desired amount of medication remains in the syringe.

♦ Tubex® Injector
1. Fully retract the plunger rod and insert the preloaded medication cartridge into the Tubex® ribbed collar.
2. Rotate the ribbed collar to tighten the cartridge into the handle.
3. Rotate the plunger rod clockwise to attach it to the cartridge.
4. Remove the needle end cap and purge any excess air and medication from the cartridge.

♦ Carpuject® Syringe System
1. Rotate the two sections of the Carpuject® handle until they are at 90-degree angles to one another.
2. Fully retract the plunger rod and insert the preloaded medication cartridge into the Carpuject® device with the plunger end inserted first, and the needle end resting firmly against the base.
3. Rotate the top half of the Carpuject® handle clockwise until it aligns with the bottom half. This will tighten the cartridge into the handle.
4. Rotate the plunger rod clockwise to attach it to the cartridge.
5. Remove the needle end cap and purge any excess air and medication from the cartridge.
Metered-Dose Inhalers

Provider level: ALL PROVIDERS

Indications
♦ A patient who is in possession of their own, prescribed metered-dose inhaler (MDI) of a beta-agonist and/or ipratropium, and is in need of the medication contained within due to an acute issue.

Contraindications
♦ N/A

Precautions
♦ Ensure that the MDI presented to the EMS provider has been prescribed specifically for the patient and for the signs and symptoms being witnessed.

Procedure
1. Inspect the medication and verify that the inhaler belongs to the patient.
2. Shake the inhaler canister vigorously.
3. Remove the supplemental oxygen from the patient if needed for the administration.
4. Explain the procedure to the patient:
   o Forcibly exhale.
   o Place lips around the inhaler.
   o Activate inhaler while taking a deep inhalation.
   o Hold breath as long as comfortably able.
5. Replace oxygen and encourage patient to take several deep breaths.
6. Repeat steps 3-5 to obtain ordered dosage. Wait 1-2 minutes between inhalations.
7. Provide an ongoing assessment of your patient to identify any effects of the medication.

Discontinuation
♦ Desired effects have been achieved
♦ Patient has an adverse reaction to the medication

Notes:
♦ Document procedure and results, including any unusual circumstances and/or difficulties encountered.
Aerosolized administration is commonly used when it is necessary to deliver medications directly to the pulmonary system to assist the patient with difficulty breathing. Medications delivered in this manner are beneficial to the patient in that they facilitate direct bronchodilation and subsequent improve oxygenation.

**Provider level: ALL PROVIDERS**

**Indications**
- Patients experiencing bronchospasm as a result of injury or disease

**Contraindications**
- None (relative to this method of administration)

**Precautions**
- Medications administered in this manner commonly precipitate tachycardia, and potentially cardiac ectopy. Patients with a history of cardiac disease should be monitored closely while receiving any type of nebulized medication.
- Patients in severe distress may not be able to properly assist in this method of medication administration. Attaching the nebulizer device to an oxygen mask or an in-line system (in the case of intubated patients) will help to ensure proper delivery.
- As equipment, suppliers, and delivery devices change, it is incumbent upon the rescuer to ensure familiarization with the equipment currently being used. Review manufacturer and in-house literature regarding assembly and use of oxygen delivery devices currently being used.

**Procedure**
1. Place the appropriate dose of medication in the nebulizer jar.
2. Attach the cap to the nebulizer jar with a clockwise rotation.
3. Insert the nebulizer into the tee (or directly into the base of an oxygen mask)
4. Connect the mouthpiece and corrugated reservoir to the tee.
5. Attach oxygen tubing to the nebulizer jar and oxygen source. Set the flow to 6-8LPM.
6. Instruct patient to take deep breaths and to hold the medication in the lungs as long as comfortably able before exhaling and repeating the process.
7. If necessary before and during treatment, tap the device to ensure that a quality aerosol mist is being produced.

**Discontinuation**
- If patient develops tachyarrhythmia or cardiac ectopy as a result of the medication, discontinue the treatment.

**Notes**
- Document procedure and results, including any unusual circumstances and/or difficulties encountered.
Provider level: ALL PROVIDERS

Indications
- Patients in need of Aspirin, Nitroglycerine, or Glucose under KFD guidelines
- Conscious patients with an intact gag reflex

Contraindications
- Altered mental status
- Aspirin: Allergy; pregnancy; physician’s orders
- NTG: Viagra, Cialis, or similar medication, taken within the last 48 hours
  Systolic BP < 100mmHg

Precautions
- Review and confirm the “6 Rights” of medication administration
- There are no precautions that are specific to this method of administration

Procedure
1. Prepare and inspect the medication.
2. Explain the procedure to the patient.
3. Administer the medication
   a. Oral: Chew the medication and swallow (with a small amount of water if necessary).
   b. Sublingual: Place the medication under the tongue and do not swallow for 10 seconds.
4. Assure the medication is swallowed, chewed, or dissolved.
5. Provide an ongoing assessment to identify desired/untoward effects of the medication.

Discontinuation
- N/A

Notes:
- Document procedure and results, including any unusual circumstances and/or difficulties encountered.
KFD Patient Care Guidelines indicate the use of Amiodarone 150mg IV in 100mL 0.9NS over ten minutes (2-3 macrodrops per second) for the treatment of recurrent runs of ventricular tachycardia with suspected cardiac ischemia. EMS providers must be able to efficiently prepare and set up this solution in order to administer the medication at the proper time during each of these algorithms.

**Provider level: PARAMEDIC**

**Indications**

- Patients requiring administration of an additional IV medication over time, in conjunction with their primary IV line

**Contraindications**

- None specific to this method of administration

**Precautions**

- Proper technique must be used to minimize the opportunity for infection and introduction of foreign material/air into the IV system.

**Procedure**

- Add desired medication to IV fluid:
  1. Prepare additive/medication as directed by package insert (if necessary), then withdraw the ordered amount with the appropriate size syringe and needle.
  2. Cleanse top of med-port on IV bag with alcohol swab.
  3. Inject additive through the med port.
  4. Gently rotate the solution to facilitate disbursement of the additive/medication.
  5. Mark/label the medication solution with adhesive label or permanent marker.
  6. Dispose of needle and syringe in appropriate container.
- Establish a piggyback line in conjunction with the primary IV line:
  1. Verify that the patient’s primary IV site is patent.
  2. Insert spike of the IV tubing into the port of the prepared medication bag, fill drip chamber and purge air from the line.
  3. Swab the med port of the primary IV line for three seconds. Attach the end of the piggyback line to the med port of the primary IV line using the Luer-Lok.
  4. Turn off the primary IV line, open the roller clamp on the medication line, and adjust the medication flow rate as needed (in the case of the aforementioned Amiodarone dose, set the piggyback flow at 2-3 macrodrops per second).
  5. Turn on the primary IV line and set the desired drip rate.

**Discontinuation**

- Observe patient for medication infiltration or any untoward effects of the drug.

**Notes**

- Document procedure and results, including any unusual circumstances and/or difficulties encountered.
Intravenous access is important to many of the patients encountered in the pre-hospital setting. In many circumstances it is not necessary to administer large volumes of fluids to the patient via conventional IV tubing. The use of a saline lock provides the rescuer with a simple, cost-effective method by which IV access may be obtained.

Provider level:  PARAMEDIC

Indications  ♦ Any patient in need of, or that may potentially need, IV medications

Contraindications ♦ No absolute contraindications

Precautions ♦ Maintain aseptic technique during the procedure when handling equipment and syringe/tubing connections

Procedure ♦ Assemble and prepare the saline lock.
1. Unpackage the short segment of extension tubing, maintaining sterility of the endcaps/connectors.
2. Attach a pre-filled 10mL syringe of NS to the Luer-Lok connector of the tubing.
3. Prime the tubing with approximately 1-2mL NS. Ensure that all the air bubbles have been purged from the tubing, and allow a small amount of fluid to drip from the opposite end.
4. Leave the syringe connected, and place the system (“saline lock”) in a position for use.
6. Attach and secure the saline lock.
1. Attach the saline lock to the IV catheter.
2. Remove the tourniquet.
3. Move the tubing clamp to the open position. Draw back on the syringe until a small return of blood is seen in the tubing.
4. Flush the remainder of the NS from the syringe and return the tubing clamp to the lock position.
5. If the saline lock does not flow properly:
   o Ensure that the tourniquet is not still in place
   o Slowly withdraw the catheter slightly. The tip may be occluded by a valve or the side of the vein.
6. Before securing, inspect the site for signs of infiltration and determine proper flow.
   o If the saline lock cannot be made to flow properly or infiltration is observed:
     • Discontinue the saline lock immediately.
     • Begin the process anew using another site.
   o If the saline lock is observed to flow properly, use a gauze pad/alcohol prep pad to wipe away fluid/blood, in order to dry the site for tape adhesion.
7. Cover insertion site with transparent dressing and secure the saline lock to the patient's extremity.

Discontinuation

♦ Infiltration, redness, swelling

Notes

♦ Document procedure and results, including any unusual circumstances and/or difficulties encountered.
Blood Glucose Monitoring

Provider level: ALL PROVIDERS

Indications

♦ Altered level of consciousness
♦ Seizure
♦ Diabetic patient with signs/symptoms of abnormal blood glucose levels

Contraindications

♦ No absolute contraindications

Precautions

♦ The test strip is designed to “sip” the blood into the sample tip. Do not drop blood directly on the flat surface of the test strip.
♦ Do not press the test strip against the patient’s finger while testing, as this may block the sample tip.

Procedure

1. Determine that the test strips are clean, undamaged, and have not expired.
2. Insert the square end of the test strip into the meter, with the metallic sensor material facing upward. The meter will turn on, and an image of a blood drop will immediately flash on the screen, indicating that the meter is ready for the application of a blood sample.
4. Twist the protective end off of the spring-loaded lancet.
5. Place the open end of the lancet against the patient’s cleaned finger and press firmly to activate the device.
6. To help form the blood drop, stroke the patient’s hand and finger toward the puncture site. Do not squeeze around the puncture site.
7. Touch the tip of the test strip lightly to the drop of blood until the meter beeps.
8. After the five-second countdown, read the result.
9. Remove the test strip and dispose along with the lancet in an appropriate sharps container.

Discontinuation

♦ If an error code appears, remove the test strip, discard, and begin the procedure with a new strip. If the error continues, consult the owner’s manual for assistance.

Notes

♦ Common error codes:
  o “HI”: Blood glucose level of greater than 600mg/dL
  o “LO”: Blood glucose level of less than 10mg/dL
  o “E2”: Insufficient blood drop for an accurate test; Remove strip and retest
  o “E11”: Abnormal result; Remove strip and retest
Following intubation, many patients may experience gastric distention due to air being forced into the stomach during the process of ventilation. Placement of a gastric tube (oro-/naso-) helps to decompress the stomach and reduces the chance for vomiting and aspiration. Evacuation of the stomach contents (air/food) allows the diaphragm to move more freely, ultimately making ventilation easier.

**Provider level: PARAMEDICS**

**Indications**
- All pediatric patients that have been intubated using a cuffed ET tube or an i-gel® if it has a gastric port
- Adult patient being ventilated with an advanced airway who have a full/distended stomach which impedes ventilation
- Patients with an advanced airway who are having return of stomach contents

**Contraindications**
- Procedure must NOT be performed on patient with an uncuffed ET tube.

**Precautions**
- Insertion of a nasogastric tube may cause epistaxis.
- Procedure may stimulate vomiting.
- Accidental passage of the tube into the trachea may stimulate coughing and block the airway.

**Procedure**
1. Estimate the amount of tubing needed by measuring from the patient’s ear lobe to the tip of the nose, and then to the umbilicus.
2. Lubricate the tube with water-soluble lubricant.
3. Insert the tube:
   - Nasally - into the patient’s nostril, directing the advancement straight back along the floor of the nasal passage
   - Orally – into the patient’s mouth, directing the advancement through the esophagus
4. Advance the tube until one of the following occurs:
   - The measured length of the tube has been reached
   - Gastric contents appear in the gastric tube.
   - Gastric distention has been relieved
5. Check the posterior pharynx to be sure that the tube is not curled up in the back of the mouth. If so, withdraw and reinsert, using the Magill forceps as necessary.
6. Inject approximately 30mL of air into the tube while listening over the stomach with the stethoscope to confirm placement
7. Secure the tube with tape and attach to suction.

**Notes**
- If the i-gel® airway is used, insert the lubricated tubing into the gastric access lumen and suction as necessary.
- The smallest i-gel® airway does not have a gastric port.
Pulse oximetry is a valuable tool when used in appropriate circumstances. It is a noninvasive monitoring tool that allows the EMS provider to document yet one more vital sign while developing an overall impression of the patient’s condition.

**Provider level: ALL PROVIDERS**

**Indications**
- May be used on all patients for whom a measurement of oxygen saturation of arteriolar hemoglobin is necessary for patient care

**Contraindications**
- None

**Precautions**
- False low readings may result from:
  - Poor perfusion of the extremity (vasoconstriction) due to cold temperatures, weak pulses, and certain medications
  - Dry blood or nail polish on the fingernail
  - Incorrect sensor application and patient movement
  - Blood pressure measurement from the same limb
- Misleading readings may result from:
  - Carbon monoxide poisoning (CO is bound to the hemoglobin, which displaces oxygen)
  - Patients with low hemoglobin or low circulating blood volumes (the hemoglobin may be completely saturated, but the overall quantity is diminished)

**Procedure**
1. Explain the procedure to the patient.
2. Remove any nail polish or foreign material from the selected digit as needed.
3. Place the sensor over the end of the digit, ensuring that the cable passes over the top of the patient’s hand.
4. Confirm that the red sensor light is on and that the cord is properly seated in the monitor.
5. Verify that the pulse signal being received is of good quality before documenting the percentage value displayed on the monitor.

**Discontinuation**
- Remove sensor, or change digits, if pulse oximetry interferes with other aspects of patient care.

**Notes:**
- Document procedure and results, including any unusual circumstances and/or difficulties encountered.
- Do not document readings from a poor quality tracing.
The use of a temporal artery thermometer is an accurate, non-invasive method by which a patient’s body temperature can be measured. This information may then be used to alert the EMS provider of the possibility of the presence of an infectious process occurring within the patient, and assist in directing the use of the appropriate level of personal protective equipment. As an additional vital sign, determining the patient’s core body temperature may also prove to be helpful during the assessment of a victim experiencing an environmental emergency.

**Provider level: ALL PROVIDERS**

<table>
<thead>
<tr>
<th>Indications</th>
<th>♦ May be used on all patients for whom a measurement of body temperature is necessary for patient care</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contraindications</td>
<td>♦ None</td>
</tr>
<tr>
<td>Precautions</td>
<td>♦ False low readings may result from:</td>
</tr>
<tr>
<td></td>
<td>o Scanning too fast or taking multiple readings which may cool the skin</td>
</tr>
<tr>
<td></td>
<td>o Not keeping the button depressed</td>
</tr>
<tr>
<td></td>
<td>o Sliding the thermometer down the side of the face</td>
</tr>
<tr>
<td></td>
<td>o Not keeping the probe flush on the skin</td>
</tr>
<tr>
<td></td>
<td>o Dirty lens</td>
</tr>
<tr>
<td></td>
<td>o Sweaty forehead</td>
</tr>
<tr>
<td></td>
<td>♦ False high readings may result from:</td>
</tr>
<tr>
<td></td>
<td>o Any covering, hair, hat, bandages, etc. would prevent the heat from dissipating.</td>
</tr>
<tr>
<td></td>
<td>Measure only the exposed area of the forehead.</td>
</tr>
<tr>
<td>Procedure</td>
<td>1. Explain the procedure to the patient.</td>
</tr>
<tr>
<td></td>
<td>2. If the patient is dirty, bloody, or otherwise a decontamination hazard, apply the probe cap prior to initiating the measurement.</td>
</tr>
<tr>
<td></td>
<td>3. Place the probe flush on the center of the forehead, depress the button, and hold the button depressed the entire time.</td>
</tr>
<tr>
<td></td>
<td>4. Slide the probe in a straight line across the forehead to the hairline.</td>
</tr>
<tr>
<td></td>
<td>5. Without releasing the button, lift the probe from the forehead and touch half way down behind the ear on the mastoid process.</td>
</tr>
<tr>
<td></td>
<td>6. Slide the probe down to the little soft depression on the neck behind the earlobe.</td>
</tr>
<tr>
<td></td>
<td>7. Release the button and read temperature.</td>
</tr>
<tr>
<td></td>
<td>8. Between patients, clean the probe and lens of the thermometer with an alcohol swab only. The lens may be cleaned with a Q-tip. Use no other cleaners or disinfectants.</td>
</tr>
</tbody>
</table>

These standards approved by Ben Weston, MD, MPH, Medical Director
Universal precautions are to be taken by KFD EMS providers to prevent the exposure of personnel to potentially infectious body fluids.

### Provider level: ALL PROVIDERS

<table>
<thead>
<tr>
<th>Indications</th>
<th>♦ All KFD EMS providers will routinely use appropriate barrier precautions to prevent skin and mucous membrane exposure when anticipating contact with patient blood or other body fluids.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contraindications</td>
<td>♦ N/A</td>
</tr>
<tr>
<td>Procedure</td>
<td>♦ General Precautions</td>
</tr>
<tr>
<td></td>
<td>○ Non-latex gloves will be worn when in contact with blood or body fluids, mucous membranes, or non-intact skin of all patients, for handling items or surfaces soiled with blood or body fluids and for performing venipunctures or other vascular access procedures.</td>
</tr>
<tr>
<td></td>
<td>○ Masks and protective eye wear or face shields will be worn to prevent exposure of mucous membranes (mouth, nose, and eyes) of the EMS provider during procedures likely to generate droplets of blood or other body fluids.</td>
</tr>
<tr>
<td></td>
<td>○ Liquid-impervious gowns will be worn during procedures likely to generate droplets of blood or other body fluids (e.g. OB delivery).</td>
</tr>
<tr>
<td></td>
<td>○ A pocket or bag-valve-mask must be kept readily available to eliminate the need for mouth-to-mouth resuscitation.</td>
</tr>
<tr>
<td></td>
<td>○ A high-efficiency particulate air (HEPA) respirator will be worn when in contact, in an enclosed area, with a patient suspected of having pulmonary tuberculosis, meningitis, or any other communicable disease transmitted by airborne or droplet method.</td>
</tr>
<tr>
<td></td>
<td>♦ Hand Washing</td>
</tr>
<tr>
<td></td>
<td>○ KFD EMS providers will conduct proper hand washing procedures after every patient encounter.</td>
</tr>
<tr>
<td></td>
<td>○ A non-water-based antiseptic cleaner is to be used at the emergency scene whenever body secretions or blood soils the EMS provider’s skin. Skin surfaces will be washed with soap and water at the first opportunity.</td>
</tr>
<tr>
<td></td>
<td>○ Liquid hand soap is preferable to bar soap for hand washing. If bar soap is used, it should be kept in a container that allows water to drain away. The bar should be changed frequently.</td>
</tr>
<tr>
<td></td>
<td>○ Paper towels will be available to dry hands. A “community” cloth towel is not to be used.</td>
</tr>
<tr>
<td></td>
<td>○ Hand washing is not to be done in a sink used for food preparation or clean up.</td>
</tr>
<tr>
<td></td>
<td>♦ Disposal of Contaminated Sharps</td>
</tr>
</tbody>
</table>
|                            |   ○ Every effort is to be made to avoid injuries caused by needles and other
sharp instruments contaminated with blood or body fluids. Safety-engineered sharps should be used whenever practical.

- If a contaminated needle receptacle is not readily available, the cap of the contaminated needle is to be placed on a flat surface and (with one hand) “scooped up” with the contaminated needle to avoid the potential of a needle stick into the hand holding the cap.

- Appropriately labeled bio-hazard sharps containers should be disposed of at an appropriate reception site when they are ¾ full. Needles or other contaminated sharps should never protrude from the bio-hazard sharps container.

Notes

♦ Any prehospital EMS provider who has reason to suspect that he/she may have sustained a significant exposure shall follow the KFD procedure for reporting, testing, and follow-up.
Vital signs are taken to determine the patient's physiological status and are re-evaluated periodically to determine the improvement, maintenance, or deterioration of the patient's condition.

**Provider level: ALL PROVIDERS**

<table>
<thead>
<tr>
<th>Indications</th>
<th>♦ All patients under the care of KFD EMS personnel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contraindications</td>
<td>♦ No absolute contraindications</td>
</tr>
</tbody>
</table>
| Precautions                      | ♦ An oversized blood pressure cuff will give a false low reading.  
|                                  | ♦ An undersized blood pressure cuff will give a false high reading. |
| Procedure                        | ♦ Blood Pressure                                   |
|                                  | 1. Position patient’s arm at heart level.           |
|                                  | 2. Choose a cuff that covers approx. 2/3 of the patient’s arm and that will attach securely. The circumference of the arm should fall between the indicator markings on the cuff to ensure appropriate size used. |
|                                  | 3. Wrap cuff around the patient’s arm, centering the “Artery” indicator over the brachial artery. |
|                                  | 4. Place stethoscope in ears with earpieces pointing forward and test for proper sound conduction. |
|                                  | 5. Auscultate the brachial artery, or palpate the radial artery pulse and inflate the cuff until 30mmHg above the loss of the pulse. |
|                                  | 6. Deflate the cuff slowly, listening for the brachial pulse (by auscultation) or feeling for the radial pulse (palpation). |
|                                  | 7. The pressure indicated when the first pulse is heard is the systolic pressure. If unable to hear the pulse, the first pulse felt at the radial artery is the systolic pressure. For example, document this as 120/P. |
|                                  | 8. If auscultating, the pressure indicated when the pulse is no longer heard is the diastolic pressure. For example, document this as 120/70 |
|                                  | ♦ Pulse                                           |
|                                  | 1. Place index and middle fingers over radial, carotid, brachial, or femoral pulse. |
|                                  | 2. Count the pulsations for 15-60 seconds.         |
|                                  | 3. Determine the rate for 1 minute.                 |
|                                  | 4. Assess the rhythm (regular or irregular), quality (amplitude), and equality of pulses. |
|                                  | ♦ Respiration                                      |
|                                  | 1. Without being obvious, count respiratory rate for 15-60 seconds by observing chest rise and fall or placing a hand on the patient’s chest wall. |
|                                  | 2. Determine the rate for 1 minute.                 |
3. Assess pattern, depth of respiration, use of accessory muscles, bilateral chest expansion, and inspiratory/expiratory ratios.

♦ Orthostatic Vital Signs – “Positive Orthostatics” is indicated by a drop in blood pressure and elevation in pulse with a change from supine to a sitting or standing position. It may be accompanied by dizziness, blurring of vision and/or syncope.
1. Only perform if supine blood pressure is not low and pulse is not elevated.
2. Take and record the blood pressure (both systolic and diastolic) and pulse rate with the patient supine.
3. Have the patient sit/stand, assisting as necessary. Observe carefully for associated signs and symptoms. Protect the patient from falling, and do not stand a patient that is faint or dizzy.
4. After 30 seconds, repeat the blood pressure and pulse reading. A drop of systolic pressure of 20mmHg or an increase in pulse of 20bpm is significant.

Notes
♦ Every patient should have a complete set of vital signs documented.
♦ Vital signs should be repeated after interventions which may affect vital signs.
♦ Vital signs should be repeated on all unstable patients.
Extremity Injuries

Kenosha Fire Department
Emergency Medical Services
Skill Standards

These standards approved by Ben Weston, MD, MPH, Medical Director

Provider level: ALL PROVIDERS

Indications
♦ A patient who shows signs and symptoms of an extremity injury requiring immobilization

Contraindications
♦ Unusual patient positioning
♦ Compound fractures in which the splinting method would affect CMS
♦ Any interference with hemorrhage control
♦ Never neglect necessary resuscitation (ABCs) to attend to an extremity injury.

Precautions
♦ Circulation, movement, and sensation (CMS) must be thoroughly assessed and documented before and after splinting is complete.
♦ Watch for the development of hypovolemic shock due to internal hemorrhage associated with pelvic, hip, or femur fracture.
♦ Maintain manual stabilization of the extremity until the splinting process is complete.
♦ Straighten severely angulated fractures unless resistance is felt.
♦ Joint injuries should be immobilized in the position found. If circulation is compromised, make one attempt to restore circulation by repositioning the injury site.

Procedure
1. Expose all injuries, removing footwear as appropriate to assess CMS.
2. For bone injuries, the joint above and below should be immobilized.
3. For joint injuries, the splint should incorporate the bone above and below.
4. Select a splinting device which will most effectively accomplish immobilization.
   o Pillow: wrap around ankle or wrist and secure with tape or bandage
   o Board splint: generally use two boards, one on each side of the injury. Be sure to have the padded side to the patient. Secure with bandage.
   o Prosplint: position appropriately and secure with Velcro®
5. After placing the splint, recheck CMS.

Discontinuation
♦ Splint should be removed as needed to visualize any possible uncontrolled hemorrhage.

Notes
♦ Document procedure and results, including any unusual circumstances and/or difficulties encountered
Helmet Removal

Provider level: ALL PROVIDERS

Indications  ♦ Potential C-spine injury patients, wearing a helmet, who require it be removed in order to facilitate proper airway management and spinal immobilization.

Contraindications  ♦ Consideration should be given to leaving a well-fitting helmet, which allows ready access to perform all necessary airway maneuvers, in place.

Precautions  ♦ The ability to maintain an airway is of ultimate importance when managing helmeted patients.

Procedure  ♦ Open-Faced Helmets / Half Helmets
  1. EMT 1 – Provide manual stabilization, from the cephalic position, by placing one hand on each side of the helmet with the fingers on the mandible.
  2. EMT 2 – Remove the face shield, then unfasten the restraining strap.
  3. EMT 2 – Place one hand on each side of the patient’s neck with thumbs resting against the angle of the jaw and the fingers extending behind the occiput to support the patient’s head and maintain manual stabilization. Maintain manual stabilization of the patient’s head and neck throughout the removal process.
  4. EMT 1 – Remove the helmet by grasping the straps or edges of the helmet to spread it as it is gently pulled along the long axis of the body and tilted slightly forward.
  5. EMT 1 – Resume control of manual stabilization.
  6. EMT 2 – Select and apply an appropriately sized cervical collar in preparation for moving the patient to a longboard.
  7. EMT 1 & 2 – Move the patient to a longboard using appropriate technique.

  ♦ Closed-Face Helmet / Full-Face Helmet
  1. Patient is positioned on a longboard using appropriate technique.
  2. While maintaining manual stabilization, the head end of the longboard is elevated approximately three inches from the horizontal and firmly blocked in that position.
  3. EMT 1 – Maintain manual stabilization from the cephalic position.
  4. EMT 2 & 3 – Straddle the patient and the longboard.
  5. EMT 2 – Grasp the patient under the armpits
  6. EMT 3 – Grasp the patient at the pelvis
  7. EMT 1 – Give the signal to the other EMTs who will move the patient up on the longboard until the lower rim of the helmet is just beyond the top edge of the board.
  8. EMT 3 – Continue to stabilize the patient’s body.
Helmet Removal

9. EMT 2 – Place one hand on each side of the patient’s neck with thumbs resting against the angle of the jaw and the fingers extending behind the occiput to support the patient’s head and assume maintain manual stabilization.

10. EMT 1 – Slowly release manual stabilization when advised by EMT 2.

11. EMT 1 – Insure that any object which could obstruct helmet removal (glasses, microphones, headset, etc.) has been removed from the patient and/or helmet, then loosen and unfasten the helmet restraining strap.

12. EMT 1 – Remove the helmet by grasping the straps or edges of the helmet to spread it as it is gently pulled along the axis of the body and tilted slightly rearward to clear the patient’s nose. Once the lower edge of the helmet has cleared the patient’s nose, tilt the helmet slightly forward and remove it.


14. EMT 2 – Grasp patient under the armpits.

15. EMT 1 – Signal all EMTs to slide the patient down the longboard until he/she is properly positioned.

16. C-collar is applied and patient is secured to the longboard using the appropriate technique.

♦ Football Helmet

1. EMT 1 – Provide manual stabilization by placing one hand on each side of the helmet with the fingers on the mandible.

2. EMT 2 – Remove the face shield by using the appropriate tools. Unfasten the chin strap at the side snaps and remove it completely.

3. EMT 2 – Using a trauma shears, pry the lower lateral interior pads from the helmet and remove them. If the helmet is equipped with an air bladder, release the air valve of the helmet and deflate the bladder.

4. EMT 2 – Place one hand on each side of the patient’s neck with the thumbs resting against the angle of the jaw and the fingers extending behind the occiput to support the patient’s head and maintain neutral alignment. Maintain manual stabilization of the patient’s head and neck throughout the removal process.

5. EMT 1 – Remove the helmet by grasping its edges to spread it as it is gently pulled along the long axis of the body and tilt slightly forward.


7. EMT 2 – select and apply an appropriately sized cervical collar in preparation for moving the patient to a longboard.

8. EMT 1 & 2 – move the patient to a longboard using appropriate technique.

9. EMT 2 – Pad under the patient’s head to maintain neutral alignment.

10. Secure patient to longboard using appropriate technique.

♦ Proper immobilization often requires the patient’s body or head to be padded to maintain appropriate neutral position.

♦ If a trainer is present, utilize their expertise in assisting the removal process.
Kendrick Extrication Device

Provider level: ALL PROVIDERS

Indications
♦ The Kendrick Extrication Device (KED) should be used to provide rigid stabilization of the cervical and thoracic spine during the movement of a patient with a suspected significant spinal injury from a sitting to supine position.

Contraindications
♦ Need for rapid extrication
♦ If able to remove patient in a safer fashion with control of the neck when needed
♦ Those who meet selective c-spine criteria for not immobilizing

Precautions
♦ Chest and abdominal straps may restrict respirations.
♦ Use of the chinstrap may prevent patient from opening mouth if vomiting occurs.

Procedure
1. Maintain stabilization of the neck, supporting it in a neutral position until the head is secured in the KED.
2. Assess neurologic status, especially peripheral sensation and movement.
3. Apply a rigid cervical collar of appropriate size.
4. Slip the KED behind the patient without disturbing the patient’s position.
5. Wrap the side panels of the KED around the torso and slide the KED upward until the tops of the side panels are firmly engaged in the patient’s axillae.
6. Secure the straps in the following order (using the memory aid).
   o My Baby Has Great Teeth:
   o M-iddle ... B-ottom ... H-ead ... G-roin ... T-op
7. Tighten all straps and tie upper extremities together.
8. Use the support loops on the KED to lift the patient and slide onto a long board.
9. Loosen the pelvic straps when the patient is supine.
10. Secure the patient to the long board with appropriate straps.
11. Loosen the chest strap to make respiration easier.
12. Reassess neurologic status, especially peripheral sensation and movement.

Discontinuation
♦ Once the splint is in place, it is rarely removed in the prehospital setting.

Notes
♦ Document procedure and results, including any unusual circumstances and/or difficulties encountered.
Provider level: ALL PROVIDERS

Indications
♦ Patients requiring immobilization of a suspected extremity fracture

Contraindications
♦ Deformity not conducive to using this device
♦ Uncontrolled bleeding if splint will hinder ability to provide direct pressure.

Precautions
♦ Always ensure circulation, movement, and sensation (CMS).

Procedure
1. Cover any open wound with a sterile dressing, control bleeding, and support the fracture site during the splinting process.
2. Check distal CMS prior to movement and splinting.
3. Straighten any severe angulation with gentle longitudinal traction above and below the break. Maintain traction while splint is applied and fixed in place by second rescuer.
4. If resistance is felt when attempting to straighten, stop attempt and splint in position found.
5. Apply splint to the extremity, extending from the joint above through the joint below the fracture site.
6. Secure splint to the extremity with Velcro straps. Do not secure straps over wounds or exposed bone.
7. Check distal CMS after splinting and frequently thereafter.
8. Loosen straps on splint if necessary to maintain circulation.
9. Use sling and swath to further stabilize upper extremity injuries.

Discontinuation
♦ Splint should be adjusted/removed as needed to visualize any possible uncontrolled hemorrhage.
♦ Once the splint is in place, it is rarely removed in the prehospital setting.

Notes
♦ Document procedure and results, including any unusual circumstances and/or difficulties encountered.
Provider level: ALL PROVIDERS

Indications
- Hip fracture
- A condition that makes it difficult to move the patient without significantly increasing the patient’s level of pain

Contraindications
- None

Precautions
- Use caution not to pinch patient’s skin or tissue.

Procedure
1. Assess and record CMS in all four extremities.
2. If spinal immobilization is indicated, one EMS provider must maintain manual stabilization of the head and neck until movement is complete.
3. Select and apply cervical collar as needed.
4. Adjust stretcher to height of patient.
5. Place one half of stretcher on each side of the patient.
6. Slide stretcher halves under patient and latch head end together.
7. Close the foot end of the stretcher, being careful not to pinch the patient.
8. Secure patient to longboard/CID using appropriate technique as indicated.
9. Reassess and record CMS in all four extremities.
Selective Spinal Immobilization

Spinal immobilization is designed to prevent or limit neurologic injury secondary to trauma. Immobilization is generally uncomfortable and can be quite painful, thus minimizing its use in a rational, evidence-based manner is appropriate. In the past, only emergency physicians were allowed to clinically clear patients for spinal injury. However, recent studies have shown that this task can be performed safely and efficiently by EMS personnel in the field.

**Provider level: ALL PROVIDERS**

**Indications**
- Any patient that you may consider immobilizing due to mechanism

**Contraindications**
- Any patient with known or suspected cervical spine injury
- Any patient with altered mental status
- Any patient with distracting injury
- Any patient that is under the influence of alcohol or pain medication
- Any patient with neurological deficit (anesthesia, paresthesia, weakness, or paralysis)
- Any patient that has pain, tenderness, or deformity in the spine
- Any patient that cannot perform range of motion due to pain or stiffness

**Precautions**
- It is believed that these criteria will miss some cervical spine injuries. However, it is believed that any missed injuries will not be adversely affected by lack of immobilization. Regardless, care should be taken in handling any patient.
- Immobilization is not without risk, thus should not be implemented “just to be safe.”

**Procedure**
1. Evaluate patient’s mental status. Any patient with altered mental status or under the influence of alcohol or other substance with the following factors requires spinal immobilization:
   - Any head, spine, or significant torso injury
   - Unconsciousness if trauma likely
   - Other severe, distracting injury
2. Examine the patient. The following require spinal immobilization:
   - Pain, tenderness or deformity to spine
   - Abnormal neurologic findings (anesthesia, paresthesia, weakness, or paralysis)
   - Pain or restriction of range of motion

**Discontinuation**
- Immobilization devices should be removed:
  - as needed to visualize any possible uncontrolled hemorrhage
  - if there is any compromise to airway or breathing
Sling and Swathe

Provider level: ALL PROVIDERS

Indications
- Injury to the shoulder girdle and/or upper extremity requiring immobilization

Contraindications
- None

Precautions
- In order to be most effective, patient must be in a sitting position.
- Does not alone provide rigid protecting to an injured extremity.

Procedure
1. Assess and record CMS in injured extremity.
2. Fold forearm of injured side across chest, with the hand slightly elevated toward the opposite shoulder.
3. Tie the pointed end of a triangular bandage into a knot to form a cup
4. Place bandage under and over the arm with the cup end at the elbow and two free ends around the back of the neck
5. Tie the two free ends together tightly enough to support the extremity. The knot should not be directly over the spine. Pad the knot as necessary for comfort.
6. Leave fingers exposed to check circulation.
7. Wrap another triangular bandage around the injured arm and body as a swathe to secure the injured arm to the body.
8. Transport in a sitting or semi-sitting position if patient’s condition permits.
9. Check CMS after splinting and frequently thereafter.

Notes
- Document procedure and results, including any unusual circumstances and/or difficulties encountered.
The STS is designed to overcome many of the limitations of conventional traction splints:

- The STS stays anatomically contained from the patients hip to ankle and thus does not extend outside of the backboard, stretcher, or stokes basket.
- Traction adjustments needed while en route are made at the patient’s hip, not jammed against the door at the patient’s foot.
- The STS is not contraindicated in lower leg injury or amputation and its design allows the ankle strap to be alternately positioned proximal to the calf, allowing femur traction to still be applied, and leaves the lower leg accessible for other splinting or bandaging.
- The STS can be used when a lower leg injury is suspected, but the “ankle” strap MUST be placed proximal to any other suspected fracture (ankle fracture, OK, proximal tibia fracture, NO).
- The STS works with both adult and pediatric patients.

**Provider level: ALL PROVIDERS**

**Indications**
- Suspected mid-shaft femur fracture

**Contraindications**
- Injury to the knee
- Suspected hip injury or gross deformity

**Precautions**
- Circulation, movement, and sensation (CMS) must be thoroughly assessed and documented before and after splinting is complete.
- Watch for the development of hypovolemic shock due to internal hemorrhage associated with femur fracture.
- Maintain manual stabilization until the splinting process is complete.
- Straighten severely angulated fractures unless resistance is felt.

**Procedure**

1. Wrap the ankle strap comfortably around the patient’s ankle. Ensure that the Velcro® tab holding the receiver is positioned correctly so that the molded piece does not contact the patient’s leg.
2. Apply the groin strap by sliding the male end of the strap under and around the patient’s thigh, attach it to the female end and cinch the strap snugly.
3. Open the distal clamp, extend the pole, and insert it into the receiver on the ankle strap.
4. Apply course traction by extending the poles manually until resistance is felt, then lock the clamp down.
5. Apply fine traction by opening the proximal clamp and pulling the cord that extends from the end of the pole until:
   a. the first rescuer reports that mechanical traction equals manual traction.
   b. the patient acknowledges pain relief.
6. Lock down the proximal clamp and readjust traction as necessary during transport.
Provider level: ALL PROVIDERS

Indications
♦ Patient with a suspected spinal injury that must be immobilized prior to transport

Contraindications
♦ None

Precautions
♦ Continuously monitor patient and assess the potential for vomiting. Paramedics may administer an anti-emetic to reduce the chances of vomiting and aspiration while the patient is immobilized in the supine position.
♦ Ensure that longboard straps do not restrict respiratory effort.

Procedure
♦ EMT 1
1. Apply manual stabilization of the patient’s head and neck throughout the entire process.
2. Release manual stabilization only when patient is immobilized on a longboard, and his/her head is secured to a cervical immobilization device (CID).
♦ EMT 2 and 3
1. Assess and record CMS in all four extremities.
2. Place longboard next to the patient on the side opposite the rescuers.
3. Both rescuers kneel alongside the patient with EMT 2 at the patient’s chest and EMT 3 at the patient’s thighs.
4. EMT 2 places the patient’s arm nearest the rescuers either over the patient’s head or alongside the patient’s body with the hand against the thigh.
5. EMT 2 and 3 reach across the patient and place their hands along the patient’s body, evenly spaced between shoulder and knees.
6. On signal from EMT 1, EMT 2 and 3 roll the patient towards them as a unit, maintaining spinal alignment.
7. While the patient is rolled onto his/her side, EMT 2 and 3 slide the backboard towards the patient, ensuring that the patient’s head is in the proper location.
8. On signal from EMT 1, EMT 2 and 3 roll the patient back onto the longboard.
9. If centering of the patient is necessary, on signal from EMT 1 slide patient with gentle, even motion while maintaining spinal alignment.
10. EMT 3 – secure patient to longboard with straps located at the chest, pelvis, thighs, and below the knees.
11. EMT 2 – select and apply an appropriately-sized cervical collar, then secure the patient’s head to the longboard with a CID.
12. Reassess and record CMS in all four extremities.

Notes
♦ Document procedure and results, including any unusual circumstances and/or difficulties encountered.
Stair Chair Operation

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One of the greatest dangers that EMS providers face on a daily basis is the potential for a back injury due to the movement of patients. Uneven terrain, confined spaces, and patient size are only a few of the factors that need to be taken into account when deciding how a patient can be moved most safely. Use of the stair chair enables operators to move patients up or down stairs with minimal lifting, significantly reducing the risk of operator back injury.

Provider level: ALL PROVIDERS

Indications
- Patients who cannot be assisted in walking requiring transfer up or down a set of stairs
- Movement of a patient from a location where the cot is not able to be maneuvered.

Contraindications
- None

Precautions
- Always use proper lifting technique, regardless of the equipment being used.
- At any time, when removing a patient from a challenging location, make use of additional resources (additional manpower, outside agencies, etc.) to minimize risk to the rescuers involved.
- An unlocked chair can fold during use, causing injury to the patient or operator. Always make sure the chair is locked in the unfolded position before using.
- Reassure patient during movement, and prevent patient from altering the center of gravity by the proper use of all provided straps.

Procedure
- Unfold the chair
  1. Stand behind the chair and apply the wheel locks.
  2. Pull the backrest and the lower extension handles apart
  3. The automatic locking mechanism will engage when fully separated.

- To fold the chair up
  1. Buckle the restraint straps and fold them neatly to prevent them from interfering with proper folding of the chair.
  2. Stand at the side of the chair and pull up on the red lock bar at the rear of the chair. Tip the chair forward.
  3. Fold the seat up to the backrest until the front legs lock in the clips on the bottom of the seat tube.

- Transferring the patient on and off the chair
  1. Place the chair beside the patient and inform him/her of intended actions.
  2. Apply the wheel locks and open the restraint straps.
  3. Transfer the patient to the chair using proper lifting technique.
  4. Secure the patient using the restraint straps.
Stair Chair Operation

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♦ Transporting on flat surfaces
  1. Use the locking rear extending handles
  2. The upper control can also be used in any position to roll and guide the chair.

♦ Transporting the patient down stairs using the Stair-TREAD™
  1. Release the upper control handle by pulling on the release cable.
  2. Squeeze the red track release bar to release the Stair-TREAD™.
  3. Extend the lower lift handles
  4. Confirm that all handles and track are locked in position before proceeding.
  5. Roll the chair to the edge of the stairs and align it squarely with the edge of the first step.
  6. Head-end operator (HEO) tilts the chair back just far enough to allow the Stair-TREAD™ to contact the floor.
  7. With the foot-end operator (FEO) holding the lower lifting handles, maintain the angle and guide the chair over the edge of the stairs allowing the Stair-TREAD™ to engage the first step.
  8. Both operators – glide the chair down the stairs until the treads are level across the edges of two or three steps.
  9. HEO applies slight downward pressure while the FEO applies slight upward pressure to keep the chair from rocking forward as it glides down the stairs.
  10. When the track reaches the last step, the FEO releases the front handles and the HEO allows the chair to tip forward until all four wheels are on the ground.

♦ Carrying the patient upstairs
  1. Roll the chair to the bottom of the stairs with the patient’s back to the stairs.
  2. FEO – extend the foot end lift handles and verify the handles are locked.
  3. HEO – unfold the head end lift handles and verify the handles are locked.
  4. FEO faces up the stairs. The HEO may either face backward for improved patient monitoring, or forward for an improved view of the stairs/obstacles.
  5. Both operators – simultaneously lift the chair, using the head and foot end lift handles and following proper lifting techniques.

Notes
♦ Release the red track release bar before clicking the Stair-TREAD™ into the locked position. Failure to follow this procedure could result in the track failing to lock.
Bleeding Control

Bleeding control is a priority, as it is essential in stabilization of the ABCs. Many wounds’ bleeding is self-limited, thus not life-threatening. Don’t get distracted by large, gruesome-looking wounds. Active control is necessary for wounds that have ongoing significant bleeding. Some of these wounds can be very small and may otherwise not attract that much attention.

Provider level: ALL PROVIDERS

Indications

♦ Any externally bleeding wound

Contraindications

♦ None

Precautions

♦ Universal precautions / body substance isolation (BSI)
♦ Be careful of sharp objects that may still be present within a wound.
♦ Bandaging can cover wounds and hide ongoing bleeding.

Procedure

1. All wounds should be visualized for the potential source and type of bleeding.
   o Remove all clothes and other coverings.
   o Venous bleeding is often characterized by a slow “ooze.”
   o Arterial bleeding is typically fast and pulsatile.
   o When blood pressure is low, arterial bleeding may no longer be pulsatile.
   o Both types of bleeding can be life-threatening.
2. If a wound does not demonstrate active bleeding, it may be covered with a bandage when time permits.
3. Wounds with active bleeding shall be controlled with direct pressure.
   o The most effective direct pressure is a finger applied directly to the source of bleeding and this will be necessary for significant arterial bleeds.
   o Sometimes the wound bed has multiple sources of bleeding, and the application of broad pressure to the entire wound bed with a large bandage is appropriate.
4. For life-threatening bleeding that cannot be controlled with direct pressure, apply a tourniquet. See the Combat Application Tourniquet skill standard for guidance.
5. Tourniquets may also be used on extremity wounds when there are not enough providers to dedicate to necessary continuous direct pressure (mass-casualty).
6. Wounds shall be monitored regularly for any signs of continued bleeding.
7. Neurovascular status distal to all extremity wounds shall be assessed and documented upon bleeding control, as well as at time of delivery to the hospital.

Discontinuation

♦ Bandages that become blood-soaked shall be removed if concerned for ongoing bleeding, and the wound shall be reassessed for bleeding control.
♦ Tourniquets shall be removed only on the order of a physician.
**Provider level: ALL PROVIDERS**

**Indications**
- Continued life-threatening extremity wound bleeding despite direct pressure
- Extremity wound bleeding and insufficient number of providers to apply direct pressure (mass-casualty)

**Contraindications**
- Not to be used for bleeding wounds on the head, neck, or torso
- Do not apply to extremity that has a dialysis fistula/graft unless a mass casualty incident or direct pressure (one finger directly applied to the source of the bleeding) is absolutely failing to control bleeding (which would be exceedingly rare).

**Precautions**
- May be painful
- May cause tissue damage
- May lead to ischemia of the extremity with prolonged use
- IVs placed distal to a tourniquet will not work
- Deciding to place a tourniquet is making a decision to save a life at the potential expense of the limb

**Procedure**
1. Verify that direct pressure is not working or is not an option.
2. Route the self-adhering band around the extremity proximal to the bleeding wound (ideally 5-10cm proximal to the wound)
3. Pass the free running end of the band through the inside slit of the buckle, and pull tight.
4. Feed the free-running end of the band down through the outside slit of the buckle, pull tight, and secure.
5. Twist the rod until bleeding stops.
6. Lock the rod in place under the clip and close the Velcro band over the rod.
8. Make sure tourniquet is visible to all and is not covered.
9. Make sure receiving hospital or helicopter is aware of tourniquet placement and document.

**Discontinuation**
- Tourniquets shall be removed only on order of a physician.

**Notes**
- A second tourniquet may be added if the first fails to control bleeding.
Provider level: ALL PROVIDERS

Indications
◆ A patient who has experienced an injury, or suspected injury, to the eye.

Contraindications
◆ No absolute contraindications

Precautions
◆ If the eyeball is not directly involved, use direct pressure to control bleeding.
◆ If eyeball injury is suspected, close eye and apply loose dressing.
◆ If chemical burn is involved, irrigate eye with normal saline continuously.
◆ If thermal burns are involved, apply dressing moistened with sterile saline.
◆ If light burns are involved, cover eyes with moist, lightproof pads.
◆ Never touch the globe of any eye with a penetrating injury.
◆ The finished bandage should hold the eye and/or penetrating object in place.
◆ Maintain verbal and physical contact with the patient as you explain your actions.
◆ If necessary, restrain the patient's hands to prevent touching of the injury area.

Procedure
◆ A brief exam for visual acuity should be performed, if possible.
  1. Can the patient see normally? Colors? Light?
  2. Is vision blurred?
  3. Is the patient able to count fingers?
◆ Non-penetrating Injury
  1. Have patient close eyes and apply sterile surface of dressing to injury
  2. Secure bandage around head, anchoring under occipital ridge
     ◦ Bandage snugly if eyeball is uninjured.
     ◦ Bandage loosely if injury to the globe is suspected.
  3. Cover both eyes with finished bandage. Do not occlude nose or mouth.
◆ Penetrating Injury
  1. Surround the injured eye with sterile padding.
  2. If penetrating object remains, cut a hole in the end of a cup just large enough for the object to pass through.
  3. Place cup or cone over eye, resting it on pads, but do not touch the eye.
  4. Secure the cup to the head with bandage wrapped around the cup and then around the head, anchoring on occipital ridge.
  5. Cover both eyes with finished bandage. Do not occlude nose or mouth.
◆ Foreign Material in the Eye
  1. If appropriate, pull down lower eyelid and inspect for presence of foreign material.
  2. Attach minidrip administration set to 1L IV bag of Normal Saline.
  3. Position the bag just slightly above the level of the patient’s head to avoid solution running at a high pressure.
4. Position patient supine with head turned toward affected side.
5. Hold eyelid open without exerting pressure on the eyeball.
6. Direct the IV fluid across the surface of the eye from medial to lateral side.
7. Use the same procedure to flush the other eye if it is affected. Use caution not to direct the foreign material/chemical into an unaffected eye.

Discontinuing

- Once eye bandaging is in place, it is rarely removed in the prehospital setting.

Notes

- Document procedure and results, including any unusual circumstances and/or difficulties encountered.
# Head Wounds

**Provider level:** ALL PROVIDERS

**Indications**
- A patient who has experienced a soft tissue injury to the head.

**Contraindications**
- None

**Precautions**
- Expose and clean the wound site to determine the extent of the injury.
- Always consider the mechanism of injury (MOI).
- Suspect cervical spine injury with major bone or soft tissue injury above the clavicles.
- Do not exert point pressure to scalp if underlying fracture is suspected.
- Do not pack the nose or ear to stop the flow of blood or CSF.

**Procedure**
- **Side Wound**
  1. Open dressing to preserve sterile surface, apply to wound, and control bleeding.
  2. Anchor the bandage securely under the brow and occipital ridges.
  3. Cover the dressing completely with the bandage.
  4. Exert even pressure over the entire wound site with finished bandage.
  5. Leave eyes uncovered; Leave ears completely covered OR uncovered.
- **Top Wound**
  1. Open dressing to preserve sterile surface, apply to wound, and control bleeding.
  2. Anchor bandage securely under brow and occipital ridges.
  3. Bring bandage over dressing and under chin and tighten down over dressing.
  4. Cover dressing completely and apply even pressure with bandage over area.
  5. Anchor bandage securely by making additional wraps around the head, securing under brow ridge and occipital ridge.
  6. Cut the bandage under the chin and fold ends up if it interferes with airway.
  7. Make the last few turns around brow, overlapping folded section.

**Discontinuation**
- If bleeding continues, remove the bandage and reapply direct pressure.
- Monitor CMS

**Notes**
- Document procedure and results, including any unusual circumstances and/or difficulties encountered.
Provider level: ALL PROVIDERS

Indications  ♦ A patient who shows signs and symptoms of a soft tissue injury to the neck.

Contraindications  ♦ None

Precautions  ♦ Circulation, movement, sensation (CMS), and airway status must be thoroughly monitored and documented during the bandaging process.
     ♦ Use an occlusive dressing to prevent air embolus from being sucked into the jugular vein.
     ♦ DO NOT use a circumferential bandage around the neck.

Procedure
1. Place dressing over the wound.
2. Secure dressing in place by wrapping a bandage over the dressing and over the top of the opposite shoulder, crossing under the axilla and back again to form a figure eight.
3. Unless contraindicated, transport patient on left side in moderate Trendelenberg position.

Discontinuation  ♦ If bleeding continues, remove the bandage and reapply direct pressure.

Notes  ♦ Uncontrolled bleeding should be controlled with direct pressure, but not circumferential pressure.
     ♦ C-spine immobilization is not indicated in soft tissue wounds, or blows to the neck and can actually impede appropriate bleeding control and airway management. Document procedure and results, including any unusual circumstances and/or difficulties encountered.
Torso Injuries

Provider level: ALL PROVIDERS

Indications
♦ A patient who has experienced an injury to the chest or abdomen.

Contraindications
♦ None

Precautions
♦ Penetrating objects should be left in place unless they interfere with the patient’s ability to breathe or maintain an airway.
♦ Penetrating objects must be removed if CPR is necessary.
♦ All open or penetrating injuries to the chest or abdomen must be sealed with an occlusive dressing.
♦ Large penetrating objects should be shortened to facilitate transport or provide stabilization.
♦ Look for multiple entry/exit wounds with any form of penetrating trauma.
♦ Use sterile solution-soaked dressings on protruding organs.

Procedure
♦ Chest Injuries (Open)
1. Apply manual pressure to seal wound after patient forcibly exhales.
2. Apply and secure an occlusive dressing.
3. Auscultate for breath sounds.
4. Turn patient on injured side, if possible, or position of comfort
5. Closely monitor patient for signs of deterioration.

♦ Penetrating Object
1. Stabilize object with hands
2. Apply occlusive dressing surrounding the base of the object.
3. Stack bulky dressings in alternating layers to stabilize object from all sides.
4. Restrain patient’s hands as necessary, and transport rapidly.

♦ Abdominal Evisceration
1. Cover exposed organs with a sterile dressing moistened with sterile saline.
2. Cover with occlusive dressing to prevent moisture loss.
3. Cover with bulky dressings to preserve body warmth.
4. Secure dressings loosely in place.
5. Transport patient in supine or lateral recumbent position with knees flexed.

Discontinuation
♦ If bleeding continues, remove the bandage and reapply direct pressure.

♦ Document procedure and results, including any unusual circumstances and/or difficulties encountered.
BRT Class of 2018
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