



Supervising Hospital: 42sv01

# EMS Protocols

December 1, 2016

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These protocols are dedicated to the hard working men and women who are committed to high quality care of patients in Knox and Martin Counties.

All of the following protocols are approved by  
Dr. Scott Keyes, MD

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Signed on: 3/21/2016

*Signed copy on file*

Dr. Scott Keyes, EMS Medical Director



### **Mission:**

Provide excellent healthcare and promoting wellness and healing through trusting relationships.

### **Vision:**

To be the regional center of excellence for in health and wellness.

### **P.R.I.D.E. Values**

Patient●Respect●Integrity●Dignity●Excellence

# General Protocols

# General Guidelines

1. Affiliated services and departments may not alter any portion of these protocols.
2. These protocols are not intended to be all-inclusive and may not cover every situation. Contact Medical control for questions or concerns about patients care.
3. Once contact is made the patient remains the EMS provider's responsibility until:
  - a. Care is transferred to receiving facility staff.
  - b. Care is transferred to appropriate level of health care provider.
  - c. Any patient who does not fall under "Guidelines for Initiating Resuscitation Efforts" protocol.
  - d. A valid Signature of Refusal is signed by an alert and oriented patient after assessment and vital signs are done.
4. Confidentiality of patient information is to be maintained.
5. The highest medical authority on scene (usually the Paramedic) is responsible for the initial assessment of all patients except under extreme circumstances (e.g. Mass causality).
6. Transfer of care to receiving provider/health care facility is not complete without verbal reports to the medical professionals (this included fire to EMS transfer of care). A written report is to be provided as soon as possible and no later than 24 hours after run according to current Indiana Emergency Medical Commission Rules and Regulations.
7. Throughout these protocols interventions are listed by certification level. With no heading is intended for all levels including EMR's. BLS (EMT) personnel are only to perform

# Continue: General Guidelines

under the BLS heading. Advance EMT's are to perform only those protocols under ALS with the \*. Paramedics may perform all therapies listed.

8. Cases of suspected abuse must be reported in accordance with Indiana law.
  - a. 1-800-800-5556 Indiana child abuse hotline.
  - b. 1-800-992-6978 Indiana Adult protective service hotline.
9. Minimum attendance to in-service and audit and review is two in-service and audit and review and two skills day's a year. Failure to comply with minimum attendance will result in suspension of privileges.
10. All protocols will be reviewed and updated every two years.

# Communications and Orders

1. Establish communication with the intended receiving Emergency Department prior to arrival for reports. Communicate early for any patient who is unstable, may require specialized care or when requesting orders.
  - a. If requesting orders ask for physician in ER.
  - b. Note name of physician giving order (list of providers in appendix 3).
  - c. Repeat orders exactly as you receive them. Once confirmed document and carry them out exactly as ordered.
2. State briefly and concisely (<30 seconds) the pertinent aspects of the following:
  - a. Patients chief complaint.
  - b. Patient's age and sex.
  - c. Brief summary of medical history including pertinent medication and allergies.
  - d. Vital signs.
  - e. Physical findings including rhythm interpretation.
  - f. Treatment performed or in progress.
  - g. ETA.
3. If unable to contact receiving facility refer to appropriate protocol for patient care guidelines.



# Medical Personnel on Scene

1. The Paramedic/EMT operates under the supervision (medical control) of the EMS Medical Director, and/or the emergency department physician via direct communications.
2. If a physician on scene is the patient's personal physician, can produce an Indiana Health Professions Bureau License and is willing to assume, in advance **ALL** medical and legal responsibilities for the patient. The physician:
  - a. Must make radio or telephone contact with the emergency department physician at the receiving facility and be willing to accompany the patient to the hospital in the ambulance, **AND**
  - b. Must be willing to sign the run sheet for all orders given, **AND**
  - c. Must be willing to sign any required provider specific forms.
3. At no time should lifesaving medical care be delayed in order to establish identities or medical control. It is the responsibility of the paramedic/EMT to institute appropriate medical care.

# Blood Administration Protocol

ALS

Purpose: A patient in critical condition may require transfusion of blood or blood products and transfer to a tertiary center. Any paramedic who has been through the training with the paramedic coordinator may transport blood products for transfusion in critically ill or injured patient who needs transfusion.

1. Obtain written order from patient's physician to continue and/or transfuse a specific number of units and type of blood product. (No FFP)
2. If at all possible, attending nurses should initiate at least one unit prior to transport.
3. If additional units are needed in route, the attending nurse should have confirmed units of blood, required paperwork and additional Y tubing for each unit needing to be transfused.
4. Prior to transport, the paramedic needs to check IV site, patient v/s, compare to baseline V/S, check and document patient ID. Check ID on the blood match, and paperwork the nurses have signed on the transfusion record. Do a visual check of blood and document expiration date of blood.
5. Blood products should **not** be given through any IV smaller than a 20g, you may give through central IV, but not through a dialysis shunt.
6. Vital signs need to be taken every 15 minutes minimum,(including temperature) and documented.
7. Monitor patient for signs of circulatory overload and reactions:

<b>Circulatory Overload</b> <ul style="list-style-type: none"><li>▪ Headache</li><li>▪ Shortness of breath</li><li>▪ Chest tightness</li><li>▪ Coughing</li><li>▪ Tachycardia</li><li>▪ Increased blood pressure</li><li>▪ Distended neck veins</li><li>▪ Pulmonary Rales</li></ul>	<b>Intervention</b> <ul style="list-style-type: none"><li>▪ Slow or stop transfusion</li><li>▪ Increase head of bed</li><li>▪ Continue or start O2</li><li>▪ Notify medical control</li></ul>
<b>Mild Reaction</b> <ul style="list-style-type: none"><li>▪ Itching</li><li>▪ Hives</li><li>▪ Flushing</li></ul>	<b>Intervention</b> <ul style="list-style-type: none"><li>▪ Slow transfusion</li><li>▪ Continue or start O2</li><li>▪ Notify medical control of mild reaction and continue to</li></ul>

# Continue: Blood Administration Protocol

Moderate to Severe reaction	Intervention
<ul style="list-style-type: none"> <li>Temp increase of 2 degrees F</li> <li>Decrease B/P</li> <li>Decreased O2 with airway symptoms</li> <li>Headache      Back pain</li> <li>Chills            Chest pain</li> <li>Hives            Profuse sweating</li> <li>Nausea          Flushing</li> <li>Oozing of blood from IV site</li> <li>IV site pain      Hemoglobinuria</li> <li>Oliguria or Anuria</li> </ul>	<ul style="list-style-type: none"> <li>Stop Transfusion</li> <li>Maintain IV with 0.9% NS</li> <li>Maintain O2 and airway</li> <li>Benadryl 25mg IV</li> <li>Tylenol 1,000 mg if patient can swallow</li> <li>Notify medical control</li> <li>Continue to monitor patient closely</li> <li>Take transfusion record, blood bag and all tubing and</li> </ul>

- When transfusion is finished, clamp blood Y tubing and start NS to run through tubing. Package blood bag for transport back to the lab at transferring hospital. **You must return all empty blood bags to blood bank at transferring facility.**
- Change out Y tubing if giving a second unit.

Good Samaritan Hospital 220 S. Stevens St., Visalia, CA 93291 (IN 4759)

Patient Name: \_\_\_\_\_ Patient Information: ABO/Rh: \_\_\_\_\_  
 MRN: \_\_\_\_\_ BB ID#: \_\_\_\_\_  
 Location: \_\_\_\_\_ Physician: \_\_\_\_\_  
 Antibodies: \_\_\_\_\_  
 Special Needs: \_\_\_\_\_

Product Information: \_\_\_\_\_  
 Unit No: \_\_\_\_\_ ABO/Rh: \_\_\_\_\_  
 Product Code: \_\_\_\_\_  
 Crossmatch Determination: \_\_\_\_\_ Tech ID: \_\_\_\_\_ Date/Time: \_\_\_\_\_  
 Assignee: \_\_\_\_\_  
 Comments: \_\_\_\_\_

Transfusion Information: \_\_\_\_\_  
 Product Left Blood Bank: Date: \_\_\_\_\_ Time: \_\_\_\_\_ by: \_\_\_\_\_

Before starting this transfusion:

- We have checked this tag with the component label and the patient's wristband and all information agrees.
- Blood has been visually checked and is free of clots and air bubbles.
- The patient has been instructed to inform the Nurse should he/she develop headache, abdominal/chest/back pain, nausea, vomiting, chills, fever, itching, rash, SOB, wheezing, and/or palpitations during the administration of the blood product.

Signature	Title	Initials	Signature	Title	Initials
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

Time	T	P	R	BP	Patient Response	Initials
Pre/Start Time					<input type="checkbox"/> Transfusion Started	
15 Mins					<input type="checkbox"/> No S&S of reaction If reaction, physician orders followed* Yes <input type="checkbox"/>	
< 1 hour after start time <input type="checkbox"/> DAC <input type="checkbox"/> N/A					<input type="checkbox"/> No S&S of reaction If reaction, physician orders followed* Yes <input type="checkbox"/>	
< 2 hours after start time <input type="checkbox"/> DAC <input type="checkbox"/> N/A					<input type="checkbox"/> No S&S of reaction If reaction, physician orders followed* Yes <input type="checkbox"/>	
< 3 hours after start time <input type="checkbox"/> DAC <input type="checkbox"/> N/A					<input type="checkbox"/> No S&S of reaction If reaction, physician orders followed* Yes <input type="checkbox"/>	
< 4 hours after start time <input type="checkbox"/> DAC <input type="checkbox"/> N/A					<input type="checkbox"/> No S&S of reaction If reaction, physician orders followed* Yes <input type="checkbox"/>	
1 hour post DAC					<input type="checkbox"/> No S&S of reaction If reaction, physician orders followed* Yes <input type="checkbox"/>	

Good Samaritan Hospital  
 Visalia, Indiana  
 TRANSFUSION RECORD

## Labs Transfusion Record

- The entire top portion of the records should be filled out prior to the EMT-P picking up the patient.
- Check to make sure the patient name on the top left corner matches the patient ID and verbal ID if able.
- Two nurse's signatures need to be present in the middle of the form above signatures line.
- Start time and baseline V/S should be recorded.
- Continue to maintain this sheet during transfer.
- Return sheet and blood bag to Lab when finished the infusion.

Note: blood can be administered over 4 hours if needed.

# Guidelines for Initiating Resuscitation Efforts

1. Resuscitation shall not be attempted in the following situations: Contact the appropriate authorities and complete a patient care report.
  - a. Rigor Mortis.
  - b. Livor Mortis.
  - c. Decomposition.
  - d. Trauma patients presenting pulseless and apneic on initial assessment including:
    - i. Decapitation.
    - ii. Transection of the torso.
    - iii. Charring of the body.
    - iv. Crushing of the head or torso.
    - v. Severe head injury with brain tissue exposed.
    - vi. In the paramedic's judgment, the injuries are obviously incompatible with life.
  - e. Valid DNR (see below)
2. **Hypothermic Patients are considered viable until rewarmed and then pronounced by a physician.**
3. If in doubt, start CPR.
4. Resuscitation efforts should begin immediately in all other cases. CPR shall be performed according to current AHA standards and appropriate protocols.
5. Do Not Resuscitate (DNR)/POST orders/Advanced Directive Orders:
  - a. A person presents at the scene of a patient in cardiopulmonary arrest, and request that resuscitative measures be withheld. Request to see a DNR/POST order signed by the attending physician or chart order (if in ECF patient).

## **Continue: Guidelines for Initiating Resuscitation Efforts**

- b.** In the event the documents cannot be produced immediately, begin resuscitative efforts in accordance with the appropriate protocol and contact the receiving facility for further orders.
- c.** If the EMT questions the validity of the DNR order, resuscitative efforts should be initiated. Contact the emergency department physician at the receiving facility for further orders.

**These guidelines do not apply to living wills.**

# Medical Protocols

# Initial Medical Care

1. Scene Safe, BSI and ensure number of patients.
2. Quick assessment and support CAB's
  - Circulation- check for pulse, if no pulse, start CPR and call for advance level of care.
  - Airway- Check airway. If the patient unable to maintain airway, place appropriate airway device. You may not exceed the devices approved for your level of certification.
  - Breathing- If patient is not breathing or has ineffective breathing start bag valve mask and call for advanced level of care.
  - If patient has a chief complaint of: Shortness of breath, chest pain, altered LOC, severe pain, allergic reaction, pregnancy related issues, diabetic emergency or any trauma, oxygen can always be administered if responder thinks the patient would benefit from use of O2. Oxygen should never be withheld if situation warrants. Start Oxygen: on stable patients 1-6L nasal cannula, unstable or short of breath patients, start 100% NRB.
3. Assess vital signs.
4. Loosen tight clothing.
5. Protect C-spine if trauma is present. Immobilization based on patient complaint and mechanism of injury. If patient has no signs of trauma you may place in position of comfort. Call the hospital on recorded line 812-885-3777 early for trauma activation patients.
6. If any question about treatment call medical control via recorded cell phone line (812-885-3777), 800 MHz radio or IHERN (155.340) radio. If unable to make connection to ER contact central dispatch and they will make contact. ( List of ER personnel able to give orders present in appendix E)
7. Attempt to keep scene to less than 10 minutes, if long scene time document delay.

## BLS

1. May place NP airway if patient unable to tolerate OP due to gag reflex, but unable to protect airway. If patient is not breathing and unable to adequately ventilate with BVM, may place Combi-tube or King airway.
2. Monitor vital signs every 5 minutes on unstable patient and every 15 minutes on stable patient while in your care.
3. 12 lead EKG if available for patient over 18 with complaints that could be cardiac in nature.
4. Obtain capillary blood glucose, call for ALS intercept/ transport if under 60mg/dl or reads "HIGH."
5. When contacting medical control for patient reports please include
  - a. Patients age, sex and approximate weight,
  - b. Nature of run and or /chief complaint
  - c. A brief summary of physical findings (basic vital signs, diagnostic signs, pertinent injuries and history of episode.
  - d. Past medical history
  - e. EKG interpretation
  - f. Treatment given
  - g. Pertinent patient medications and allergies.
  - h. Status (still on scene/ ETA)

- i. Patients name and DOB if on secure line.
- j. Attempts should be made to limit radio traffic to under 60 seconds.
- k. If orders received from Medical Control, document name of nurse and/or physician giving you the order.

## ALS

1. \*May titrate oxygen based on need of patient.
2. If time allows, place Endotracheal airway if patient is not breathing or unable to protect airway.
3. \*Establish IV for: appropriate protocols, need to administer medications or if patient has chest pain, shortness of breath, abdominal pain, diabetic issues, allergic reaction, unstable vital signs or Trauma.
  - a. Start large bore IV if able on trauma (16g or 14g). Small bore IV (22,20, or 18) on stable medical patients.
  - b. Every attempt should be made to start a peripheral IV in hand, Forearm or AC.
  - c. If patient is critical and peripheral attempts fail you may access external jugular IV.
  - d. Start N.S. on patient needing fluids, if elderly with no signs of instability or dehydration you may start a saline lock.
  - e. For trauma patients: N.S. should start on blood set; second IV should be LR.
  - f. KVO rates are defined as 30ml/hr.
  - g. If patient is short ETA to hospital, you may defer placement of IV, Do not delay transport to start IV
  - h. Aseptic technique required for IV starts, cover IV with appropriate dressing and label site to date, size and initials.

\*Indicates protocols New Advanced (2014) may perform.



# Oxygen Administration

1. Any patient who has difficulty breathing or a SpO<sub>2</sub> less than 93% should be given oxygen.
2. Patients with mild respiratory distress (respiratory rate over 25, no cyanosis and no use of accessory muscles) may be given oxygen by nasal cannula at 2-6 lpm to maintain an oxygen saturation of 94%-99%.
3. Patients with moderate respiratory distress (with or without cyanosis and/or use of accessory muscles while breathing) should be given oxygen by a non-rebreather mask at 10-15 lpm. Liter flow should be enough to maintain inflation of the reservoir with oxygen and to maintain an oxygen saturation of 94%-99%.
4. Patients with severe respiratory distress should be assisted with ventilations by use of bag-valve-mask with reservoir and supplemental oxygen.
5. Spontaneously breathing patients who are suspected to have been exposed to carbon monoxide or who are suspected of having pneumothorax regardless of distress level should receive oxygen by non-rebreather mask at liter flow of 10-15 lpm, liter flow should be enough to maintain inflation of reservoir with oxygen. Do not depend on SpO<sub>2</sub> to guide the need for oxygen.

\* indicates protocols New Advanced (2014) may perform.

# Hypotension/Shock

Hypotension- systolic blood pressure below 90 mm/Hg; hypotension is a late marker of shock.

Type of Shock	Signs and Symptoms	possible causes
Anaphylactic Shock	itching, wheezing, shock, warm burning feeling, cyanosis, pulmonary edema, dyspnea, sudden drop in blood pressure	Reaction to known or unknown allergen
Cardiogenic Shock	cool, clammy skin, altered LOC, anxiety/restlessness, JVD, marked tachycardia or bradycardia	MI, CHF, PE, pulmonary edema
Hypovolemic Shock	Tachycardia, weak thready pulse, narrow pulse pressure, pale cool clammy skin, dyspnea, altered LOC, restless	Decrease circulating blood volume either from trauma or medical
Neurogenic Shock	Evidence of trauma, normal or bradycardia, narrow pulse pressure, compromised neurological function, warm and dry extremities	spinal cord or head trauma
Septic Shock	Tachycardia, narrow pulse pressure, dehydration, altered LOC, dyspnea, febrile, signs of infection	Infectious, be aware of sudden changes in elderly

6. Begin initial medical care.
7. Administer oxygen at 10-15 lpm by mask.
8. Assess possible causes of hypotension and shock.

BLS

1. Call for medic transport/intercept.
2. Look for signs of anaphylaxis and refer "Allergic Reaction with Respiratory Distress/Anaphylaxis" protocol.
3. If evidence of trauma, refer to initial trauma care protocol. If signs of Neurogenic shock, it is essential to maintain backboard/c-collar. Be aware of irregular breathing associated with neurogenic shock and be prepared to ventilate patient.
- 4.

# Continue: Hypotension/Shock

4. If signs of cardiogenic or septic shock transmit copy of EKG to receiving hospital, call on recorded line, and inform medical control that you have sent EKG.
5. Check capillary blood sugar.

## ALS

1. \* Start large bore IV of .9% N.S. give 250ml bolus rapid re-evaluate radial pulse and blood pressure. Maintain radial pulse and blood pressure systolic 90 mm/Hg. May repeat bolus up to 2,000 ml.
2. \*Pediatric patients start IV and administer .9% N.S. 20ml/Kg (or refer to Broselow tape). Re-assess patients to maintain signs of peripheral perfusion may repeat bolus X1.
3. If signs of cardiogenic shock, start Dopamine 5mcg/Kg/min. (Max dose 20 mcg/Kg/min) Titrate to systolic blood pressure of 70 mm/Hg and signs of peripheral perfusion and radial pulse. Do not use Dopamine in trauma patients and use with caution in elderly who may have septic shock. Do not mix with bicarbonate; ensure patent IV site due to risk of tissue necrosis.

\* indicates protocols New Advanced (2014) may perform.

# Adult Altered Level of Consciousness

Any patient found unconscious and the cause is not immediately known should be treated in the following manner:

1. Begin initial medical care.
2. Perform the primary assessment. If breathless and/or pulseless, refer to the appropriate treatment guideline. Call for ALS unit
3. All unconscious patients should be suspected of having spinal injuries. Spinal precautions should be utilized during treatment.
4. If the patient is obtunded to the point that he/she offers no resistance place OP airway. Always have suction readily available.
5. Follow Airway management protocol.
6. Administer high flow Oxygen either by non-rebreather or bag valve mask.
7. Investigate possible causes; assist with patients home blood glucose monitor.
8. Attempt to obtain the following information:
  - a. Name of any suspected substances inhaled; ingested, injected or absorbed.
  - b. Quantity ingested (bring all containers to the hospital).
  - c. Time ingested.
  - d. Medical history.
  - e. Suicide notes.
  - f. Medications patient is or has been taking.
9. If suspected opiate ingestion and the patient has shallow, agonal or no respirations, administer 2mg Narcan (naloxone) intra-nasally (if available). Administer by using aerosol mist device attached to a 2mg prefilled syringe (1mg/ml concentration). Administer 1mg in each nostril. Onset of action should be between 3 to 8 minutes. Duration of this medication is approximately 20 minutes. Be prepared to administer another dose if necessary. ***Continue to monitor patients for cardiopulmonary support.***

*\*Naloxone can cause abrupt behavioral changes and increases the potential for seizure activity*

## Continue: Adult Altered Level of Consciousness

### BLS

1. Obtain capillary blood sugar.
2. Obtain 12 lead EKG and transmit/fax.

### ALS

1. \*Administer 1 amp of D50 IVP if glucose <60. Evaluate patient status for 3 minutes. If no response after 3 minutes, give another amp of D50 IVP.

NOTE: If the patient is unconscious, take vomiting precautions. It is probably best to wait on intubation attempts until the D50 has clearly not aroused the patient

2. If unable to establish an IV administer glucagon 0.5mg IM
3. If blood sugar is over 180 and patient has signs of ketoacidosis, infuse IV 0.9% NaCl, 500 ml run at wide open rate as long as lungs are clear to auscultation. If lungs are not clear run IV fluids at 100 ml/hr.
4. If no improvement is noted after administration of D50, administer 2 mg of Narcan IVP. Recommend Narcan be diluted in 10 ml normal saline and given to titrate to effect, Max initial dose is 2 mg including intranasal. Repeat dosage one time if needed.

\*Indicate protocols the new Advanced (2014) may perform

# Stroke (Cerebrovascular Accident- CVA)

This protocol is intended for patients who are actively displaying signs and symptoms of a Stroke. Protect the patient from physical injury in the absence of self-protective capabilities. Protect the patient's airway. Be prepared to progress to other protocols. Always be suspicious of low blood sugar.

## BLS

1. Initiate routine medical care including:
  - a. Assessment and support of ABC's
  - b. Vital signs
  - c. Assist breathing in patients with decreased LOC and respiratory rates of <10 or >30
  - d. Use BVM, Airway adjuncts, and oxygen as needed (titrate to maintain SpO2 above 94%)
  - e. Protect C-Spine and properly immobilize if trauma oriented
2. Perform ***Cincinnati Stroke Scale***
  - a. **Facial Droop**- One side of the face does not move at all when the patient is asked to smile or to show their teeth.
  - b. **Arm Drift**- With both arms outstretched, palms down the patient is asked to hold arms steady while closing their eyes. If one arm drifts, this is positive.
  - c. **Speech**- Slurred speech or inappropriate words or the inability to speak when asked to repeat "You can't teach an old dog new tricks."

***\*If any one of these is positive there is an 85% probability of a CVA.***

- d. **Time**- Last Known Well time is very important. The last time someone can verify this patient being without symptoms.
3. Obtain past medical history including all medications (prescription and recreational)
4. Request ALS if not already en route. If the BLS crew is able to deliver the patient to an emergency room within the same time it would take for the ALS crew to respond to the scene, the BLS crew should transport the patient.
5. Monitor ABCs and reassess vital signs frequently.
6. Check capillary blood sugar, if less than 60 mg/dl follow **Altered LOC Protocol** or call for ALS transport/intercept.

## ALS

1. \*Initiate an I.V. of N.S. at TKO (30 ml/hr)- 18G in Antecubital vein if possible to expedite CT with contrast on arrival to the hospital.

\*If capillary blood sugar is less than 60mg/dl, administer 1 amp of D50 IVP

- a. A\*. If unable to establish IV after 2 attempts administer glucagon 1 mg IM
2. Draw blood tubes if time permits.
3. Apply Cardiac Monitor
4. Contact Medical Control as soon as possible. If any positive Stroke findings Activate Stroke Alert.

## Allergic Reaction with Respiratory Distress/Anaphylaxis

When patient presents with or was exposed to allergen with respiratory distress and a history of bee stings, insect bites, injection or ingestion of medications, food or substance to which the patient has known or suspected allergy with the following signs or symptoms

- Hives, rash, itching, flushing or redness of the skins
- Edema, especially of the tongue or throat
- Stridor, difficulty speaking or drooling
- Tightness or chest pains, nausea or vomiting
- Shock

1.Begin initial medical care.

2.Apply Oxygen per Oxygen guidelines.

3.Anaphylactic reactions can occur rapidly and is considered a true emergency, call for ALS unit and rapid transportation and aggressive treatment is required.

4.If able to remove stinger do so but avoid squeezing or pinching or pushing stinger. Apply cold pack to sting area.

### BLS (EMR, EMT and trained LEO)

1. If patient is experiencing shortness of breath, edema to face or mouth, stridor or hypotension administer one-epi-auto injector (if available). For use on adults and children 30kg or greater unless the patient has their own prescribed by their physician in which case you may assist them. (Adult Epi-pen contains .3mg of Epinephrine 1:1000) For children 15-30 kg use Epi-Pen Jr. (.15mg of epinephrine 1:1000) Contact medical control if patient is below 15kg or greater than 40 years old and has a history of cardiac disease.
2. Call for ALS intercept/transport immediately.

### ALS

1. Pay particular attention to airway for swelling, intubate if needed with ETT only.
2. \*Start IV N.S. run at 50cc/hr or titrate to blood pressure.
3. If patient has isolated hives or rash administer Benadryl 25- 50 mg IV or IM in adults, Call for pediatric dose (Benadryl 0.5mg/Kg IV to a max of 50mg).



## **Continue: Allergic Reaction with Respiratory Distress/Anaphylaxis**

4. \*If patient has wheezes and rash and or hypotension administer 0.3cc Epinephrine 1:1000 subcutaneously for adults. Contact medical control if patient is greater than 40 years old with past cardiovascular disease. Contact medical control for pediatric dosing (Epinephrine 1:1000 0.01cc/kg to a max of 0.3cc).
5. \*For patient with wheezing also administer Albuterol HHN 2.5mg at a flow to produce a fine mist for children and adults.
6. \*If after 15-20 minutes patient is no better or signs of distress are worse repeat Epinephrine 1:1000 0.3cc subcutaneously.
7. Adult patients who continue to have no improvements administer Solu-medrol 125mg IVP.

If intubation is impossible due to tracheal swelling and the patients respiratory status is severely compromised perform a cricothyrotomy following cricothyrotomy guidelines present in Appendix 5. If a cricothyrotomy is performed a copy of the run sheet must be given to EMS Medical Director and EMS Coordinator before leaving shift.

\*Indicate protocol the new Advanced (2014) can perform.

# Heat Related Emergency's

1. Begin initial medical care.
2. Move patient to a cool area and have them lie down, do not massage cramped muscles.
3. Loosen clothing; do not leave wet clothing on patient.
4. Avoid making patient shiver.
5. If skin is hot to the touch you may sponge patient down.
6. Apply Oxygen per Oxygen guidelines
7. If patient has altered LOC, refer to that protocol.

## BLS

1. Give one to two glasses water if patient is not nauseated and vital signs stable.
2. If patient has confusion, skin is hot to touch, nauseated or has a blood pressure below 90 mm/hg or above 180 mm/hg call for ALS unit.
3. Check capillary blood sugar.

## ALS

1. \*If patient is nauseated Start N.S. IV to run at 200cc bolus and titrate rate to a blood pressure of 90mm/Hg systolic.
2. If patient continues to be nauseated administer Zofran 4 mg IV push.

Note: Heat stroke can be a consequence of the administration of major tranquilizer use. The obtaining of a medical history is very important.

\*Indicate protocols the new Advanced (2014) may perform.

# Environmental Emergency – Hypothermia

Definition of severity:

Mild Hypothermia: 93.2 degrees Fahrenheit or greater.

Moderate Hypothermia: 86 – 93.2 degrees Fahrenheit.

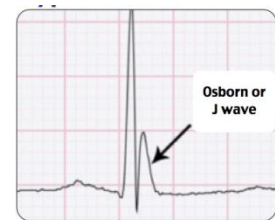
Severe hypothermia: 86 degrees Fahrenheit or colder.

## Universal Medical Care

1. Use caution, personal safety is first concern. Intubation and rough handling of the patient can cause ventricular fibrillation.
2. Remove patient from environment.
3. Remove wet clothing and wrap in dry sheets/blanket.
4. Place patient in warm environment with heater on high.
5. Call for ALS or insure ALS care is in route.
6. Begin initial medical care.
7. Apply high flow oxygen and or secure airway via appropriate protocol.
8. If patient is in cardiac arrest only administer one defibrillation, if patient does not respond withhold further defibrillation until core temperature reaches 86 degrees Fahrenheit PR
9. Perform Chest Compressions at a rate of 100-120 and provide ventilations at 1 breath every 6 seconds continuously until body temperature is above the threshold stated above.

## BLS

1. Continue re-warming of the patient via blankets and heater.
2. Check capillary blood sugar.
3. Apply cardiac monitor and fax/email copy of EKG to receiving hospital; call on recorded line, and inform answering nurse you have sent EKG. Check EKG for “Osborne- J Waves.” While not always present, their presence indicates a core temperature between 86-76 degrees Fahrenheit.
4. If patient is in cardiac arrest only administer one defibrillation, if patient does not respond withhold further defibrillation until core temperature reaches 86 degrees Fahrenheit.



## ALS

1. Establish IV/IO and administer warmed lactated ringers at KVO rate. Maintain blood pressure of 90mm/HG systolic. Patient's that have been hypothermic for greater than 45 minutes may require fluid bolus due to vasodilation.
2. Patients may present with sinus bradycardia (ie, appropriate to maintain sufficient oxygen delivery when hypothermia is present), and cardiac pacing may not be indicated.
3. If patient is in cardiac arrest and does not respond to initial defibrillation and/or first round cardiac drugs, withhold further defibrillation and cardiac medications until patients core temperature has reached 86 degrees Fahrenheit.

[http://circ.ahajournals.org/content/112/24\\_suppl/IV-136.full](http://circ.ahajournals.org/content/112/24_suppl/IV-136.full)

# Respiratory Distress

1. Begin initial medical care. Assist patient to position of comfort.
2. Apply Oxygen per Oxygen guidelines.

## BLS

1. Any symptoms in Adults that could be cardiac in nature (Shortness of breath, dizziness, nausea, abdominal pain etc...) should receive a field EKG if available as soon as possible and with any significant changes in patient condition.
2. Fax/E-mail copy of EKG to receiving hospital; Call on recorded line, and inform answering nurse that you have sent EKG.
3. Call for medic intercept if patient's condition warrants it.
4. Assist the patient with the use of patient's inhaler or metered dose inhaler (MDI) only if the following conditions are met:
  - a. Patient has sign of respiratory distress but able to cooperate.
  - b. Patient has not already taken prescribed dose in prescribed time frame.
  - c. The medicine is prescribed for the patient by a physician.
  - d. The expiration date has not passed
5. Administer by:
  - a. Assure medication is at room temperature; attach spacer if used by patient.
  - b. Remove oxygen and have patient exhale deeply.
  - c. Have the patient put lips around device and inhale deeply while puffing medication.
  - d. Have the patient hold breath as long as comfortable before exhaling.
  - e. Replace oxygen.
6. Re-assess and anticipate the need for bag valve mask.

## ALS

1. E-mail/fax copy of EKG and notify receiving hospital with STEMI or patients with chest pain thought to be due to myocardial ischemia and a left bundle branch block.
2. \*Start Saline lock.
3. \*Cardiac Monitor

## Continue: Respiratory Distress

4. Consider use of immediate placement of CPAP if the patient is in severe respiratory distress with any of the following:
  - a. Hypoxia SpO<sub>2</sub> <92
  - b. Respirations >25
  - c. Use of accessory muscles
  - d. Dyspnea at rest
  - e. Rales or Wheezes
5. \*If patient has underlying respiratory disease, administer nebulized Albuterol 2.5mg with 5-6 L of oxygen; may repeat every 5 minutes to a max of three treatments.
6. Second treatment may give Albuterol 2.5mg and Ipratropium 0.5mg nebulized with 5-6 L of oxygen
7. \*Stop treatment if pulse rate increases 20 beats per minute, arrhythmias are noted, tremor develops or patient's has complaints (palpitations)
8. Be prepared for advance airway or bag valve mask.
9. \*If patient shows signs of pulmonary edema (rales, diaphoretic and dyspnea), administer Nitroglycerin if blood pressure is above 100 systolic. Give one metered dose of Nitro spray or one Nitroglycerin tab 1/150 every 5 minutes times three; so long as the BP remains above 90 systolic. If Blood pressure is below 90 systolic, contact medical control before administering. Do not administer Nitro to an inferior MI, Do not administer Nitro if patient is on phosphodiesterase inhibitor (Viagra, Cialis, or Levitra).
10. Administer Lasix 20mg slow IVP if blood pressure is above 100 systolic.
11. Administer morphine 2-4 mg IVP if blood pressure remains above 100 systolic.

\* indicates protocols New Advance (2014) may perform.

# Continuous Positive Airway Pressure (CPAP)

## ALS

1. Indication: along with medical management for respiratory distress
  - a. Persistent dyspnea
  - b. Hypoxemia
  - c. History consistent with heart failure, volume overload, COPD or exacerbation of asthma.
2. Patients must meet the following criteria:
  - a. 18 years of age or older
  - b. Able to protect own airway.
  - c. Systolic blood pressure above 90mm/Hg.
  - d. SpO<sub>2</sub> <92% on 100% oxygen
  - e. Respirations >25
  - f. Use of accessory muscles
  - g. Dyspnea at rest
  - h. Rales or Wheezes
3. Contraindications:
  - a. Respiratory or cardiac arrest.
  - b. Agonal respirations.
  - c. Suspected or confirmed pneumothorax or chest trauma.
  - d. Inability to maintain airway.
  - e. Any impediment to proper mask placement or seal(facial trauma, stroke, facial anomalies, epistaxis).
  - f. Tracheostomy.
  - g. Persistent nausea, vomiting or GI bleed.
  - h. Inability to comply with device due to severe anxiety or altered mental status.
4. Procedure:
  - a. Assure patent airway, cardiac monitor, pulse ox, and capnography if available.
  - b. Explain procedure.
  - c. Ensure adequate oxygen supply to device.
  - d. Place mask and hold in place as patient adjusts to breathing support. Encourage to breath deep.
  - e. Secure mask, check for air leaks and increase liter flow as instructed by manufacturer.
  - f. Contact receiving hospital as soon as possible to have RT available upon arrival.
  - g. Monitor v/s and pulse ox, (document respiratory rate and pulse ox every 5 minutes).
  - h. Watch for decrease in respiratory rate or change in mental status.
  - i. If patient deteriorates remove device and consider BVM or ET intubation.

# Seizures

This protocol is intended for patients who are actively seizing. Protect the patient from striking objects if they are actively seizing and secure the scene. Protect the patient's airway. Be prepared for more than one seizure episode.

## BLS

7. Initiate routine medical care including:
  - a. Assessment and support of ABC's
  - b. Vital signs
  - c. Assist breathing in patients with decreased LOC and respiratory rates of <10 or >30
  - d. Use BVM, Airway adjuncts, and oxygen as needed
  - e. Protect C-Spine and properly immobilize if trauma oriented
8. Obtain past medical history and present history to possibly establish cause of seizures
9. Request ALS if not already en route. If the BLS crew is able to deliver the patient to an emergency room within the same time it would take for the ALS crew to respond to the scene, the BLS crew should transport the patient.
10. Monitor ABCs and reassess vital signs frequently.
11. Check capillary blood sugar, if less than 60 call for ALS transport/intercept.

## ALS

2. \*Initiate an I.V. of N.S. at TKO  
\*If capillary blood sugar is less than 60, administer 1 amp of D50 IVP
  - a. A\*. If unable to establish IV after 2 attempts administer glucagon 1 mg IM
5. If seizures are suspected secondary to eclampsia, administer 4 grams Magnesium Sulfate over four minutes, dilute to 40cc in N.S. or D5W.
6. If the seizure activity lasts longer than 3 minutes or two or more consecutive seizures without regaining consciousness:

Medication	Adult Dosing	Pediatric Dosing	Contraindications
<b>Midazolam (Versed)</b> <b>High Potency</b> <i>Do not give IV/ IO</i>	>14 years of age 10mg/ 2ml given Intra-nasally (IN) by instilling 5mg/ 1ml in each nostril. If seizure activity persists, contact medical control immediately for additional orders.	>2 mos <14 years of age 0.2mg/ kg up to a maximum of 10mg Intra-nasally (IN) instill half in each nostril. If seizure activity persists, contact medical control immediately for additional orders.	1. Allergy to the medication. 2. Known pregnancy (consider Magnesium first) 3. Blood sugar below 60mg/ dl (Consider glucose)
<b>Lorazepam (Ativan)</b>	>14 years of age 2mg IV/ IO slow push over 2 minutes.	>2 mos <14 Years of age 0.1mg/ kg IV/ IO. May repeat at 0.05mg/ kg after 10 minutes if seizure persists.	

### Midazolam Dosing chart

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

\*Indicate protocols that new Advanced (2014) may perform.



# Bradycardia

Bradycardia Criteria- heart rate less than 60/minute for adults; heart rate less than 80/minute in children (1-8 years) and infants.

Symptomatic Criteria- SBP less than 90mm Hg with signs of poor perfusion,(altered mental status, chest pain, dyspnea) or diaphoresis.

1. Begin initial Medical Care.
2. If symptomatic call for ALS transport/intercept.

## BLS

1. Apply 12 lead EKG where available.
2. Monitor vital signs every 5 minutes.

## ALS

1. \* Establish saline lock; if a patient is symptomatic start N.S. and titrate to blood pressure and patient's condition (refer to hypotension protocol).
2. Symptomatic adults:
  - a. Administer Atropine 0.5mg every 2 minutes until pulse rate is greater than 60/minute.
  - b. Implementation of pacing-set rate at 70 BPM
  - c. Start mA at 10 and gradually increase until point of electrical capture, verify pulse with femoral or radial pulse. Avoid checking carotid pulse when pacing.
  - d. Consider sedation if patient is conscious for pacing; Ativan 0.5mg, repeat X1 if needed for sedation; ensure blood pressure is stable.
3. Symptomatic pediatrics:
  - a. Perform CPR if HR is less than 60/minute.
  - b. Administer epinephrine 0.01 mg/kg (1:10,000 0.1ml/kg) IV or IO; may repeat dose X1 in 3-5 minutes after initial dose.
  - c. Search for possible reversible cause of hypoxia.

\* indicates protocols New Advanced (2014) may perform.

# Tachycardia

Tachycardia Criteria- heart rate greater than 100/minute for adults; heart rate over 140/minute in children (2-10 years); heart rate over 200/minute for infants.

Symptomatic Criteria- SBP less than 90mm Hg with signs of poor perfusion, (altered mental status, chest pain, dyspnea) or diaphoresis.

1. Begin initial Medical Care.
2. If symptomatic, call for ALS transport/intercept.
3. Identify underlying causes of tachycardia.

## BLS

1. Apply 12 lead EKG where available.
2. Monitor vital signs every 5 minutes.

## ALS

1. \* Establish saline lock; if a patient is symptomatic, start N.S. and titrate to blood pressure and patient's condition (refer to hypotension protocol).
2. Symptomatic adults (Narrow Complex  $<0.12$  sec):
  - a. Have patient perform vagal maneuver.
  - b. If rhythm has not converted to sinus rhythm, and is SVT, administer 6 mg Adenosine rapid IVP followed by 10 ml of N.S.
    - i. Observe and anticipate AV block or transient Asystole.
  - c. If after 2 minutes the rhythm does not convert, administer 12 mg Adenosine rapid IVP followed by 10 ml of N.S.
  - d. **Emergent:** If a patient is unconscious or no obtainable blood pressure, perform synchronized cardioversion in an escalating fashion at dose recommended by manufacturer.
3. Adults (Wide complex QRS  $> 0.12$  sec):
  - a. Asymptomatic-monitor patient and transport.
  - b. Symptomatic patients administer Amiodarone 150 mg IV over 10 minutes.
  - c. If VT persist; contact medical control regarding additional Amiodarone dosing.
  - d. If patient is unstable (B/P  $< 90$  mm/Hg, unconscious, sign of pulmonary edema with severe shortness of breath) perform synchronized cardioversion in escalating fashion at energy levels recommended by the manufacturer.
4. Adults (Tachycardia without a pulse):
  - a. Treat as cardiac arrest.

# Continue: Tachycardia

5. Symptomatic pediatric (Narrow complex QRS < 0.12 sec):
  - a. Perform vagal maneuver (ice to face).
  - b. If rhythm has not converted to sinus rhythm, and is SVT, administer Adenosine 0.1 mg/kg (max 6 mg) rapid IVP followed by 10 ml of N.S.
    - i. Observe and anticipate AV block or transient Asystole.
  - c. If after 2 minutes the rhythm does not convert, administer Adenosine 0.2 mg/kg (max 12 mg) rapid IVP followed by 10 ml of N.S.
  - d. **Emergent:** If a patient is unconscious or acutely altered mental status with signs of shock, synchronized cardioversion in an escalating fashion at dose recommended by manufacturer.
6. Pediatric (Wide Complex > 0.12 sec)
  - a. Asymptomatic-monitor patients and call medical control for IV orders.
  - b. If patient has serious signs (including hypotension, acutely altered mental status, or signs of shock) perform synchronized cardioversion beginning with 0.5 j/kg and increase to 2j/kg as needed and in compliance of the manufacturer.
  - c. Contact medical control for further instructions.
7. Pediatric (Tachycardia without a pulse):
  - a. Treat as cardiac arrest.

\* indicates protocols New Advanced (2014) may perform.

# Adult Chest Pain

1. Begin initial medical care. Assist patient to position of comfort.
2. Apply Oxygen per Oxygen guidelines.

## BLS

1. Any symptoms in adults that could be cardiac in nature (Shortness of breath, dizziness, nausea, abdominal pain etc...) should receive a field EKG if available as soon as possible and with any significant changes in patient condition
2. Fax/E-mail copy of EKG to receiving hospital, call on recorded line, and inform answering nurse that you have sent EKG.
3. Call for medic intercept.
4. Give four 81 mg chewable baby aspirin if not contraindicated or previously taken by the patient as part of their normal medication routine.
5. Assist patient with their own valid prescribed Nitroglycerin one every 5 min to a max of 3 as long as systolic blood pressure is above 100. Pay particular attention to name on prescription and date.

## ALS

1. E-mail/fax copy of EKG and notify receiving hospital with STEMI or patients with chest pain thought to be due to myocardial ischemia and a left bundle branch block.
2. \*Start Saline lock; if patient is hypotensive (systolic below 90 mm/Hg start fluids and titrate to BP). STEMI patients draw blood at time of IV start (blue top, gold top, green top, and purple top). Keep blood in your possession and deliver to ER for you or receiving RN to label with patient sticker.
3. \*Administer Nitroglycerin if blood pressure is above 100 systolic; give one metered dose of Nitro spray or one Nitroglycerin tab 1/150 every 5 minutes times three; so long as the BP remains above 90 systolic. If Blood pressure is below 90 systolic, contact medical control before administering. Do not administer Nitro to an inferior MI. Do not administer Nitro if patient is on phosphodiesterase inhibitors (Viagra, Cialis, or Levitra)
4. Give 2 mg morphine sulfate, slow IVP every 5 minutes, if needed, up to 10 mg total, or until either the pain is gone or the BP falls below 100 systolic
5. If Patient is a verified STEMI by ER doctor, attempt to get patient undressed if possible
  - a. Administer eight 75 mg Plavix PO
  - b. Administer Lipitor 80mg PO
  - c. Administer 4,000 unit of Heparin IVP in prefilled syringe from pharmacy

\* indicates protocols New Advanced (2014) may perform.

# Adult Cardiac Arrest

1. In absence of respiration, pulse or response to stimuli, immediately start high quality CPR 30:2 if patient does not have advanced airway.
2. Do not start resuscitation efforts if the following are present.
  - a. Decomposition of the body.
  - b. Rigor Mortis
  - c. Livor Mortis
  - d. Traumatic injury including but not limited to decapitation, transection at midline of the torso, charring of the body, crushing of torso or head or severe head injury with exposed brain tissue.
  - e. DNR or POST form signed and present. These do not apply to living wills.
3. Call for ALS transport.

## BLS

1. Turn on AED or monitor and Attach to patient.
2. Do not interrupt compressions for longer than 10 seconds any time during resuscitation.
3. Wait for instructions for shockable rhythm, continue high quality CPR with minimal stops.
4. Place Combi-tube or King Airway as time allows, only interrupt compressions for 10 seconds for airway placement.
5. Use of Lucas 2 CPR machine is recommended if available.

## ALS

1. Continue high quality CPR with a maximum interruption of compressions of 10 seconds.
2. Follow current ACLS guidelines posted in Appendix 1 of these protocols.
  - a. Refer to Asystole algorithm as determined by cardiac rhythm.
  - b. Refer to pulseless VT/VF algorithm as determined by cardiac rhythm.
  - c. Refer to PEA algorithm as determined by cardiac rhythm and absence of a palpable pulse.
3. \*Start IV according to IV or IO protocol.
4. Intubate as needed and as time allows, only replace basic airway when not working as an adequate adjunct.
5. \*Check blood sugar follow appropriate protocol.
6. If ROSC please refer to that protocol.

\* indicate protocols New Advance (2014) may perform.

# EZ IO Paramedics and Advanced

## ALS

1. \* Patients in cardiac arrest or respiratory arrest, who are in need of rapid regular IV.
2. \*Indications include:
  - a. Patients where rapid IV access is needed including cardiac arrest and respiratory arrest.
  - b. Two peripheral IV attempts prior to considering IO.
3. \*Contraindications are:
  - a. Fracture proximal to proposed insertions site.
  - b. History of Osteogenesis Imperfecta (“brittle bone disease”)
  - c. Current or prior infection at the proposed site.
  - d. Skin issues in proposed site.
  - e. Previous IO insertion or joint replacement at the proposed site.
4. \* See appendix 2 for insertion instructions by EZ-IO by Vidacare,

\* indicates protocols New Advance (2014) may perform.

# LUCAS CHEST COMPRESSION SYSTEM

1. LUCAS Chest Compression System may be used in the place of manual CPR when available and appropriate in adult patients requiring external chest compressions who have acute circulatory arrest defined as absence of spontaneous breathing and pulses and the loss of consciousness.

2. LUCAS Chest Compression System shall assist rescuers with 100 chest compressions per minute with a depth of 1.5 to 2 inches as recommended in the American Heart Association guidelines.

3. Initiate resuscitative measures following the current Advanced Life Support Guidelines and Knox County First Responder / Basic EMT / Advanced EMT Protocol for patients in Cardiac Arrest.

- a. Manual chest compressions should be started immediately or continued while the Automated CPR device is being retrieved and placed on the patient.
- b. Limit interruptions in manual chest compressions to 10 seconds or less.
- c. Do not delay manual CPR waiting for the arrival of the device.

## 4. General Guidelines

- a. Follow manufacturers' guidelines for proper placement of the machine on the patient including patient size criteria for use of the automated CPR device. LUCAS Chest Compression System contraindications are listed below. Do NOT use the LUCAS Chest Compression System in these cases:
  1. If it is not possible to position the LUCAS safely or correctly on the chest.
  2. Too small patient: if you cannot enter the pause mode or active mode when the pressure pad touches the patient's chest and LUCAS alarms with 3 fast signals.
  3. Too large patient: if you cannot lock the upper part of LUCAS to the back plate without compressing the patient's chest.
- b. Manual defibrillation / AED operation are performed in the standard fashion according to current AHA and Knox County First Responder / Basic EMT / Advanced EMT guidelines.
- c. Clothing should be removed from the upper torso before the patient is placed in the device.
- d. Defibrillation / AED pads should be applied to the patient's chest before the device is secured to the patient.
- e. The device can continue to deliver high quality CPR during patient movement. It may be advantageous to use a long spine board or soft patient mover to assist in moving the patient, it is essential that the device and the patient be securely fastened to the long spine board or other device to prevent unwanted movement.
- f. Operate either in the 30:2 mode for an unsecured airway or in the continuous mode for a patient who has a secured airway.
- g. Continuously monitor for correct position of the device on the sternum and make adjustments as necessary.
- h. Operation of the automated CPR device must be paused whenever rhythm analysis is performed. Make interruptions as short as possible.
  4. If automated CPR is used record that use in the patient care report.

# Nausea and Vomiting

1. Assess for potential life-threatening causes for nausea and vomiting and initiate appropriate protocols.

## ALS

If nausea and/or vomiting persist after initiating other indicated treatment protocols, and if no contraindication is present, you may administer Ondansetron (Zofran).

1. Administer Ondansetron (Zofran).
  - a. Adults 50 kg (110 pounds) and over: 4-8 mg IV push.
  - b. Call medical control for pediatric dosing.



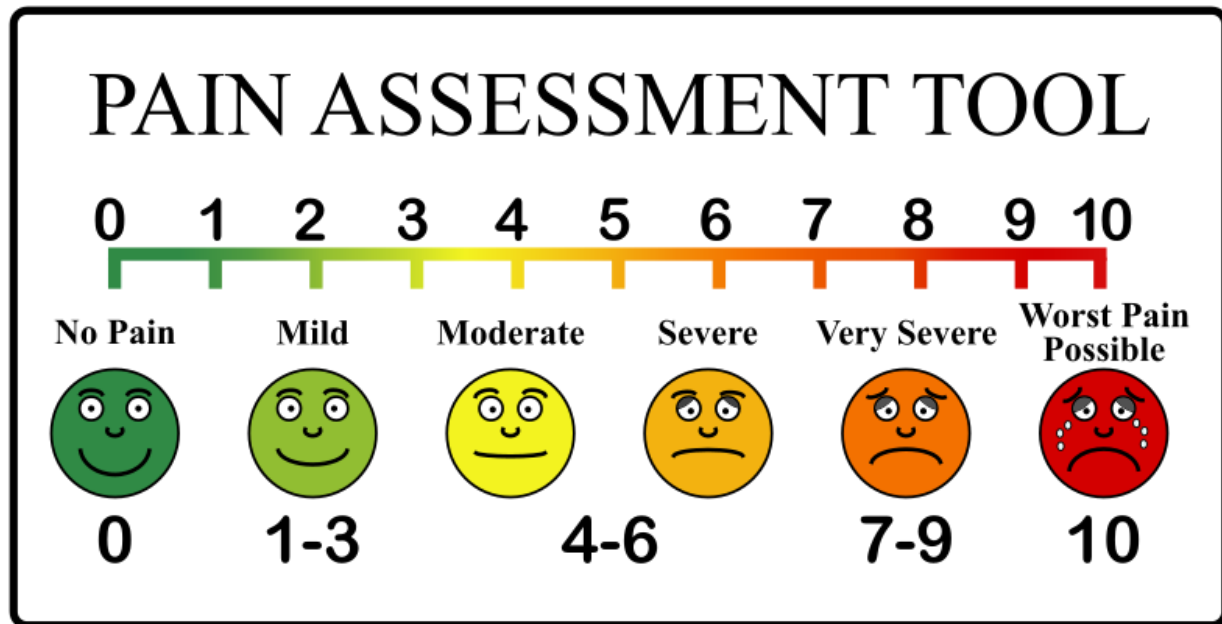
# Pain Management

Follow appropriate protocol for existing situation.

Attempt to place patient in position of greatest comfort.

## ALS

1. Consider offering pain medication to any patient describing pain. Medications should be selected by paramedic judgment of pain severity.
2. Patient's BP, HR, RR, GCS, SPO2 and pain scale must be monitored regularly and documented on the patient care record.
3. Have Naloxone (Narcan) immediately available for all narcotics.



Pain level	Medication	Dosing	Pediatric Dosing	Contraindications
Mild to Moderate	Toradol (Ketorolac)	For patients >14 years old and <65 years old and >50 kg (110 lbs): 30 mg IV/ IO or 60 mg IM.  For patients > 65 years old or <50 kg: 15 mg IV or 30 mg IM.	Do not use below 14 years of age	1) An allergy to Ketorolac, Aspirin, or other NSAIDS. 2) History of renal dysfunction. 3) History of GI bleed. 4) Active bleed or suspicion of active bleed. 5) NSAID use in the last 6 hours. 6) Pregnancy.
Moderate	Morphine Sulphate	Adult Dosing  5mg IV/ IO may repeat in 15 minutes if needed.  May give 10mg Intramuscular (IM) if no vascular access.	6 mos- 14 years 0.1mg-0.2mg/ kg IV/ IO (maximum dose of 5 mg). May be repeated q15 minutes if needed.	For all narcotics  1) An allergy to medication to be given. 2) Systolic Blood Pressure <90 mm/ Hg 3) A significantly altered level of consciousness (GCS < 14). 4) Use with caution in the elderly.
Moderate to Severe	Fentanyl (Sublimaze)	1. For patients >14 years old and >50 kg (110 lbs): 50-100 mcg slow IV/ IO push (1-2mcg/Kg) Push slowly over 3-5 minutes.  Half of initial dose up to 50 mcg may be administered every 30-60 minutes up to a maximum of 300 mcg.  May be given IM if unable to access IV.  <b>Intranasal (IN)</b>  2mcg/ kg up to 100 mcg divide equally in both nostrils.  May repeat 1 time in 10 minutes if no significant reduction in pain (half in each nostril) with an overall maximum of 200 mcg.	>1 <14 years old or <50kg give 1 mcg/ kg IV/ IO slow push over 3-5 minutes. May repeat at 0.5mcg/ kg in 1 hour.  <b>Intranasal (IN)</b>  >1yr- <14yrs 1mcg/ kg (divide equally in both nostrils).	
Severe	Dilaudid (Hydromorphone)	Initial dose should be 0.5mg-1mg IV/ IO slow push.  May repeat in 30 minutes if no significant change or recurrence of pain.	Do not use below 14 years of age	

# Trauma Protocols

# Initial Trauma Care

1. Perform Initial Medical Care.
2. Perform a scene survey, assess for mechanism of injury.
3. Check and Record the level of consciousness using the AVPU method:
  - a. A= Alert
  - b. V= Responds to verbal stimuli only.
  - c. P= Responds to painful stimuli only.
  - d. U= Unresponsive to any stimuli.
4. Obtain and record initial Glasgow Coma Score.
5. Airway- Assess, secure and maintain an adequate airway with C-spine immobilization.
6. Breathing- Quickly look listen and feel for breathing
7. Visually check the chest.
8. Check for presence and equality of breath sounds.
9. If patient has difficulty breathing administer oxygen.
10. Circulation-
  - a. Assess carotid and peripheral pulses for presence and quality.
  - b. Check capillary refill.
  - c. Control all massive or life threatening bleeding with direct pressure.
11. In extremity injuries, utilize a pressure dressing.
12. If unable to control major bleeding in an extremity with pressure dressing or direct pressure; consider use of tourniquet.
13. Assess baseline vital signs check and records vitals every 5 minutes.
14. Backboard for all patients who meet criteria according to Spinal Motion Restrictions (SMR).
15. Request ALS transport or intercept based on mechanism of injury.
16. Immobilize any deformities.
17. Expose patient but maintain body temperature and modesty.
18. Rapidly extricate and transport the patient. Keep scene times to 10 minutes or less when possible. IF scene time exceeds 10 minutes document the reason for the delay.

## BLS

1. If patient is not breathing or unable to protect airway may place OP airway. If patient is unable to take OP due to gag reflex may place an NP airway. (NP airway is contraindicated in mid-facial trauma.)
2. Early hospital notification is recommended for possible trauma activation seen in appendix F.
3. Check Capillary Blood Glucose.

## ALS

1. \*May titrate oxygen based on need of patient.
2. If patient is not breathing or If BLS airway techniques are not adequate or unable to protect airway place advanced airway.
3. If tension pneumothorax is suspected, perform a needle decompression with 16gx 3in gauge or larger IV catheter.
4. \*Start large bore IV if (16g or 14g). First line should be N.S. on a blood set if major trauma or 911 activation.
5. If patient is critical and peripheral attempts fail you may access EJ for IV.

6. \*If major trauma or trauma activation start 2<sup>nd</sup> IV large bore.
  - i. If patient is critical and peripheral attempts fail you may access EJ for IV.
  - ii. Do not delay transport time to start IV.
7. Refer to hypotension protocol as needed.

\*Consider IO for critical or unresponsive patients with 2 unsuccessful IV attempts.

\*Indicate protocols New Advanced (2014) may perform.

# Musculoskeletal Injuries

1. Perform Initial Trauma care.
2. Cover open wounds.
3. Control bleeding with direct pressure, if unable to control life threatening bleeding apply tourniquet. Do not remove tourniquet to check bleeding status.
4. Splint injured extremity. Elevate area and apply ice if available.
5. Do not attempt to reduce deformed extremity unless pulses are not present; never attempt to reduce a deformity of a joint.
6. Irrigate amputated part with saline, place in dry dressing and place in plastic bag if available. Place plastic bag on ice if available; do not expose skin area directly on ice.

## ALS

1. \*Start IV for amputations larger than tip of finger, start .9% N.S. at a rate to maintain blood pressure, see “Hypotension/Shock” protocol.
2. Consider pain medication; refer “Pain Management” protocol.

\*Indicates protocols New Advanced (2014) may perform.

# Abdominal and Chest Injuries

1. Initial trauma care.
2. Administer high flow oxygen
3. Flail chest- loss of stability of the thoracic cage following multiple fractures of the ribs with or without accompanying fracture of the sternum. At least two adjacent ribs can cause a paradoxical breathing and can lead to hypoxia or death. Use a bulky dressing or blanket to stabilize chest
4. If open chest wound apply an occlusive dressing on exhalation. Observe for signs of increased respiratory distress and decreasing blood pressure if this occurs lift edge of dressing long enough to allow air to escape.
5. Any object impaled in chest or abdomen stabilize object and transport to hospital.
6. If evisceration is present to abdomen cover with moist sterile non-adherent dressing, never attempt to replace organs. Do not use a vaseline dressing
7. Never cut clothing through entrance or exit wounds.
8. If patient has unstable vital signs or shortness of breath, any impaled objects any deep chest or abdominal wounds call for medical transport/intercept.

## ALS

1. \*Start IV for amputations larger than tip of finger, start .9% N.S. at a rate to maintain blood pressure, see “[Hypotension/Shock](#)” protocol
2. Consider pain medication; refer to “[Pain Control](#)” protocol.
3. If unable to auscultate any breath sounds, patient is in respiratory distress, and hypotensive consider needle decompression of lung. Locate the second intercostal space at mid-clavicular line. Clean skin and insert 16 g, 3 inch or larger IV catheter over the superior border of the 3<sup>rd</sup> rib perpendicular to the floor/cot with the bevel pointing towards the midline. Re-assess and re-auscultate for improvement in breath sounds, pulse, respiration and blood pressure. Never remove catheter after insertion into the chest.

\* indicates protocols New Advanced (2014) may perform.

# Drowning/Near Drowning

1. Protect yourself. Do not enter a body of water unless you are certified in water rescue and have the appropriate equipment.
2. Immobilize cervical spine and place on long spine board.
3. Perform Initial Trauma Care.
4. Call for ALS to transport/intercept.
5. Warm patient if cold water drowning.
6. Treat patient under appropriate protocol.
7. All near drowning patients should be transported to hospital complications such as pulmonary edema may be delayed.

## BLS

1. Initiate routine medical care including:
  - Assessment and support of ABC's
  - Vital signs
  - Assist breathing in patients with decreased LOC and respiratory rates of <10 or >30
2. Monitor ABCs and reassess vital signs frequently.
3. Obtain field EKG if available as soon as possible and with any significant changes in patient condition.
4. Fax/E-mail copy of EKG to receiving hospital, call on recorded line, and inform answering nurse that you have sent EKG.
5. Check body temperature if available.
6. Check capillary blood glucose.

## ALS

1. \*Initiate an I.V. of N.S. at TKO

\*Indicates protocols that new Advanced (2014) may perform.



# Traumatic Brain Injuries

4. Initial trauma care.
5. Identify patients with physical trauma and a mechanism of injury consistent with potential brain injury.
  - a. GCS of 12 or less.
  - b. GCS less than 15 and decreasing.
  - c. Multisystem trauma requiring intubation.
  - d. Post-traumatic seizure activity.
6. Elevate head of bed 30° if possible.
7. Start oxygen at 6 lpm nasal canula, unless patient is inadequately breathing or apneic.
8. If SpO<sub>2</sub> falls below 93% despite nasal cannula reposition airway and increase to a non-rebreather mask at 10-15 lpm.
9. Do not use NP airway on patients with brain injuries.
10. If patients has unstable vital signs of potential brain injury call for medic transport/intercept.

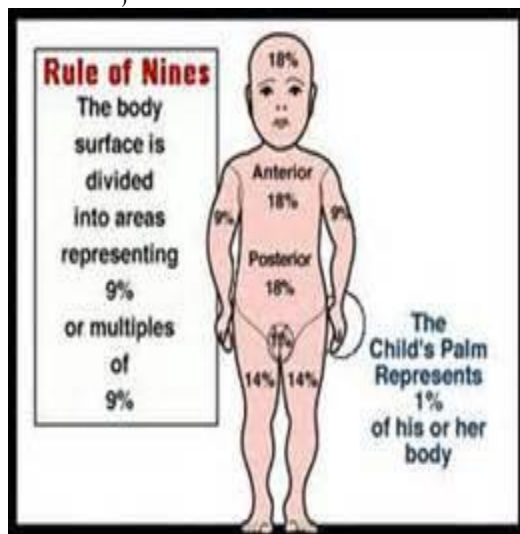
## ALS

11. \*Start IV .9% N.S. at a rate to maintain blood pressure, see” Hypotension/Shock Protocol”.
12. Administer pain medications with caution.
13. Do not use nasal intubation on patients with potential brain injuries.
14. If patients does not have spontaneous breathing assist respirations between 10-12/minute.

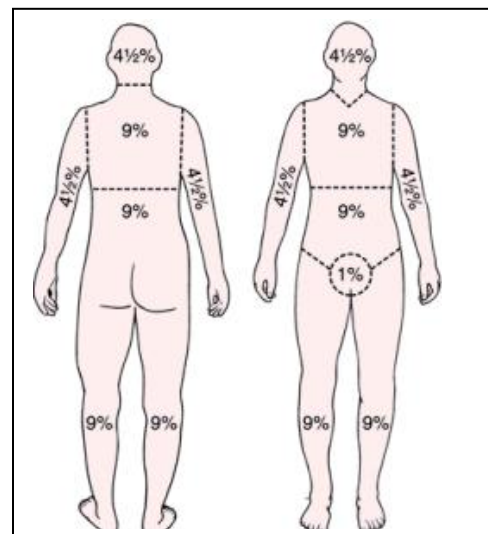
\* indicates protocols New Advanced (2014) may perform.

# Burns

1. Protect yourself.
2. Remove the patient from the source and put out fire. Remove burned clothing and jewelry if this does not disrupt skin.
3. Perform Initial Trauma care.
4. Address more life threatening injuries first, and then treat burns.
5. Attempt to maintain sterility when treating burns.
6. Call for ALS transport/intercept:
  - a. For burns over 10%, burns involving face, feet, hands, genitalia, circumferential burns or joints.



7-15 years of age (puberty)



Adult

- b. Difficulty breathing, smoke inhalation, damage to the airway, or confinement in an enclosed space.
- c. Burns complicated by Fractures.
- d. Pediatric patients.
- e. All electrical burns.

## BLS

1. Categorize type of burn and provide appropriate treatment:

### Thermal Burns:

1. Suspect inhalation injury in any patient with facial burns or involvement in fire in an enclosed space.

## Continue: Burns

2. For first and second degree burns involving less than 10%, soak area with sterile water for 10-15 minutes until temperature is the same as unaffected skin. Do not apply cold packs to the burned area.
3. For all other thermal burns, cover with a dry, sterile dressing or burn sheets.
4. Leave blisters intact.

### Chemical Burns

1. Brush off excess dry agent, remove all clothing and jewelry.
2. Contact HAZMAT, check SDS sheets. If applicable, copious irrigation with saline or water for at least 20-30 minutes.
3. Cover in dry sterile sheets.
4. Keep warm and protect against hypothermia.

### Electrical Burns

1. Turn off the source or contact appropriate agency to turn off source.
  2. Be aware of musculoskeletal injury.
  3. Obtain 12 lead EKG if available.
  4. Remove clothing and look for entrance and exit wound.
2. Check capillary blood glucose.

## ALS

1. Consider intubation for patients who have decreasing LOC, obvious oral inhalation injury, soot in airway (nose and mouth) who are unable to maintain airway.
3. \*Start large bore IV (16-14 gauge), run N.S. Infuse per Parkland formula:  $4\text{ml}/\text{Kg} \times \% \text{BSA burned}$ . Give  $\frac{1}{2}$  in the first 8 hours then reduce rate to give the remainder over the next 16 hours. *Example:  $4\text{ml} \times 100 \text{ kg} \times 10 \% \text{BSA burned} = 4,000 \text{ ml} / 24 \text{ hr}$ . Infuse 2,000 ml over first 8 hours or 250ml/hr.* Do not insert IV catheter through burned skin if possible. Document and report total amount of fluids given in pre-hospital setting.
4. \*Apply Cardiac Monitor to non-burned skin.
5. Consider pain medication; refer to "Pain Management" protocol.

# Special Operations Protocols

# OB Emergencies

1. Begin initial medical care.
2. Administer oxygen at 10-15 lpm by mask.
3. Call for medic transport/intercept.
4. Gather information about gestational age, prenatal care and (if bleeding or leaking fluid) number of pads patient has soaked.
5. Contact receiving facility as soon as possible with OB emergencies.

## BLS

1. Prepare to treat for shock. If shock is present treat per “Hypotension/Shock” protocol.
2. Transport in left lateral recumbent position if over 20 weeks gestation or uncontrolled bleeding.
3. If prolapsed cord; elevate presenting part off of the umbilical cord by using a gloved hand in vagina. Keep elevated; **do not remove hand, until relieved by hospital staff.**
4. If post-partum hemorrhage (blood loss exceeding 500ml following child birth); massage fundus of uterus after delivery of placenta until firm. Delivery of placenta could take 20-30 minutes. Does not delay transport while waiting for delivery of placenta. Do not tug or pull on umbilical cord to assist placental delivery. Check fundus every 5 minutes for firmness and repeat massage as necessary.

## ALS

1. \* Start large bore IV .9 N. S., titrate to blood pressure of 90 systolic; do not give more than one liter without notifying medical control.

\* indicates protocols New Advanced (2014) may perform.

# Delivery of the Newborn

If delivery is determined to be imminent, follow the guidelines below. Delivery may be imminent even though the water has not broken. If the mother is not at full term, or if signs of meconium stain are present. Begin transport call for ALS intercept.

1. Initial medical care.
2. Obtain the following information:
  - a. Due date.
  - b. Frequency of contractions.
  - c. Number of Pregnancies (gravida) and number of children born (para).
  - d. History of pre-term deliveries.
  - e. Sensation of the “need to push” or “need to move bowels” may indicate delivery is imminent.
  - f. Presence of crowning, delivery is imminent.
3. If no crowning is present, begin transportation in the left lateral recumbent position. If crowning is present, prepare for delivery.
4. Administer high flow oxygen.
5. Assist with the delivery.
  - a. Guide and control but do not try to stop the delivery.
  - b. Do not pull on the infant or put traction on the cord.
  - c. If the cord is around the neck of the infant, slip it over the head. If unable to slip the cord over the head, immediately clamp the cord in two places and cut between the clamps. Continue with delivery.
  - d. Look for presence of meconium staining. (**Presence of green amniotic fluid or green/black particulate material on face or in upper airway**).
  - e. After completion of the delivery, vigorously stimulate dry and warm infant.
  - f. Wait at least one minute before clamping the newborn’s cord.
6. Complications including breech birth or footling breech birth, place patients in Trendelenburg position, if patient is in no respiratory distress.
7. Provide post-partum care to the mother. After the placenta is delivered (or 5 minutes after the baby is born, whichever comes first) initiate patient transport. Massage the

# Continue: Delivery of the Newborn

fundus of the uterus after delivery of the placenta. Wrap up the delivered placenta and take it to the hospital.

8. Contact receiving facility for early notification.
9. After delivery you may perform a fundal massage to help control bleeding.
10. The placenta should be delivered in 20-30 minutes. Never pull on cord to facilitate placental delivery. If delivered, collect the placenta in a plastic bag and deliver to hospital. Do not delay transport while waiting for the placenta to deliver.
11. If the perineum is torn and bleeding, apply direct pressure with a sanitary pad or dressings and have the patient bring her legs together to hold in place.
12. Refer to “Newborn Care” protocol

## ALS

1. \*Start N.S. IV with large bore IV (at least 18g) on mother.

\* indicates protocols New Advance (2014) may perform.

# Newborn Care

1. Assess baby's risk for requiring resuscitation, call for intercept/transport. Stimulate newborn infant to cry by rubbing/drying the back.
2. Position with airway open and clear.
3. Keep infant warm and dry, cover the body and head.
4. Keep baby at the same level of the perineum for at least one minute. Clamp cord in two places approximately 2 inches apart and cut between clamps after pulsating stops. If cord continues to bleed apply additional clamps.
5. Record the time of birth. Determine APGAR Score at one and five minutes of life.

	0	1	2
HR	Absent	<100	>100
Respiration	Absent	Irregular/ weak cry	Strong cry
Reflex irritability	No response	Grimace	Cough/ sneeze
Muscle tone	None	Some flexion	Well flexed
Color	Central cyanosis	Peripheral cyanosis	Pink

6. Provide supplemental (blow by) oxygen.
7. If heart rate is below 100 or if infant is gasping or apneic, start positive pressure ventilations (PPV) at a rate of 40 per minute.
8. If after one minute of PPV heart rate is below 60/minute start chest compressions as well as PPV.
9. Notify hospital as soon as possible to ensure proper equipment and personnel.
10. Perform capillary blood glucose

## ALS

1. Continue above efforts.



## Continue: Newborn Care

2. If an infant HR does not raise, gain vascular access either peripherally or through cord. Flush with 1-2ml of saline. May administer up to 10ml of fluid and repeat once if needed.
3. If heart rate remains below 60 with one minute of CPR, give Epinephrine 1:10,000 0.1-0.3ml/kg IV (0.01-0.03mg/kg), you will need to estimate baby's weight or use Broselow tape.
4. Consider need for Narcan 0.1mg/Kg

\* indicates protocols New Advanced (2014) may perform.

# Emerging Infectious Disease Response

Emerging Infectious Disease Response addresses in part the situations encountered in the response field associated with suspicion of a bacterial or viral infection from a known or suspected epidemic or pandemic associative nature such as Ebola, Malaria, Yellow fever, Bourbon Virus etc... The focus must shift to ensuring the safety of the responders and early notification to the receiving hospital. This may overshadow other treatment protocols in favor of responder safety.

## BLS

6. **Identify** a patient having signs and symptoms related to an Emerging Infectious Disease with an associated potential of exposure to a known or suspect host.
7. Immediately **Isolate** the patient in a safe area and maintain a distance of greater than 3 feet from any body fluid or potential droplet exposure. (consider having patient don the level 4 impervious coverall, droplet mask and gloves as well) You may need to explain to the patient and family why you are “backing out.” It is for the safety of everyone.
8. Take steps to don appropriate Personal Protective Equipment (PPE) and prepare the transport unit as well. (Knox County EMS has a designated transport vehicle for the county. Please contact 812-882-7757 for response of Special Disease Unit)
  - a. Isolate or remove any unnecessary equipment (do not expose anything to the immediate environment around the patient unless necessary)
  - b. Draping- The interior compartment of the ambulance should be draped in plastic covering all surfaces and protecting any remaining equipment.
9. Gather as much information as possible while documenting the onset of signs and symptoms as well as time, place and duration of potential exposure.
10. Provide only immediate treatments and follow Routine Medical Care Protocol as much as feasible without risk of exposing responders. (you may disregard or send away any unnecessary responders once all appropriate PPE is donned for the transport crew)
11. Attempt basic vital signs as needed including:
  - a. Blood Pressure
  - b. Pulse (rate, regularity and quality)
  - c. Respirations (rate, depth and quality)
  - d. SpO2
12. **Inform** the receiving facility as soon as possible and prior to transporting. Limit open frequency radio use and use secure cellular or landline phones for communication unless absolutely necessary. Notification must be made to the Nursing Supervisor to enact the hospital’s response plan in preparation to receive your patient.
13. Requesting of Advanced Life Support (ALS) is advisable, but not always necessary if current responders have the adequate training.

## ALS

Treat all conditional signs and symptoms per appropriate protocol with limited exposure and invasion as described herein:

14. Limit all exposures to body fluids by isolating patient from exterior environment.

15. Provide comfort measures and temperature controls as much as feasible. (note: PPE increases body temperature especially in febrile patients) Consider temperature and fluid loss through sweat, emesis and diarrhea.
16. Do not attempt IV, IO or Intubation unless absolutely necessary for life saving intervention.

### Training

All responders have received training in Universal Precautions and Hazardous Materials to some degree. This situation warrants an increased focus on appropriate donning and doffing of PPE including that listed in the Infection Prevention and Cleaning Section. Also, the focus on responder safety is paramount in these situations. **DO NOT DEVIATE FROM YOUR PPE.** All EMS provider agencies must maintain proficiency in donning and doffing PPE for all hazards.

Good Samaritan offers Quarterly Training on Emerging Infectious Disease Response for their internal team. All Emergency Medical Responders, EMT's and Paramedics are invited to attend these trainings for inservice. Contact the EMS Coordinator to arrange this training.

### Infection Prevention and Cleaning

These diseases are controlled by effective use of PPE and standard commercial grade disinfectants. Ensuring the complete and thorough use of these products to disinfect and clean the Ambulance, Equipment and especially as is appropriate to the staff is one of the main focuses to be upheld. Responder safety must take precedence over all other aspects of this protocol/ procedure.

Good Samaritan has adopted a maximum protection approach to PPE for infectious disease including but not limited to the use of Powered Air Purifying Respirators (PAPR) for all staff with potential contact to an infectious disease patient as well as the level 4 impervious coveralls and triple glove technique. This meets and in some cases supersedes the recommendations of the Indiana State Department of Health (ISDH) and CDC. All PPE is disposable with exception to the actual PAPR and supply hose. These will be disinfected and cleaned in accordance to manufacturer recommendation and placed back into usage after proper charging and testing.

PPE Kits are maintained in the decon room adjacent to the Emergency Department at Good Samaritan. Each Blue Duffel is packed and sealed with all of the gear needed, including the laminated checklists to dress out 1 responder in full "maximum protection" gear. The pre-packed units fit most responders featuring a 2XL Level 4 impervious coverall, ample supply of long cuffed gloves in sizes Medium through XL and all of the accessories needed to complete the ensemble. It is not recommended that the driver wear a PAPR hood while driving. If necessary, have someone else dress to the level appropriate to drive the ambulance and remain free of patient contact or exposure. These kits are currently available for loan to the EMS Response Provider Agency in the event of an actual patient response only. Each provider is responsible for returning the non-disposable gear to the hospital including the PAPR device, Hose and batteries. All other exposed equipment is disposable.

### Staging at the Hospital

1. Hospital Security will have the Ambulance garage secured for this vehicle only. All others will report to the main ED Entrance as in any other downtime procedure.
2. Transporting units will not exit their vehicle until the ED staff are dressed and secure to accept this patient. Once the patient is secured, Hospital Staff will assist EMS with doffing.
3. Once the patient is offloaded and secured in the ED and reports have been given, the EMS crew will return to their ambulance leaving nothing at the bedside. At this time they will

begin to disinfect the unit with commercial grade disinfectant. All surfaces of the interior of the vehicle must be decontaminated.

4. Any equipment that is not disposable must be discarded in the Category A container using triple bag-in-bag technique with the bags being wiped with bleach prior to putting in the next. (limit equipment in the patient area in the preparation phase)
5. EMS Responders will be assisted by hospital IDRT with doffing PPE in the appropriate area by using the doffing checklist and a trained observer. All PPE will be discarded in a Category A waste container.
6. Responders will report to a rehab area for hydration and brief physical monitoring. Registration with the Knox County Health Department for Active Monitoring must be completed prior to leaving the hospital. All responders present at the initial scene must also contact the KCHD for arranging active monitoring.
7. All documented reports must be completed and submitted to the Hospital within 6 hours or sooner if possible to ensure accuracy in the continuum of care with Good Samaritan (GSH), Knox County Health Department (KCHD), Indiana State Department of Health (ISDH) and Centers for Disease Control and Prevention (CDC)

Donning Type C Personal Protective Equipment (PPE) Checklist	
Procedure	Completed
Use restroom, change into provided attire, remove all jewelry	
Obtain VS: T_____ P_____ RR_____ BP_____	
Drink 6-8 oz. of fluid (preferably a sport type drink) NO CAFFEINE	
Secure hair and apply hair net to ensure all hair is away from the face	
<b>Partner assistance:</b> Apply plastic boot liners and duct tape them to the outside of the scrub pants (be sure to fold over tape to create a tab for easy removal)	
Apply biological protective suit to the waist	
<b>Partner assistance:</b> Put on shoe covers and secure to suit with duct tape being sure to create a tab for easy removal	
Wash hands or use alcohol hand gel	
Apply close fitting exam gloves	
Apply protective suit to upper body and zip to just above the waist	
<b>Partner assistance:</b> Apply PAPR battery pack with tubing attached. PAPR unit should fit snug and comfortably at the small of the back	
<b>Partner assistance:</b> Apply 2 <sup>nd</sup> layer of gloves (extra-long) and duct tape cuffs to protective suit. Fold over ends of tape for easy removal.	
Attach PAPR tubing to hood and turn on unit. Apply hood and adjust to comfortable fit (be sure to feel air movement within the hood)	
<b>Partner assistance:</b> Pull up outer layer of PAPR hood. Tuck attached suit hood into suit. Tuck inner layer of PAPR hood completely into suit.	
<b>Partner assistance:</b> Zip suit up to neck, remove backing from zipper flap, and completely cover the zipper with flap.	
<b>Partner assistance:</b> Pull outer layer of hood down over shoulders	
<b>Date &amp; Time Donned:</b> _____	
<b>Verify completion of entire checklist- Staff Initials:</b> ____ / ____	
Upon entering patient room, apply 3 <sup>rd</sup> layer of gloves	

Doffing Type C Personal Protective Equipment (PPE) Checklist	
Procedure	Completed
<b>Prior to entering doffing area:</b> Remove 3 <sup>rd</sup> layer of gloves. Clean soiled areas of PPE with bleach wipes and remove shoe covers. Dispose into biohazard bag. Enter doffing area.	
<b>Doffing partner:</b> Remove duct tape from wrists. Dispose into biohazard bag.	
Undo PAPR belt and place PAPR unit on stable surface	
<b>Doffing partner:</b> Completely wipe PAPR tubing, battery pack, and PAPR belt with bleach wipes	
Using bleach wipes, wipe down front layer of hood, front of suit, arms, wrists, and hands while doffing partner is cleaning PAPR unit.	
Pull outer layer of hood up	
<b>Doffing partner:</b> Remove zipper seal and unzip suit	
<b>Doffing partner:</b> Remove suit by rolling suit inside-out and downwards towards the ankles. <b>Avoid touching inner layer of clothing.</b> Stop when ankles are reached. <b>NOTE:</b> When suit is pulled from arms, outer gloves may remain in place and cuffs may fold outward.	
Remove outer gloves using glove-in-glove technique. Dispose into biohazard bag.	
Step out of the suit onto the floor	
<b>Doffing partner:</b> Assist with removing the duct tape and boot liners. Dispose into biohazard bag. <b>Avoid touching inner layer of clothing.</b>	
<b>Doffing partner:</b> Switch off PAPR unit and disconnect tubing from the battery pack.	
Remove hood by pulling outer layer together overhead and remove using a forward⇒up⇒and over motion. Immediately place in biohazard bag. <b>Avoid touching any outer part of hood and tubing to clothing and exam gloves.</b>	
<b>Doffing partner:</b> Retrieve PAPR tubing for reuse	
Remove final layer of gloves using glove-in-glove technique. Dispose into biohazard bag.	
Use hand sanitizer. Go directly to sink to wash hands and forearms	
Rehydrate with 6-8 oz. of fluid (preferably a sport type drink)	
<b>Date &amp; Time Doffed:</b> _____	
Proceed to shower	
<b>Doffing partner:</b> Close biohazard bag and attend to reusable items	
Wait 10 minutes after shower and obtain VS: T_____ P_____ RR_____ BP_____	
<b>Verify completion of entire checklist- Staff Initials:</b> ____ /_____	

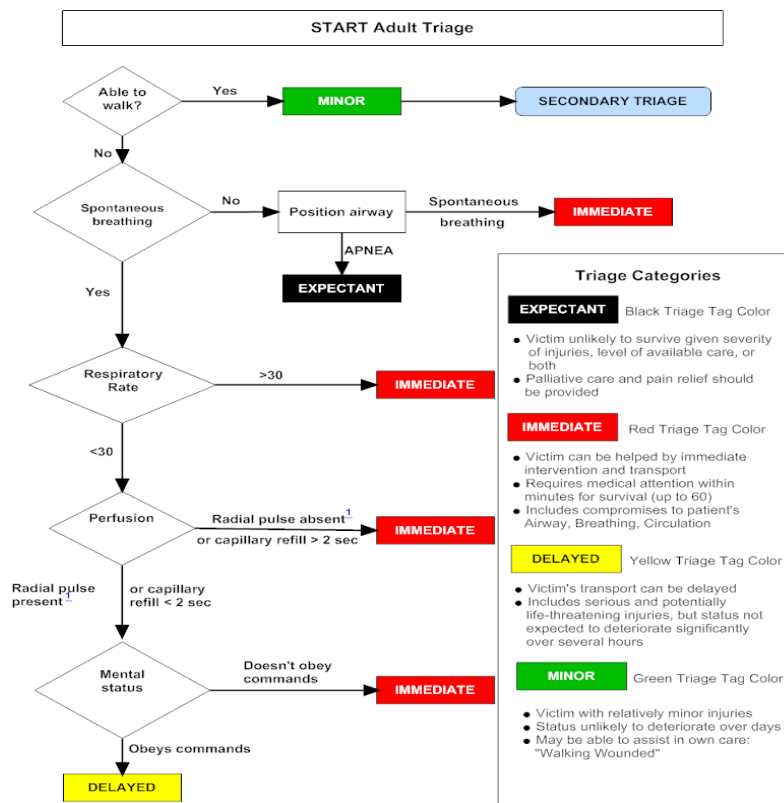
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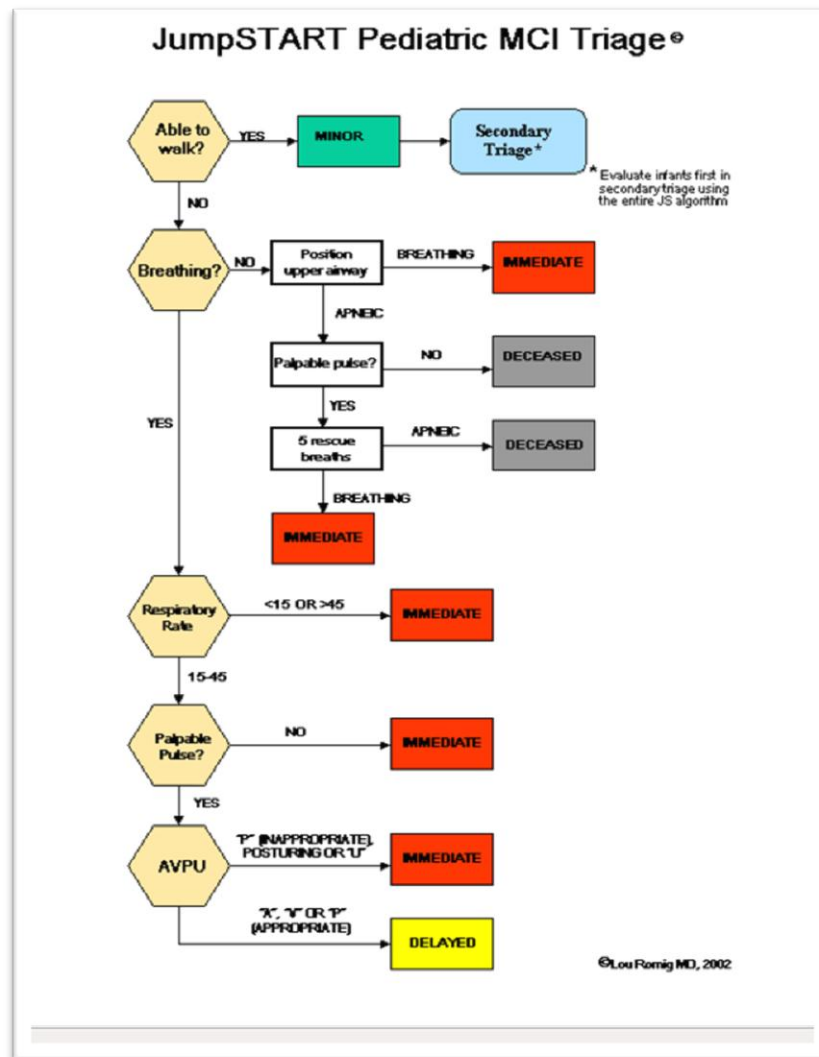
# Knox County Mass Casualty Plan

A mass casualty incident is one that overwhelms the initial response capabilities by requiring more resources and assets than are immediately available. *Do the most good for the most possible survivors.*

## BLS

1. . Ensure Scene Safety
2. Determine need for additional assistance and request as appropriate (Notify Central Dispatch)
3. Initiate Incident Command per NIMS/ ICS (Must have an Incident Commander and Safety Officer all other positions as needed) Set up: Triage/ Treatment, Transportation/ Staging, Communications and all other necessary Sections as personnel and resources become available.
4. Triage patients using START Triage (JUMP START for Pediatrics)





5. Notify Medical Control as soon as possible to begin assessing potential patient dispositions.
6. Please relay this information:

Number of patients

Severity of patients (Red, Yellow, Green, Expectant, Dead)

Any known hazards

Possible number of patients who have already left the scene (if known)

Estimate time to patients' arrival at the hospital.



## Continue: Knox County Mass Casualty Plan

7. Treat patients as appropriate with given resources. (Spinal Precautions need to be considered on everyone)
8. Ensure any contaminated patients have been decontaminated in the field prior to transport.  
Requesting of Advanced Life Support (ALS) is advisable, but not always necessary if current responders have the adequate training.
9. Initiate transport to appropriate treatment area, hospital or alternate care site.

### ALS

1. Treat all conditional signs and symptoms per appropriate protocol.
2. Do not get caught up in distracting injuries or heroic lifesaving measures.

### Training

START Triage- Adult  
JUMP START Triage- Pediatrics

# Spinal Motion Restriction (SMR)

Definition: Spinal Motion Restriction (SMR) describes the procedure used to care for patients with possible unstable spinal injuries. SMR includes: Reduction of gross movement by the patient; prevention of additional damage to the spine; and regular reassessment of motor/sensory function.

## All Prehospital Providers

### Principles:

1. Be cautious and always err on the side of treatment. Temporary pain and even skin compromise are not an equal alternative to life in a wheelchair or worse.
2. Utilization of backboards for spinal immobilization during transport should be judicious, so that potential benefits truly outweigh risks.
3. There are multiple methods of SMR; current evidence does not support any one method over another. In addition, there are potentially harmful side effects of SMR that must be considered when application is prolonged or applied incorrectly.
4. Potential SMR Methods: (least to most invasive) cervical collar in Fowler's, semi-Fowler's or supine on the stretcher, vacuum mattresses/ scoops / skeds, short-boards and K.E.D.S, backboard and head blocks with straps. (Not all devices are available on all units)
5. Prehospital provider assessment in accordance to the algorithm (attached) will determine what method is needed. ***Every patient with trauma must receive an assessment.*** If any assessment component is positive or the provider feels it necessary, the patient requires SMR.
6. Prehospital provider should use judgment and consider less invasive means of SMR for patients without neurologic findings, but in whom one is still concerned for unstable spinal injury.
7. Ambulatory patients may not need a backboard, however, do not let this alone be a deciding factor.
8. SMR for penetrating injuries is generally not indicated and transport must not be delayed to apply SMR. Treatment of patients with penetrating trauma should not involve a backboard unless it is required as an extrication device or if there is a significant concomitant blunt mechanism.
9. Safe and proper removal of the helmet should be done by two people following steps outlined in an approved trauma curriculum (PHTLS or ITLS).
10. Once SMR has been initiated based upon prehospital provider assessment, only hospital personnel should discontinue it. However, if a patient is not tolerating a particular method of SMR, alternate methods may be used when appropriate. In particular, management of the patient's airway may necessitate alternate SMR and should take precedence.

### Guidelines:

1. An unreliable patient is anyone who has an altered level of consciousness or intoxicated. Limited evaluation may be due to communication barrier, uncooperative patient or patient too distracted by other injuries and circumstances.
2. An abnormal spine exam is any deformity or tenderness along the spine.
3. Neurological examination includes:
  - A) Test of sensation and abnormal sensation (paresthesia) in all 4 extremities
  - B) Test of motor skills in all 4 extremities with active movements by the patient (avoid just reflexive movements like hand grasp) to include: wrist/finger extension and flexion, foot plantar and dorsiflexion

C) Frequent reassessment.

### **Indications for Immobilization:**

Spinal movement restrictions are required for any patient for whom a mechanism of injury is present that has the potential to have caused injury to the patient's spine (MVC, fall, or an injury resulting in ANY evidence of trauma above the clavicles) AND any ONE OR MORE of the following is present:

- a. The patient offers a subjective report or objective evidence of otherwise unexplainable numbness, tingling, weakness or paralysis of any extremity.
- b. ANY alteration in the patient's level of consciousness at the time of evaluation.
- c. A report by patient, bystander or witness that the patient had experienced a loss of consciousness.
- d. Suspicion of intoxication due to drugs or alcohol.
- e. A significant language or communication barrier exists between EMS personnel and the patient
- f. Evidence of inadequate systemic perfusion.
- g. Patient is younger than 14 years or older than 65 years of age.
- h. The patient has an injury that could reasonably be thought to distract from the patient's ability to accurately be examined.
- i. Significant mechanism of injury. *(short falls for osteoporosis patients and lateral impacts in children can potentially result in disproportional injury to mechanism as compared to a healthy adult age range patient)*

### **Pediatric Guidelines:**

**Pediatric SMR requires the patient's head, neck and torso to be appropriately stabilized.**

< 3 years – cervical collar plus backboard with occipital recess or thoracic padding plus straps to secure patient to the board. If patient is in an appropriate child restraint seat, consider immobilizing in the device.

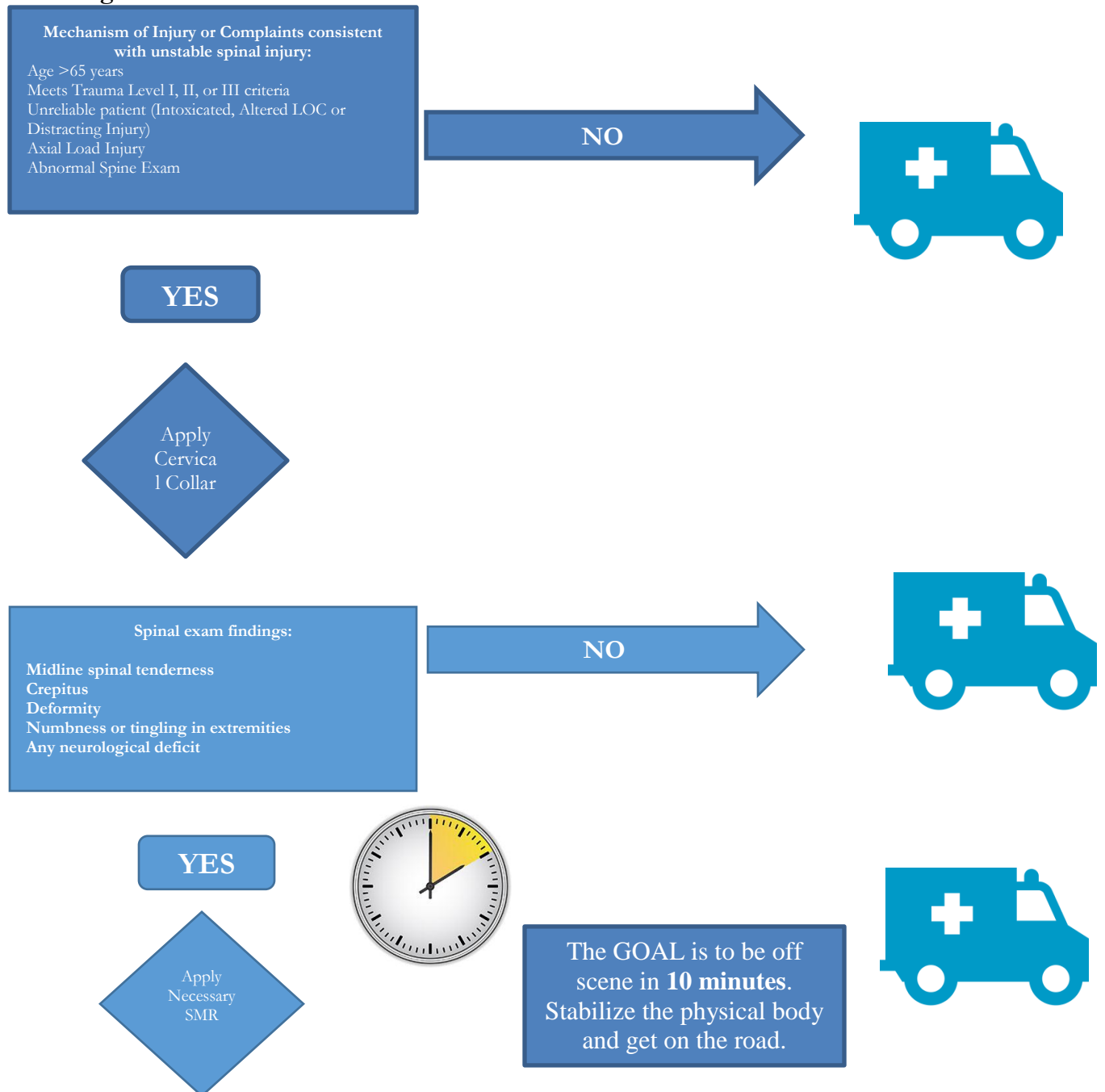
3-14 years - cervical collar plus backboard with thoracic padding as needed plus straps to secure patient to the board

Infants in rear facing car seats may be immobilized and extricated in the car seat as long as the patient is stable and does not exhibit signs of respiratory distress or shock.

Children restrained in a car seat with a high back should be extricated in the car seat and then be placed in SMR as appropriate.

Children in booster seats (without a back) should be placed in SMR as appropriate.

## Adult Algorithm:



- Perform a careful assessment on all patients.
- Use your best judgment.
- Consider less invasive SMR only when applicable.
- Strongly consider SMR in patients at high risk.

**References:**

Department of Health Services County of Los Angeles, CA. 2014

Pennsylvania Department of Health Bureau of Emergency Medical Services, July 1, 2015

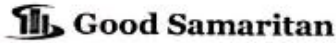
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Freidman, M. (January 2016) Emergency Medicine News *Hey EMS! Where is the backboard?* Vol.38 issue 1

# Appendix 1.

## Approved Medication List



### ALS Provider Approved Medication List

Par	UNIT	DESCRIPTION	Par	UNIT	DESCRIPTION
5	vial	Adenocard 6 mg / 2 ml (Adenosine)	4	vial	Magnesium Sulfate 1 gm / 2 ml
10	ampules	Albuterol 2.5 mg / 3 ml (30/bx)	5	syr	Narcan 2 mg / 2 ml (Naloxone)
3	vial	Amiodarone 150 mg	2	amp	Narcan 400 mcg / ml (Naloxone)
3 bottles	bottles	Aspirin, ASA 81 mg Chewable	4	each	Nasal Atomizer (LMA MAD300 #2580348)
5	syr	Atropine 0.5mg / 5 ml	2	btl	Nitrolingual Spray (Nitroglycerin)
10	ampules	Atrovent 0.5 mg / 2.5 ml (30/bx) (Ipratropium)	2	btl	Nitrostat 1 / 150 gr (400 mcg) (Nitroglycerin)
2	vial	Benadryl 50 mg (Diphenhydramine)	4	vial	Ondansetron 4mg/2ml Injection (Zofran)
3	syr	Dextrose 50% 25 gm / 50 ml	4	syr	Sodium Bicarb 8.4% 50 mEq / 50 ml
2	syr	Dextrose 25% 2.5 gm / 10 ml	2	syr	Sodium Bicarb 4.2% 0.5 mEq / 10 ml
1	bag	Dopamine 800 mg in 500 ml D5W	4	vial	Solu-Medrol 125 mg Act-O-Vial (Methylprednisolone)
10	syr	Epinephrine 1:10,000 1 mg / 10 ml	5	30/box	Sodium Chloride 0.9% 3 ml NEBU
2	amp	Epinephrine 1:1,000 1 mg / 1 ml PF	10	30/box	Sodium Chloride 0.9% 10 ml Syringe
4	vial	Furosemide 40 mg / 4 ml	<b>IV Fluids</b>		
2	vial	Glucagon 1 mg	2	bag	Dextrose 5% 500ml
8	3/tube	Glutose 15gm Gel 3/package	2	bag	Lactated Ringers 1000ml
4	vial	Ketorolac 60mg/2ml	4	bag	Sodium Chloride 0.9% 1000ml
5	syr	Lidocaine 100 mg / 5 ml	<b>Controlled</b>		
<b>Place Drugs Below In Plastic Bag)</b>			4	vial	Midazolam (Versed) 10mg/ 2ml
1 ea	tab	Atrovastatin (Lipitor) 80 mg (1 Each)	4	amp	Fentanyl 100mcg/2ml Ampul
8 ea	tab	Clopidogrel (Plavix) 75 mg (8 Each)	2	vial	Lorazepam (Ativan) 2mg / ml
1 ea	vial	Hepatin 5,000 Units/1ml (1 Each)	10	syr	Morphine Sulfate 2 mg / ml
			4	syr	Morphine Sulfate 10 mg/ 2ml

Dr. Scott Keyes #01062724A

EMS Medical Director

10/24/2016

Date

(Each provider must maintain their individual lists with par levels)

# Appendix 2.

## Insertion Instructions for EZ IO

### EZ-IO® Intraosseous Vascular Access System Procedure Template

#### INDICATIONS FOR USE

For adult and pediatric patients any time vascular access is difficult to obtain in emergent, urgent or medically necessary situations for up to 24 hours.

Adults	Pediatrics
<ul style="list-style-type: none"><li>• Proximal humerus</li><li>• Proximal tibia</li><li>• Distal tibia</li></ul>	<ul style="list-style-type: none"><li>• Distal Femur</li><li>• Proximal humerus</li><li>• Proximal tibia</li><li>• Distal tibia</li></ul>

#### CONTRAINDICATIONS

- Fracture of the targeted bone
- Previous, significant orthopedic procedures at insertion site (e.g. prosthetic limb or joint)
- IO in the targeted bone within the past 48 hours
- Infection at area of insertion
- Excessive tissue or absence of adequate anatomical landmarks

#### EQUIPMENT/SUPPLIES

- EZ-IO® Power Driver
- EZ-IO® Needle Set and EZ-Connect® Extension Set
- Non-sterile gloves
- Cleansing agent of choice
- Luer lock syringe with sterile Normal Saline flush (5-10 mL for adults, 2-5 mL for infant/child)

#### PROCEDURE

Explain procedure to patient/family when possible

Obtain assistance as needed

Wash hands

#### INSERTION SITE IDENTIFICATION

Palpate site to locate appropriate anatomical landmarks for needle set placement and to estimate soft tissue depth overlying the insertion site. Utilize the correct technique below based on patient and site selected:

##### ADULT INSERTION SITE IDENTIFICATION

##### Proximal Humerus (Adult)

1. Place the patient's hand over the abdomen (elbow adducted and humerus internally rotated)
2. Place your palm on the patient's shoulder anteriorly; the "ball" under your palm is the general target area  
You should be able to feel this ball, even on obese patients, by pushing deeply
3. Place the ulnar aspect of your hand vertically over the axilla and the ulnar aspect of your other hand along

the midline of the upper arm laterally

4. Place your thumbs together over the arm; this identifies the vertical line of insertion on the proximal humerus
5. Palpate deeply up the humerus to the surgical neck
  - This may feel like a golf ball on a tee – the spot where the “ball” meets the “tee” is the surgical neck
  - The insertion site is 1 to 2 cm above the surgical neck, on the most prominent aspect of the greater tubercle

#### Proximal Tibia (Adult)

1. Extend the leg.
2. Insertion site is approximately 2 cm medial to the tibial tuberosity, or approximately 3 cm below the patella and approximately 2 cm medial, along the flat aspect of the tibia.

#### Distal Tibia (Adult)

1. Insertion site is located approximately 3 cm proximal to the most prominent aspect of the medial malleolus.
2. Palpate the anterior and posterior borders of the tibia to assure insertion site is on the flat center aspect of the bone.

### INFANT/CHILD INSERTION SITE IDENTIFICATION

#### Distal Femur (Infant/Child)

1. Secure the leg out-stretched to ensure the knee does not bend.
2. Identify the patella by palpation. The insertion site is just proximal to the patella (maximum 1 cm) and approximately 1-2 cm medial to midline.

#### Proximal Humerus (Infant/Child)

1. Place the patient’s hand over the abdomen (elbow adducted and humerus internally rotated)
2. Place your palm on the patient’s shoulder anteriorly; the “ball” under your palm is the general target area
  - You should be able to feel this ball, even on obese patients, by pushing deeply
3. Place the ulnar aspect of your hand vertically over the axilla and the ulnar aspect of your other hand along the midline of the upper arm laterally
4. Place your thumbs together over the arm
  - This identifies the vertical line of insertion on the proximal humerus
5. Palpate deeply up the humerus to the surgical neck
  - This may feel like a golf ball on a tee – the spot where the “ball” meets the “tee” is the surgical neck
  - The insertion site is 1 to 2 cm above the surgical neck, on the most prominent aspect of the greater tubercle

#### Proximal Tibia (Infant/Child)

1. Extend the leg. Pinch the tibia between your fingers to identify the medial and lateral borders.
2. Insertion site is approximately 1 cm medial to the tibial tuberosity, or just below the patella (approximately 1 cm) and slightly medial (approximately 1 cm), along the flat aspect of the tibia.

#### Distal Tibia (Infant/Child)

1. Insertion site is located approximately 1-2 cm proximal to the most prominent aspect of the medial malleolus.
2. Palpate the anterior and posterior borders of the tibia to assure insertion site is on the flat center aspect of the bone.

### NEEDLE SET SELECTION

Select EZ-IO® Needle Set based on patient weight, anatomy and clinical judgment. The EZ-IO® Catheter is marked with a black line 5 mm proximal to the hub. Prior to drilling, with the EZ-IO® Needle Set inserted



through the soft tissue and the needle tip touching bone, adequate needle length is determined by the ability to see the 5 mm black line above the skin.

- EZ-IO® 45 mm Needle Set (yellow hub) should be considered for proximal humerus insertion in patients 40 kg and greater and patients with excessive tissue over any insertion site
- EZ-IO® 25 mm Needle Set (blue hub) should be considered for patients 3 kg and greater
- EZ-IO® 15 mm Needle Set (pink hub) should be considered for patients approximately 3-39 kg

## INSERTION

Use a clean, “no touch” technique, maintaining asepsis

Prepare supplies

Prepare the site by using antiseptic of your choice; stabilize the extremity

Remove the needle set cap

### ADULT INSERTION TECHNIQUE

#### Proximal Humerus - Adult

1. Aim the needle set at a 45-degree angle to the anterior plane and posteromedial
2. Push the needle set tip through the skin until the tip rests against the bone  
**The 5 mm mark must be visible above the skin for confirmation of adequate needle set length**
3. Gently drill into the humerus approximately 2 cm or until the hub is close to the skin; the hub of the needle set should be perpendicular to the skin

#### Tibia - Adult

1. Aim the needle set at a 90-degree angle to the bone
2. Push the needle set tip through the skin until the tip rests against the bone  
**The 5 mm mark must be visible above the skin for confirmation of adequate needle set length**
3. Gently drill, advancing the needle set approximately 1-2 cm after entry into the medullary space or until the needle set hub is close to the skin

### INFANT/CHILD INSERTION TECHNIQUE

#### Proximal Humerus – Infant/Child

1. Aim the needle set tip at a 45-degree angle to the anterior plane and posteromedial
2. Push the needle set tip through the skin until the tip rests against the bone  
**The 5 mm mark must be visible above the skin for confirmation of adequate needle set length**
3. Gently drill, immediately release the trigger when you feel the loss of resistance as the needle set enters the medullary space; avoid recoil – do NOT pull back on the driver when releasing the trigger

#### Femur and Tibia – Infant/Child

1. Aim the needle set at a 90-degree angle to the bone
2. Push the needle set tip through the skin until the tip rests against the bone  
**The 5 mm mark must be visible above the skin for confirmation of adequate needle set length**
3. Gently drill, immediately release the trigger when you feel the loss of resistance as the needle set enters the medullary space; avoid recoil – do NOT pull back on the driver when releasing the trigger

## INSERTION COMPLETION

1. Hold the hub in place and pull the driver straight off; continue to hold the hub while twisting the stylet off the hub with counter clockwise rotations; catheter should feel firmly seated in the bone (1st confirmation of placement);

Dispose of all sharps and biohazard materials using standard biohazard practices and disposal containers.

If using the NeedleVISE® 1 port sharps block, place on stable surface and use a one-handed technique.

2. Place the EZ-Stabilizer® Dressing over the hub
3. Attach a primed extension set to the catheter hub, firmly secure by twisting clockwise
4. Pull the tabs off the dressing to expose the adhesive, apply to the skin
5. Aspirate for blood/bone marrow (2<sup>nd</sup> confirmation of placement)\*

\*Inability to withdraw/aspirate blood from the catheter hub does not mean the insertion was unsuccessful.

6. Proceed with technique below, based on situation:

### A. ADULT - RESPONSIVE TO PAIN – RECOMMENDED ANESTHETIC

Observe recommended cautions/contraindications to using 2% preservative and epinephrine-free lidocaine (intravenous lidocaine) and confirm lidocaine dose per institutional protocol

1. Prime extension set with lidocaine

Note that the priming volume of the EZ-Connect® Extension Set is approximately 1.0 mL

2. Slowly infuse lidocaine 40 mg IO over 120 seconds
3. Allow lidocaine to dwell in IO space 60 seconds
4. Flush with 5 to 10 mL of normal saline
5. Slowly administer an additional 20 mg of lidocaine IO over 60 seconds.

Repeat PRN; consider systemic pain control for patients not responding to IO lidocaine

### B. ADULT - UNRESPONSIVE TO PAIN

1. Prime extension set with normal saline
2. Flush the IO catheter with 5-10 mL of normal saline

If patient develops signs indicating responsiveness to pain, refer to adult recommended anesthetic technique.

### C. INFANT/CHILD - RESPONSIVE TO PAIN – RECOMMENDED ANESTHETIC

Observe recommended cautions/contraindications to using 2% preservative and epinephrine-free lidocaine (intravenous lidocaine) and confirm lidocaine dose per institutional protocol; usual initial dose is 0.5 mg/kg, not to exceed 40 mg

1. Prime extension set with lidocaine; priming volume of the EZ-Connect® Extension Set is approximately 1.0 mL

For small doses of lidocaine, consider administering by carefully attaching syringe directly to needle hub (prime extension set with normal saline)

2. Slowly infuse lidocaine over 120 seconds
3. Allow lidocaine to dwell in IO space 60 seconds
4. Flush with 2-5 mL of normal saline
5. Slowly administer subsequent lidocaine (half the initial dose) IO over 60 seconds.

Repeat PRN; consider systemic pain control for patients not responding to IO lidocaine

### D. INFANT/CHILD - UNRESPONSIVE TO PAIN

1. Prime extension set with normal saline
2. Flush the IO catheter with 2-5 mL of normal saline

If patient develops signs indicating responsiveness to pain, refer to infant/child recommended anesthetic technique.

7. Connect fluids if ordered and pressurize up to 300 mmHg for maximum flow
8. Verify placement/patency prior to all infusions. Use caution when infusing hypertonic solutions, chemotherapeutic agents, or vesicant drugs.
9. Stabilize and monitor site and limb for extravasation or other complications
  - For proximal humerus insertions, apply arm immobilizer or other securement device*
  - For distal femur insertions, maintain securement of the leg to ensure the knee does not bend*
10. Document date and time on wristband and place on patient

## Appendix 3.

### List of Providers; authorized to give orders over recorded cell line.

Kelly R. Anderson, D.O.

Adrian L. Carter, D.O.

Holly D. Dagney, D.O.

Thomas J. Dagney, III, D.O.

Richard A. DeFelice, M.D.

Sabrina Atkinson-Dornhoefer, D.O.

Thimjon Craig Ferguson, M.D.

Gregory M. Fletcher, M.D.

Michael S. Herron, M.D.

Carl E. Holt, Jr., M.D.

Scott R. Keyes, M.D.

P. Bryan Lilly, D.O.

Lance T. Payton, M.D.

Monte J. Sellers, D.O.

#### **Phys Assistants/ Nurse Practitioner**

Mary K. Fichtinger, PA-C

Cary S. Malczewski, PA-C

Lucas W. Jones, PA-C

Eric M. Potts, PA-C

Minsun Kim, NP-C

# Appendix 4

## Trauma Activations for Good Samaritan Hospital

### 911 ACTIVATION CRITERIA

- CONFIRMED blood pressure <90 at any time in adults and age-specific hypotension in children
- Gunshot wounds to the head, neck, chest, abdomen, or extremities proximal to the elbow/knee
- Glasgow Coma Scale score  $\leq 10$  with mechanism attributed to trauma
- Transfer patients from other hospitals receiving blood to maintain vital signs
- Intubated patients transferred from the scene, -OR-
- Patients who have respiratory compromise or are in need of an emergent airway
  - Includes intubated patients who are transferred from another facility with ongoing respiratory compromise (does not include patients intubated at another facility who are now stable from a respiratory standpoint)
- Open or depressed skull fracture
- 2 or more proximal long bone fractures
- Pelvic fractures with hemodynamic instability
- Limb paralysis and/or sensory deficit above wrist and ankle
- Amputation above wrist or ankle
- Combination trauma with 15% TBSA burn, facial burns, and inhalation injuries
- Traumatic arrest
- Flail Chest
- De-gloved or mangled extremity
- Pregnancy >20 weeks and meets 911 or 912 criteria
- Pulseless extremity with traumatic injury
- Emergency physician's discretion

### 912 ACTIVATION CRITERIA

*\*All 911 activation criteria supersede 912 alert criteria*

- Falls >20 ft. or more
  - Pediatrics (birth-15 y.o.)-falls 3 times body length of child
- Ejection from automobile, death in automobile accident, or prolonged extrication
- Head injury with LOC –OR- Head injury on daily anticoagulation therapy
- GCS 11-13 with mechanism attributed to trauma
- Transfers in with 2 or more systems injured
- Penetrating wounds to the head, neck, abdomen, chest, or groin
- Drowning
- Hanging
- Auto vs. pedestrian or Auto vs. bicycle, ATV injury with significant impact
- Emergency physician discretion

# Appendix 5

## Cricothyrotomy Guidelines

### Introduction

The Rusch Quick Trach allows quick and safe access for ventilation in the presence of acute respiratory distress with upper airway obstruction. The kit consists of a pre-assembled emergency Quick Trach unit with a 10mL syringe attached to a padded neck strap and connecting tube

### Product specifications

1. The adult QuickTrach has an internal diameter of 4mm.
2. The pediatric QuickTrach has an internal diameter of 2mm.
3. Plastic cannula with fixation flange and 15mm connector.
4. Removable stainless steel cricothyrotomy needle.
5. Removable stopper.
6. Preassembled and ready to use.
7. Sterile, single use, and latex-free

### Product Benefits

1. Removable stopper reduces risk of damage to the rear wall of the trachea.
2. Conical needle tip guarantees the smallest necessary stoma and reduces bleeding.
3. The syringe allows identification of the trachea by aspirating air.
4. Connecting tube for immediate ventilation.

### Indications

1. Acute upper airway obstruction, which cannot be relieved by, obstructed airway maneuvers.
2. Upper airway trauma with inability to nasally or orally intubate a patient who has severe respiratory insufficiency.

### Precautions

1. WEAR GLOVES AND EYE PROTECTION
2. Hold constant pressure on the larynx laterally between the thumb and forefinger. If you release this pressure during the procedure, landmarks may become difficult to relocate.

### Technique

1. Place the patient in a supine position. Assure stable positioning of the neck and hyperextend the neck (unless cervical spine injury suspected)
2. Secure the larynx laterally between the thumb and forefinger. Find the cricothyroid membrane (in the midline between the thyroid cartilage and the cricoid cartilage). This is puncture site.
3. Prep the site by vigorously scrubbing with alcohol or iodine preps.
4. Firmly hold device and puncture cricothyroid membrane at a 90-degree angle.

- a. After puncturing the cricothyroid membrane, check the entry of the needle into the trachea by aspirating air through the syringe.
- b. If air is present, needle is within trachea, change the angle of insertion to 60 degrees (from the head) and advance the device forward into the trachea to the level of the stopper. The stopper reduces the risk of inserting the needle too deeply and causing damage to the rear wall of the trachea.
  - c. Should no aspiration of air be possible because of an extremely thick neck, it is possible to remove the stopper and carefully insert the needle further until entrance into the trachea is made.
5. Remove the stopper. After the stopper is removed, be careful not to advance the device further with the needle still attached.
6. Hold the needle and syringe firmly and slide only the plastic cannula along the needle into the trachea until the flange rests on the neck. Carefully remove the needle and syringe.
7. Secure the cannula with the neck strap
8. Apply the connecting tube to the 15 mm connection and connect the other end to the bag-valve-mask with supplemental oxygen.
9. Continue ventilation with 100 percent oxygen and periodically assess the airway.

#### Complications

1. Respiratory arrest and patient demise due to:
  - a. Severity of patient's airway injury.
  - b. Lack of attention to other potential airway maneuvers.
  - c. Subcutaneous air due to improper tube or catheter positioning, along with positive ventilation.
  - d. Bleeding from superficial neck vessels is very common. Use direct pressure after QuickTrach is in place.
  - e. Perforations of the back wall of the trachea and the esophagus from excessively deep penetration by the QuickTrach.