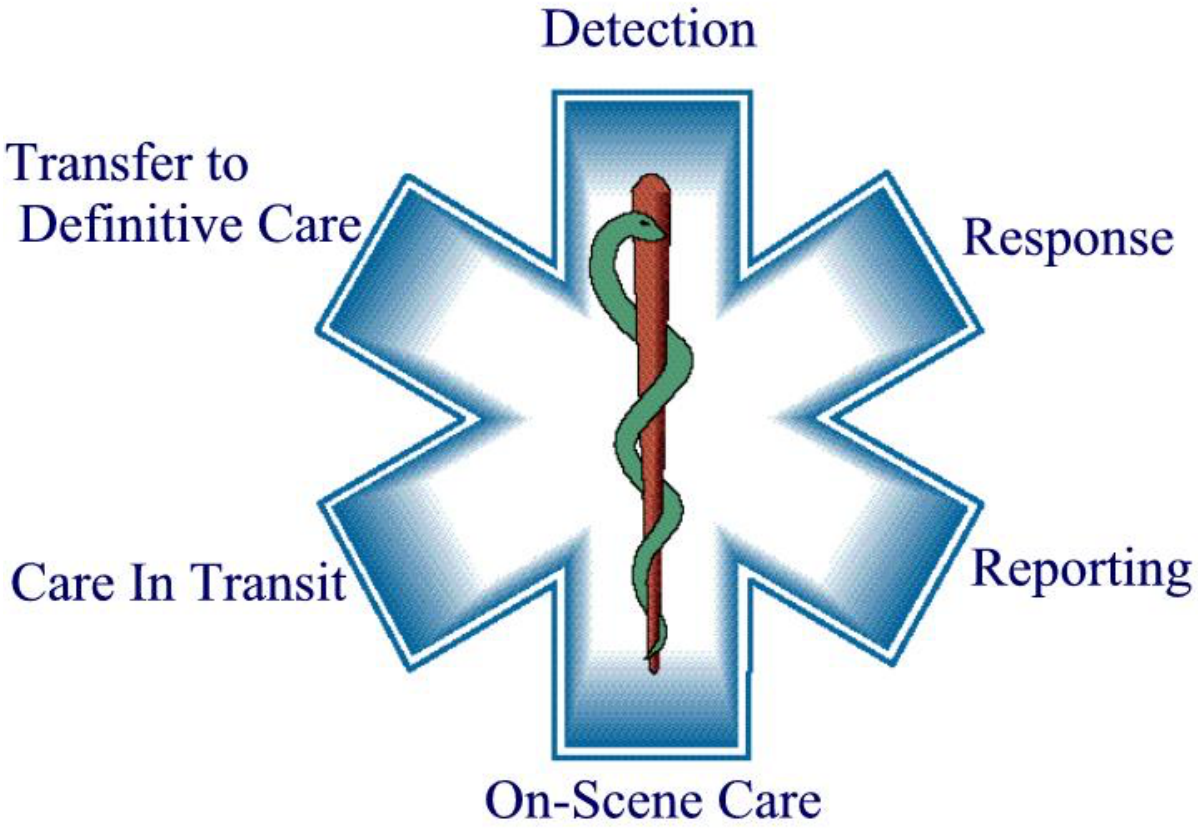
Ascension St. Vincent
EMS Protocols
2023



Stephanie Gardner, MD, FACEP, FAAEM, FAEMS

INTRODUCTION

The following protocols have been developed to provide standardized guidelines for patient care in particular critical situations. In some circumstances it is necessary to abbreviate or shorten terms to provide the most concise set of guidelines possible. When "ALS" appears in this document, we refer to Paramedic procedures, care, or transport as outlined by the Emergency Medical Services Branch, Fire and Building Safety Division of the Indiana Department of Homeland Security. When "BLS" appears in this document, we refer to Emergency Medical Technician (EMT) procedures, care, or transport as defined by the Emergency Medical Services Branch, Fire and Building Safety Division of the Indiana Department of Homeland Security. Throughout this document the terms "guidelines", "protocols", and "directives" may be used interchangeably.

The following protocols are guidelines to be used in patient care management. These medical guidelines are not intended to be all-inclusive and may not necessarily have covered every situation which may be encountered by the Paramedic/EMT. These guidelines are not meant to serve as a teaching tool, but are written with the understanding that the EMT or Paramedic knows how to perform the procedures. If there are references to procedures, medications, or conditions to which the Paramedic/EMT is not familiar, it is his/her responsibility to attain the appropriate guidance and/or education prior to performing such procedures or using such medications.

The protocols are designed to guide the Paramedic/EMT through the continuity of care for the out-of-hospital patient. ALS procedures are contained within the same protocol as the BLS procedures. This is intended to allow both the EMT and Paramedic to understand where ALS intervention is involved as part of the team of out-of-hospital care providers and where ALS intervention may be necessary in the out-of-hospital care. Some protocols are specific to ALS care as the treatment provided to the patient evolves beyond the BLS level of care.

The protocols are to provide guidelines in the treatment of patients of all ages. Where necessary, protocols unique for specific ages those ages are noted. For the purposes of these protocols, an adult is over the age of 15 years, a child is ages 1 to 15 years, an infant is 1 month to 1 year, and a newborn is from time of delivery up to 28 days (less than 1 month). When certain procedures are contrary to these ages, they are noted in the specific protocol.

Written protocols are not a substitute for direct physician orders and will always be superseded by on-scene EMS Medical Directors/Fellows or on-line medical control. As with all aspects of health care, these patient care protocols should be considered dynamic and will thus be continually evolving.

The Operational Guidelines Section contains guidelines for all affiliates. Some guidelines have specific notations for Indianapolis Emergency Medical Services (IEMS) personnel. These IEMS guidelines are in addition to, **NOT** substitution for, other guidelines in this section.

These protocols are reviewed and affirmed or revised annually. New or **substantially** changed material for this year is highlighted in red text.

These protocols are to be used by all affiliates. Except where indicated, affiliating agencies may not alter, add to or delete any portion of these protocols without written permission from their Medical Director.

THE GREATER INDIANAPOLIS AREA EMS MEDICAL DIRECTORS COUNCIL
OUT-OF-HOSPITAL CARE GUIDELINES
January 1st, 2023

Table of Contents:

This Page
Intentionally
Left Blank

Section ONE

Operations

PHILOSOPHY

Marion County **Advanced and Basic Life Support Protocols** are designed to allow pre-hospital care to begin immediately upon arrival of EMS personnel. If the advanced life support provider believes it is appropriate to provide ALS treatment beyond the contents of these protocols, the provider must establish on-line medical control and receive orders for such additional care.

Realizing that each patient's presentation is unique, the EMS provider's care should be stylized for the patient's needs. EMS personnel should take the time for an appropriate and accurate assessment. Most patients will tell the provider what is wrong with them. EMS personnel should take the time to listen. All patients require initial and on-going assessments. Making the assumption that everything is abnormal until proven normal by exam will minimize errors. Communication with the physician or nursing staff as a consult is encouraged. It is all right not to know everything. It is unacceptable not to ask questions. When specifically noted, communication is mandatory for medical direction. Medical control means interaction with a physician either through direct communication or via a nurse or paramedic who has questioned a physician regarding the requested order.

The sequence of care outlined may vary according to the patient's condition and the resources available. Documentation in the patient care report of decisions made is required. EMS providers can accept reasonable and appropriate orders from physicians. They can also refuse orders which do not seem right for the situation. The EMS provider is the individual assessing the patient and further discussion can always occur.

Incident reports by receiving facilities or by the EMS provider should be viewed as quality assurance issues not punishment. Growth and improvement can occur only with a continuous examination of this system and its needs. Concerns and issues that are not directly related to patient care should be documented via an incident report. Patient care reports should be reserved for patient care documentation only.

It is the goal of the Marion County Advanced and Basic Life Support System to provide the best possible care to all patients. The paramedics and EMTs within this system should view themselves as responsible professionals committed to others through service and example. Through their dedication, knowledge, and essential prehospital patient management, the patient's chances for a positive outcome can only be enhanced.

GENERAL GUIDELINES

- Affiliating services, departments, and agencies may not alter any portion of these protocols without written permission from the Medical Director.

- These protocols are not intended to be all-inclusive and may not have covered every situation potentially encountered by EMS personnel. An on-line ED physician must order any other skills or therapies and the EMS provider must have been trained in the skill or therapy.

- This is NOT meant to be a teaching tool. EMS personnel are expected to know how to perform the therapies and procedures. If an EMT or Paramedic is unfamiliar with any condition, treatment, medication, skill, or procedure contained herein, it is that individual's responsibility to seek the needed education.

- Once contact is made with a patient, the patient remains the EMS provider's responsibility until one of the following occurs:
    - Care is transferred to receiving facility staff
    - Care is transferred to an appropriate level healthcare provider
    - The patient is deemed non-viable
    - A valid Signature of Release (refusal of transport) is obtained

- Transfer of care at the receiving facility is not complete until a verbal report is given to the medical care provider. It is also required that a written patient care report be submitted to the ED staff unless the EMS provider is sent on an emergency response. When this occurs, the written patient care report must be made available as promptly as possible.

- Throughout these protocols unless otherwise specified, adult is over 15 years old, child is 1 to 15 years old, infant is 1 month to 1 year of age, and newborn is birth to 1 month old.

- Throughout these protocols, interventions are listed by certification level. BLS (EMT) personnel may only provide therapies listed as BLS, and Paramedics may provide all therapies listed. When appropriate, the Paramedic may elect to provide a Paramedic level intervention instead of an EMT level intervention (i.e. – Endotracheal intubation instead of placing a non-visualized airway).

- Cases of suspected abuse must be reported according to law.
    - 1-800-800-5556 is the Indiana Child Abuse and Neglect Hotline
    - 1-800-992-6978 is the Indiana Adult Protective Services Hotline

- In the event of the death of a child less than 1 year of age the Sudden Unexpected Infant Death (SUID) form will be filled out and faxed to coroner's office (317) 327-4563.

- Anywhere throughout this protocol manual where medications are to be administered at the BLS or the ALS level, it is required that the medication be verified prior to administration.

COMMUNICATIONS AND ORDERS

A. Establish communications with the intended receiving hospital when:
   1. Patient's condition is unstable
   2. Patient requires specialized care
   3. Requesting orders
   4. Consulting MD regarding a refusal of transport

B. Radio or phone report should be brief and generally follow the MIST format:
   1. Provide Age/Gender
   2. **M**echanism of Injury or **M**edical Complaint
   3. **I**njuries or **I**llness Identified
   4. **S**ymptoms/ **V**ital Signs
   5. **T**reatments Rendered
   6. Request orders (when appropriate)

   Note: Patient names are not to be given over the radio-patient initials and/or last 4 digits of social security number are permissible if requested by receiving facility

   Hospital communication or request for orders should be made on a recorded line whenever possible.

C. Repeat any orders received exactly as heard for confirmation.

D. If, based upon the EMS provider's training, the orders received are inappropriate and/or dangerous, question the orders three times then verbally refuse to act. Continue to treat the patient according to these protocols.

E. If an order for therapy is denied and the EMS provider believes it to be life-saving, verbally request it three times. The EMS provider may then contact their supervising hospital for further instructions. Continue to treat the patient according to appropriate protocols.

M	**M**echanism of Injury or **M**edical Complaint	Mechanism: Speed, Vehicle Type, Restraints, Protective Equipment, Weapon Type Medical: Onset, duration, other pertinent history
I	**I**njuries or **I**llness Identified	Injuries – Head to Toe Illnesses – STEMI - EKG Findings, Stroke – Scale Positive/Negative
S	**S**ymptoms/ Vital **S**igns	Current vitals, any prior abnormal vital signs (HR, BP, SPO2, RR, ETCO2, Blood Glucose) GCS: Eyes:____ Motor: _____ Verbal: _____ (Total: _____)
T	**T**reatments Rendered	Airway placement – What Type? Tourniquets / Needle Decompression Defibrillator shocks IV or IO Access Medications Given + Responses

An incident of refusal of orders must be brought to the attention of the appropriate leader at the service, agency, or department and the Medical Director within 48 hours.

Facility Handoff Report / MIST Report

When patient care is transitioned at the hospital, a face-to-face verbal handoff must be provided to the receiving facility staff. Use the MIST format:

1. **M**echanism of Injury or **M**edical Complaint
2. **I**njuries or **I**llness Identified
3. **S**ymptoms/ **V**ital Signs
4. **T**reatments Rendered

M	**M**echanism of Injury or **M**edical Complaint	Mechanism: Speed, Vehicle Type, Restraints, Protective Equipment, Weapon Type Medical: Onset, duration, other pertinent history
I	**I**njuries or **I**llness Identified	Injuries – Head to Toe Illnesses – STEMI - EKG Findings, Stroke – Scale Positive/Negative
S	**S**ymptoms/ Vital **S**igns	Current vitals, any prior abnormal vital signs (HR, BP, SPO2, RR, ETCO2, Blood Glucose) GCS: Eyes:____ Motor: _____ Verbal: _____ (Total: _____)
T	**T**reatments Rendered	Airway placement – What Type? Tourniquets / Needle Decompression Defibrillator shocks IV or IO Access Medications Given + Responses

VERIFICATION OF MEDICAL PERSONNEL ON THE SCENE

A. The EMS provider is operating under the supervision of "medical control". Medical control is defined as the Medical Director or an on-line ED physician.

B. In general, on scene non-EMS system medical personnel will be courteously dissuaded from participating in patient care.
    1. This and sections C and D do not apply to the agency's EMS Medical Director(s), the IU School of Medicine EMS Fellow(s), and the IUSM Emergency Medicine residents when in IEMS vehicles.

C. The paramedic on the scene with the patient will have medical control of the patient except when:
    1. A physician identifies him/herself as a physician and can produce a State of Indiana Professional Licensing Agency license and is willing to assume in advance ALL medical and legal responsibilities for the patient. The physician:
        a. Must be willing to sign the run sheet for all orders given.
        b. Must be willing to sign a required provider specific form (when applicable)
        c. 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.
    2. The paramedic feels the physician may be helpful in rendering care to the patient within the scope of the ALS protocols or if the physician possesses special knowledge about the patient or can perform special skills the patient may need.
    3. Patient care may not be directed by or turned over to non-system medical personnel other than physicians (e.g., nurses, nurse practitioners, physician assistants, midwives, etc.). If the non-physician health care provider is insistent, they may be referred to the on-line physician at the receiving or supervising hospital.

D. If the physician requests an intervention that according to prehospital standards of care is inappropriate or detrimental to the patient, the paramedic will treat the patient as outlined by the ***appropriate protocols***. The paramedic will then refer the on-scene physician to the physician at the receiving hospital.

E. At no time should lifesaving medical care be delayed in order to establish identities or medical control. It is the responsibility of the paramedic to institute appropriate medical care ASAP.

ALS AND BLS TEAM APPROACH

A. The EMS provider with the highest level of certification is responsible for the initial assessment of all patients unless the number of patients or the severity of injuries makes this impossible.
B. In the event of a non-transport (refusal or non-viability), the EMS provider with the highest level of certification is responsible for the assessment and documentation unless the number of patients and the severity of injuries make this impossible.
C. In situations where a BLS crew has requested a paramedic for assistance and the paramedic feels BLS transport is indicated, the paramedic will continue to assist the BLS crew throughout the transport.
D. Patient care may be delegated from the Paramedic to the EMT under the following conditions:
    1. The patient is stable and does not meet any of the criteria for ALS transport listed below.
    2. The Paramedic fully informs the EMT of assessment findings and anticipated patient needs.
    3. The EMT is comfortable with accepting responsibility for treatment and transport.
    4. The patient has not received any ALS treatment (i.e. – IV therapy, intubation, etc.)
    5. The Paramedic fully documents assessment findings and treatment up to the point of delegation of patient care to the EMT.

ALS treatment and transport is indicated if the patient has one or more of the following conditions. If the BLS crew is able to deliver the patient to an emergency department in less time than it would take for the ALS crew to make contact, the BLS crew should complete transport. Waiting for ALS to arrive should not cause delays in transporting the patient.

- Shortness of breath or acute dyspnea
- Chest pain or anginal equivalent
- New onset altered level of consciousness
- Uncontrollable bleeding
- Unconsciousness
- Seizures
- Patient meets Trauma Alert Criteria
- Patient meets Medical Alert Criteria
- Shock signs/symptoms (unstable patient)
- OB at >20 weeks with contractions and:
    - Evidence of meconium staining **or**
    - Vaginal Bleeding
- Childbirth prior to 38 weeks gestation
- Syncope or near-syncope
- Symptomatic with abnormal vital signs
- Any uncertainty about the patient's status

Any time the EMS provider believes the patient's condition warrants ALS treatment and care.

TRANSPORTATION/DESTINATION

A. A patient is anyone who has either requested an ambulance or has had an ambulance requested for them. All patients who have activated the EMS system will be transported to a hospital campus with EMS radio communication capabilities unless patient refuses transport. (See "Non-Transported Patient")

B. Patients will be transported to the patient's hospital of choice when their condition is stable and they do not meet a special needs situation. The EMS provider is responsible for informing the patient that transport to a specific hospital may be better for their specific medical situation.

C. Special needs considerations for hospital choice include:
   1. Patients with multi-systems trauma → Trauma Center
   2. Patients with serious burns → Burn Center (in case of burn diversion closest appropriate trauma center) – See Burn Center criteria
   3. OB in 2nd and 3rd trimester → Hospital with Labor and Delivery
   4. STEMI / CVA → Hospital with resources for that specialty
      a. Patients with ROSC following cardiac arrest should be transported to a PCI-capable facility
   5. Children with known or suspected button battery ingestion should be transported to St Vincent-Peyton Manning Children's Hospital or Riley Children's Hospital.

D. If there is an immediate threat to loss of life or limb, the EMS provider may use their judgment and transport the patient to the nearest or most appropriate facility. The EMS provider will advise the patient and the family of this decision. The EMS provider will make every effort to explain the rationale behind the decision.

E. In the interest of safety and well being for EMS providers, patients, and community members, it is realized that red lights and sirens must be used appropriately when transporting to the hospital. If, in the judgment of the EMS provider, there is a "time critical" threat to life or limb, red lights and sirens are appropriate.

F. Special Considerations for Pediatric Trauma Transport Destination Protocol:
   1. Patients with multi-system trauma → trauma center
      a. Patients under the age of 15 should be transported to a pediatric trauma center.
      b. If adults and children from the same family meet major trauma criteria, children should be transported separately to a pediatric trauma center. If the injured adult refuses to be separated from the child, the adult should be informed of the risks of taking the child to a non-pediatric trauma center and both should be taken to a trauma center with capabilities for both age groups.
      c. In the case of Pediatric MCI, activate the MedMACC (page MESH via Dispatch). In these cases, some children may need to be transported to non-pediatric specific trauma centers. This should occur with the following considerations:
         i. In MOST cases Riley Hospital for Children estimates that they can take 4 RED, 8 YELLOW, and 30 GREEN
         ii. In MOST cases St Vincent-Peyton Manning Children's Hospital estimates that they can take up to 2 REDS, 6 YELLOW and UNLIMITED GREEN

         iii. In situations in which injured children **need to be triaged to hospitals OTHER than Riley or St Vincent-Peyton Manning**, the **sickest** and **youngest** of the

injured children should be preferentially taken to Riley or St Vincent-Peyton Manning. The other critically injured should be dispersed equitably and with primary consideration to travel distance to the following trauma centers:

- Eskenazi Hospital
- Methodist Hospital

NON-TRANSPORTED PATIENT

A. Transportation of the patient for additional evaluation and care should always be the goal of EMS providers regardless of the acuity of the patient's complaint. Should the patient state that they are refusing transportation, the EMS provider will enlist the aid of the patient's friends and family members present to encourage the patient to agree to additional treatment and transportation. Any fears or concerns the patient might have should be discussed.

B. Medical control must be consulted when a patient is refusing transport and any of the following applies:
    1. Patient has an abnormal mental status, indicated by:
        a. Slurred or abnormal speech
        b. Disorientation to person, place, or time
        c. Inappropriate or irrational thinking
    2. Patient is less than 1 year old.
    3. There are any historical data, symptoms, or signs suggestive of a potentially life threatening illness or injury.
    4. Patient does not have access to a phone or "significant others" to aid in getting further care if needed.

C. When Medical Control is contacted, the physician will be apprised of the situation and whether the SOR is against the EMS personnel's medical advice. The physician will be asked for recommendations, and may ask to speak directly to the patient. The EMS provider should record the hospital, physician's name, and the recommendations on the patient care report of the Refusal of Transport or Signature of Release form.

D. To accept the patient's decision not to receive treatment and/or transportation, the following must be performed:
    1. The patient or the patient's guardian is informed:
        a. That transport is indicated for further evaluation and care by an emergency department physician.
        b. That the patient has not been evaluated by a physician.
        c. That significant medical problems may exist and that these potential problems cannot be fully described at this time, but may possibly lead to significant disability or even death.
        d. To seek follow-up medical care as soon as possible.
        e. That 911 may be called at any time should they change their mind and wish to be transported to a hospital emergency department.
    2. The patient is asked if they understand the risks in refusing further medical care, and additional explanation is provided as needed.
    3. The refusal form is signed by the patient or their guardian after they read (or have read to them) the statement of refusal.
    4. A complete patient care report with all assessment findings and vital signs must be completed by the highest medical authority on scene in addition to the refusal-specific documentation.

E. In the event the patient is less than 18 years old, these persons may take responsibility for the child:
    1. Parent or legal guardian
    2. Individual in loco parentis (someone who assumes the duties and responsibilities in place of a parent, e.g., grandparent, aunt, uncle, babysitter, principal, police officer) if:
        a. There is no parent or legal guardian present; or
        b. The parent or legal guardian is not reasonably present or declines to act; or
        c. The existence of the parent or legal guardian is unknown to the health care provider.

3. Adult sibling of the minor if:
    a. There is no parent, legal guardian, or individual in loco parentis present; or
    b. The parent, legal guardian, or individual in loco parentis is not reasonably present or declines to act; or
    c. The existence of the parent, legal guardian, or individual in loco parentis is unknown to the health care provider.
4. The minor patient if there is compelling evidence of emancipation as defined under Indiana Code 16-36-1-3(a)(2)(A)-(E):
    a. At least 14 years of age; and
    b. Not dependent on a parent for support; and
    c. Living apart from the minor's parents or from an individual in loco parentis; and
        i. Managing the minor's own affairs; or
        ii. Is or has been married; or
        iii. Is in the military service of the United States; or
        iv. Is authorized to consent to health care by any other statute.

F. If the patient is a minor and none of the above can be contacted, the patient should be transported to the closest, most appropriate facility.

SAFE TRANSPORT OF PEDIATRIC PATIENTS

A. These guidelines apply to every EMS response resulting in the need to transport pediatric patients and require the use of a safety seat or restraint (as defined below). Pediatric patients that do not require a child safety seat or restraint should be transported following the same procedure as adult patients.

Unlike other situations, choice of safety restraints are directly related to the child's size. Therefore, for the purposes of this protocol, child specific safety seats or restraints are required until the child has reached adult size by provider judgment (As a general guide, greater than 5 feet tall and 100 lbs.).

B. These guidelines offer recommendations, as published by NHTSA, for the transportation of children in five (5) different possible situations:
   1. A child who is not injured or ill.
   2. An ill or injured child whose condition does not require continuous and/or intensive medical monitoring/intervention.
   3. An ill or injured child who does require continuous and/or intensive monitoring/intervention.
   4. A child whose condition requires spinal motion restriction and/or lying flat.
   5. A child or children who require transport as part of a multiple patient transport (newborn with mother, multiple children, etc.).

C. General Guidelines
   1. Each agency is responsible for providing child restraint options that are compatible with their transporting vehicles. These guidelines do not comprehensively cover all possible situations and EMS provider judgment should be used if a situation is presented that is not addressed below.

   2. The child's age and weight shall be considered when determining an appropriate restraint system. Child seat models offer a wide range of age/weight limits, so each individual device must be evaluated to determine the appropriateness of use.

   3. The child's own safety seat is the preferred device unless the device has been involved in a motor vehicle crash, cannot be safely secured in the vehicle or the child needs care and monitoring that cannot be delivered with the child in the car seat.
      i. With the exception of a minor vehicle crash (e.g. "fender-bender"), avoid using the child's own safety seat if the seat was involved in a motor vehicle crash. However, using the child's own seat can be considered if no other restraint systems are available and the seat shows no visible damage/defect.

   4. Transportation of a child in any of the following ways is NEVER appropriate:
      i. Unrestrained;
      ii. On a parent/guardian/other caregiver's lap or held in their arms;
      iii. Using only horizontal stretcher straps, if the child does not fit according to cot manufacturer's specifications for proper restraint of patients;
      iv. On the multi-occupant bench seat or any seat perpendicular to the forward motion of the vehicle, even if the child is in a child safety seat.

D. Situation Guidelines:

Ideal transport method is in **bold & highlighted, with acceptable alternatives listed.*

1. The uninjured/not ill child shall be transported:
    a. **In a vehicle other than a ground ambulance using a properly installed, size-appropriate child restraint system.**
    b. In a size-appropriate child seat properly-installed in the front passenger seat of the ambulance with the airbags off or in another forward-facing seat.
    c. In a size-appropriate child seat properly-installed on the rear-facing EMS provider's seat.
    d. Consider delaying the transport of the child (ensuring appropriate adult supervision) until additional vehicles are available without compromising other patients on the scene. Consult medical direction/operations.
2. The ill/injured child not requiring continuous intensive monitoring/interventions, shall be transported:
    a. **In a size-appropriate child restraint system secured appropriately on the cot.**
    b. In the EMS provider's seat (captain's chair) in a size-appropriate restraint system.
    c. On the cot using three horizontal straps (chest, waist, knees) and one vertical restraint across each shoulder (X formation).
3. The ill/injured child whose condition requires continuous intensive monitoring or intervention, shall be transported:
    a. **In a size-appropriate child restraint system secured appropriately to cot.**
    b. On the cot using three horizontal straps (chest, waist, knees) and one vertical restraint across each shoulder (X formation). If assessment/intervention requires the removing of restraint strap(s), restraints should be re-secured as quickly as possible.
4. The ill/injured child who requires SMR or lying flat, shall be transported:
    a. **Secured to a size-appropriate LBB, then secure the LBB to the cot, head first, with a tether at the foot (if possible) to prevent forward movement, and three horizontal restraints (chest, waist, and knees) and a vertical restraint across each shoulder (X formation).**
    b. Secured to a standard LBB with padding added as needed and secure using the strap configuration listed above.
5. The child or children requiring transport as part of a multiple patient transport.
    a. **If possible, for multiple patients, transport each as a single patient according to the guidance provided for situations 1 through 4. For mother and newborn, transport the newborn in an approved size-appropriate restraint system in the rear-facing EMS provider seat with a belt-path that prevents both lateral and forward movement, leaving the cot for the mother. Protect newborn from hypothermia.**
    b. Consider the use of additional units to accomplish safe transport, remembering that non-patient children should be transported in non-EMS vehicles, if possible.
    c. c. When available resources prevent meeting the criteria for situations 1 through 4 for all child patients, transport using space available in a non-emergency mode, exercising extreme caution and driving at a reduced speed.
    d. Note: Even with childbirth in the field, it is NEVER appropriate to transport a child held in the parent/guardian/caregiver's arms or on a parent/guardian/caregiver's lap.

Reference: Working Group Best-Practice Recommendations for the Safe Transportation of Children in Emergency Ground Ambulances. National Highway Traffic Safety Administration (NHTSA), September 2012, available at www.ems.gov

LANGUAGE CONSIDERATIONS

Communication is a key to a thorough evaluation of the patient's condition and determining necessary treatment. All services, agencies, and departments are strongly encouraged to have interpretation services available for EMS personnel to contact in the event of a language barrier.

English/Spanish Translations

I am a paramedic.	Soy paramédico.
How are you?	Cómo se siente?
What's the matter?	Qué le ocurre?
Speak slowly please.	Hable despacio, por favor.
You must go to the hospital.	Tiene que ir al hospital.
We're going to take you to the hospital, OK?	Vamos a llevarle al hospital. ¿De acuerdo?
Understand?	¿Me comprende?
What is your name?	Cómo se llama?
What is your age?	Cuántos años tiene?
Where do you live?	Dónde vive?
Are you allergic to medicine?	Sufre de alguna alergia a las medicinas?
Where does it hurt?	Dónde le duele?
Does it hurt here?	Le duele aquí?
How much does it hurt? Bad? Mild? Little?	Quanto duele? Malo? Suave? Poco?
Do you take medications?	Toma usted medicamentos?
Do you have insurance?	Tiene seguro médico?
What hospital do you want to go to?	A qué hospital quiere ir?
Sign here please.	Firme aquí, por favor.
Do you feel better?	Se encuentra mejor?
Do you take Viagra?	Toma Viagra o otra?
Please don't move.	No se mueva, por favor.
Any questions?	Tiene alguna pregunta?

Refusal of Transportation Statements

Emergency personnel have offered to transport me to the hospital for further evaluation and care. I refuse this service.	Aunque el personal de emergencia se ha ofrecido a llevarme al hospital para que me realicen más pruebas y para recibir más atención médica, yo rechazo este servicio.
I understand that I have not been evaluated by a physician and that serious medical problems may still exist which may result in disability or death.	Yo comprendo que no me ha examinado un médico y que posiblemente tenga problemas de salud graves que puedan causarme incapacidad o incluso la muerte.
I understand that I may call 911 or an ambulance at any time if I change my mind and wish to be taken to a hospital.	Entiendo que puedo llamar al 911 o a una ambulancia en cualquier momento si cambio de opinión y deseo que me lleven al hospital.
I understand that I am assuming full responsibility for my continuing medical care.	Yo asumo toda la responsabilidad de buscar atención médica

GUIDELINES FOR INITIATING RESUSCITATION EFFORTS

A. Basic and/or Advanced cardiac life support must be started on all patients who are found apneic and pulseless, UNLESS meets Dead On Arrival (DOA) Criteria:
   1. Valid DNR (see below)
   2. Obvious signs of prolonged death such as rigor mortis, dependent lividity, or decomposition
   3. Injury that is incompatible with life (i.e. decapitation, or burned beyond recognition without detectable signs of life, gross dismemberment including crushing of head or torso)

B. If any of the above applies, do not start CPR. Contact the appropriate authorities and complete a patient care report.

C. Resuscitation efforts should begin immediately in all other cases. **If in doubt, start resuscitation.**

GUIDELINES FOR TERMINATION OF RESUSCITATION EFFORTS (FOR PATIENTS OVER THE AGE OF 15)

Non-EMS Witnessed Adult Medical Cardiac Arrest

A. Termination of resuscitation may be appropriate for non-EMS witnessed medical cardiac arrest victims who have no return of spontaneous circulation after **complete advanced life support care** is provided. **Complete advanced life support care** is defined as having provided, at a minimum:
   - **High Quality CPR**
   - **Ventilation with oxygenation**
   - **Intravenous or intraosseous access**
   - **At least 3 administrations of epinephrine given at appropriate intervals**
   - **Treatment of possible reversible causes**

If cardiac arrest persists with a non-shockable rhythm after all the above interventions provided despite rendering **complete advanced life support care**, the paramedic is authorized to consider terminating resuscitation efforts without consulting a base hospital physician. After termination is declared, a 10-minute observation period before leaving the scene is recommended. **The monitor does not need to be kept on during the observation period.** Re-verify apnea and pulse after this observation period. Equipment recovery and family counseling can take place during this observation period.

B. Exception: If a patient remains in refractory ventricular fibrillation/tachycardia, transport after 6 defibrillation shocks have been administered. **Continue defibrillation efforts every 2 minutes if in VF/VT.**

C. If ROSC is achieved at any time but cardiac arrest re-occurs, the patient should still be transported.

D. Resuscitation may also be terminated by contacting intended receiving facility.

Exceptions: Standing termination protocols do not apply for patients under 15 years of age, females with known pregnancy >24 week or uterine fundus palpable above the umbilicus, victims of lightning strikes, victims of cold water drowning (unless known submersion time greater than 30 minutes in adults or 90 minutes in children), or victims with hypothermia as suspected etiology of cardiac arrest. Please refer to appropriate protocols.

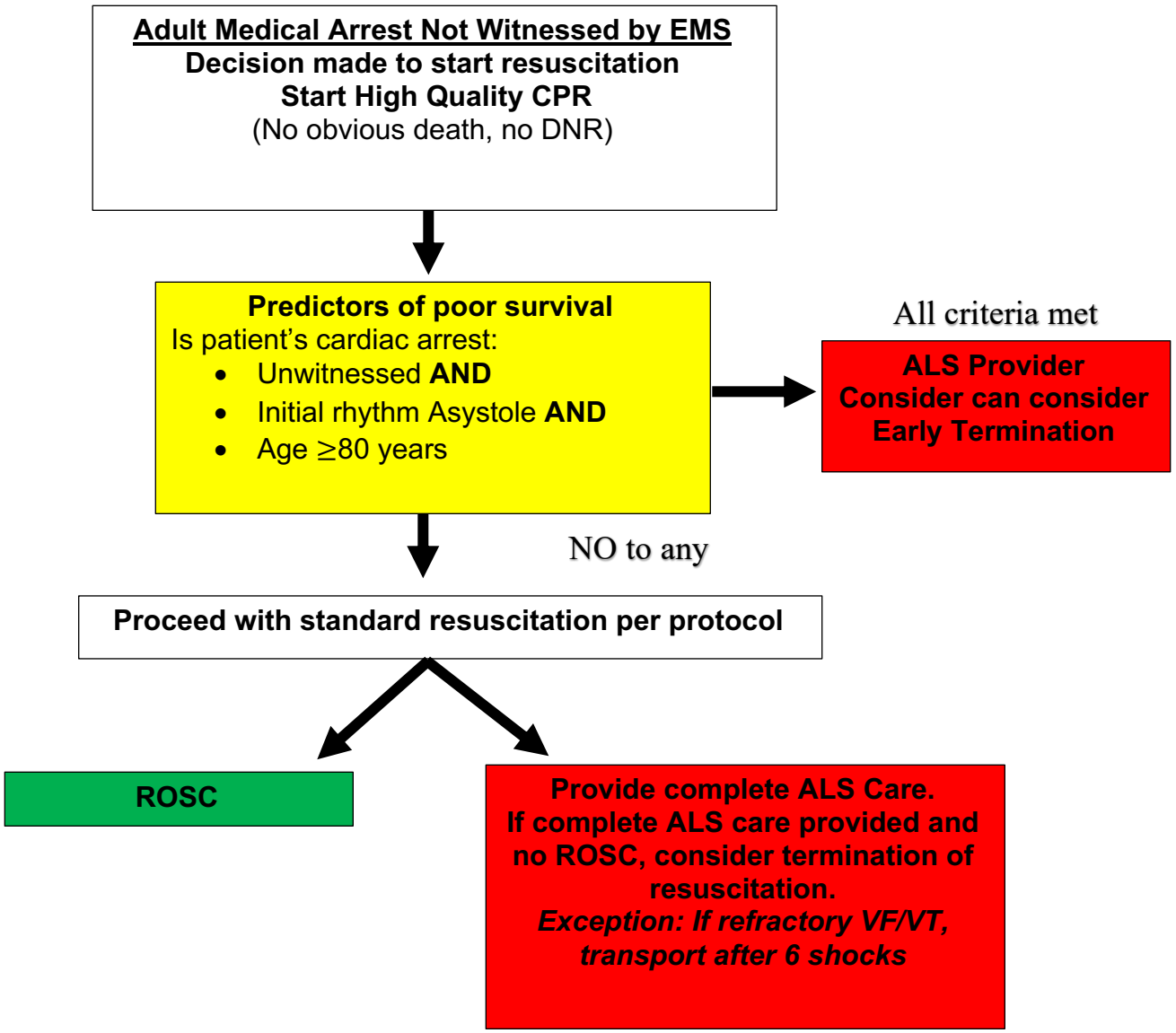
CONSIDERATION FOR EARLY TERMINATION OF RESUSCITATION

Patients who meet the following criteria have <1% survivability:

- Unwitnessed cardiac arrest, **and**
- Initial rhythm asystole, **and**
- Age 80 or over

In these patients, ALS providers are not required to continue resuscitation efforts once all of these criteria have been determined. ALS providers may consider early termination without base hospital physician order for these patients.

If there is missing information (such as age, witnessed versus not witnessed), if family or other bystanders feel strongly that resuscitation should be pursued, if any of the first responders feels that there are special circumstances that might lead to a better outcome, or if it is impractical to terminate resuscitation early in the prehospital setting, follow standard resuscitation protocol.



EMS Witnessed Medical Cardiac Arrest

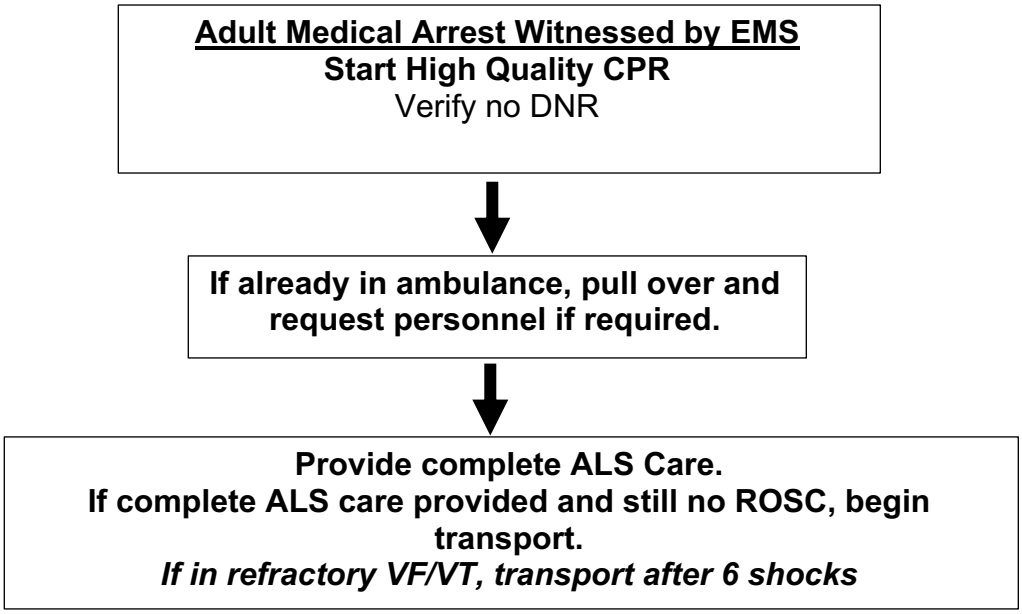
A. "EMS Witnessed" is defined as cardiac arrest that occurs in the presence of any EMS clinician (e.g. Fire Department or EMS).

B. EMS Witnessed Medical Cardiac Arrest have a statistically higher chance of survival and should be transported even if field ROSC is not obtained.

C. If the EMS-witnessed arrest occurs while in an ambulance, the EMS crew should pull over and request additional manpower in order to provide High Quality CPR.

D. Transport of EMS Witnessed medical cardiac arrest should take place after complete advanced life support care is provided. Complete advanced life support care is defined as having provided, at a minimum:
   - High Quality CPR
   - Ventilation with oxygenation
   - Intravenous or intraosseous access
   - At least 3 administrations of epinephrine given at appropriate intervals
   - Treatment of possible reversible causes

E. If a patient remains in refractory ventricular fibrillation/tachycardia, transport after 6 defibrillation shocks have been administered



Termination of Resuscitation for Traumatic Cardiac Arrest:

A. Follow **Traumatic Cardiac Arrest Protocol** for when to initiate resuscitation

B. When the mechanism of injury does not correlate with the clinical condition, suggesting a non-traumatic cause of cardiac arrest, standard resuscitative measures should be followed.

C. If an adult patient **was asphyxiated by hanging**, initiate on-scene resuscitation care to ensure **complete advanced life support care** has been provided, as defined above. Terminate if no ROSC after full ALS support has been provided. If ROSC occurs, transport to a trauma center and identify as a trauma alert.

Exemptions: Standing termination protocols do not apply for patients under 15 years of age, females with known pregnancy >24 week or uterine fundus palpable above the umbilicus, victims of lightning strikes, victims of cold water drowning (unless known submersion time greater than 30 minutes in adults or 90 minutes in children), or victims with hypothermia as suspected etiology of cardiac arrest. Please refer to appropriate protocols.

GUIDELINES FOR DO NOT RESUSCITATE (DNR)/ POST ORDERS/ ADVANCED DIRECTIVE ORDERS:

A. If persons present at the scene of a patient in cardiopulmonary arrest request that resuscitative measures be withheld, request to see a DNR/POST order which has been signed by the attending physician or chart order (if an ECF patient). The order in the medical record may contain the words DNR, Do Not Resuscitate, No CPR, or No Code. When DNR orders are noted in medical records in licensed facilities, it should be noted on the ePCR that the written DNR order was present.

1. A DNR order only indicates that CPR should be withheld in the event of cardiac or respiratory arrest. EMS providers must ensure that all patients receive thorough and proper assessments and that, short of CPR, those treatment modalities which correlate with the findings of those assessments and accepted standards of care are instituted. This includes treatments such as clearing a blocked airway or providing fluids for a trauma injury, which may have nothing to do with the patient's main illness etiology.

2. If hospice workers or the patient's primary physician are already there, or arrive on the scene while you are evaluating the patient, they almost certainly have significant knowledge about the patient's pre-existing medical condition, as well as his/her decisions regarding invasive treatments. **They can verbally confirm the DNR or POST if it is not immediately available.**

B. If the DNR/POST order is presented and resuscitative efforts are not attempted, complete a patient care report with assessment findings, contact the attending physician if possible, and contact the appropriate authorities.

- 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.

- If a patient stated that they wish resuscitative measures after the date on a signed DNR, the request shall be honored.

- If the paramedic questions the validity of the DNR order, resuscitative efforts should be initiated. Contact the emergency department physician at the intended receiving facility for further orders. These guidelines do not apply to a Living Will.

- If a family member requests resuscitative measures despite a valid DNR or POST, EMS personnel should not initiate resuscitation. Personnel should contact on-line medical control for direction, if needed.

- These guidelines does not affect the resuscitation of suicide attempts

End of Life Care

- If the patient is not in cardiac arrest and has a valid POST form, EMS personnel may provide comfort measures as described in Section B of the POST form.

- The patient should be transported to the hospital if comfort measures are started by EMS field personnel. The POST form should accompany the patient to the hospital so that it may be incorporated into the medical record at the receiving facility.

SUPPORTIVE MEASURES FOR END OF LIFE CARE

- Medical interventions that may provide for the comfort, safety and dignity of the patient should be utilized.

- The patient should receive palliative treatment for pain, dyspnea, major hemorrhage or other medical conditions.

- Many hospice or palliative care patients undergoing aggressive treatments like chemotherapy may already have a vascular access device, such as a Port-A-Cath, arteriovenous (AV) graft or AV fistula, that they would prefer be used as a primary medication administration route. In this case, it may only be accessed by EMS if the proper equipment is available and if the personnel are properly trained to do so. Alternatives may be necessary, including intranasal or intramuscular administration.

- Hospice patients may be immunosuppressed, anorexic, or have decreased liver and renal function due to chemotherapy, radiation therapy or the progression of their disease. Drug metabolization can be slowed, and adverse side effects can become more severe in these patients. The patient will typically have benzodiazepines, opioids, and anti-emetics prescribed. If you are not familiar with a medication and

there are questions about potential harmful or additive effects if combined with other medications, it is best to contact medical control.

- Pain and anxiety may frequently be encountered at the end of life. EMS administration of midazolam or fentanyl is appropriate, but should be specifically authorized by on-line medical control.

- In the final hours and minutes before the end, patients adopt unusual breathing patterns that can unsettle bystanders. This is frequently accompanied by sonorous respirations or sounds of choking which are very distressing to family members in attendance. A nasopharyngeal airway will alleviate most of these without altering the outcome.

- If it is decided that patient transport is necessary, every effort should be made to ensure the destination facility is familiar with the patient's condition and advance directives. Also, keep in mind some of the simple, noninvasive clinical measures that can be employed for comfort, such as oxygen administration and cold or heat packs. A climate-controlled ambulance, extra padding when necessary, and overall care and compassion are necessary comfort measures.

- In addition, the prehospital care provider must be prepared to transport any home medical equipment that the hospice patient may need, such as a ventilator, respirator or medication infusion pump. If you are unable to transport the patient with the device, or are unsure whether the device should be transported, contact medical control. If operation or monitoring of the equipment is outside the provider's scope of practice and/or training, arrangements may need to be made for a knowledgeable caregiver to accompany the patient in the ambulance, or a specialty care transport unit to transfer the patient to a care facility.

- When at all possible, the crew should attempt to comply with the patient's and his family's wishes as much as is prudent.

- Allow any family members/significant others to express their concerns and begin their grieving process.

- Unless a patient is actively dying, medical treatment for other conditions should not be withheld.

TRAUMATIC CARDIAC ARREST RESUSCITATION PROTOCOL

Definitions:

Signs of Life is defined as: pupillary response, spontaneous ventilation, presence of carotid pulse, measurable or palpable blood pressure or extremity movement.

Blunt Trauma – Adult

1. Initiate resuscitation using traumatic cardiac arrest protocol only if the adult patient had initial Signs of Life when first encountered by public safety [Police, Fire, EMS] after injury prior to cardiac arrest (i.e. a witnessed traumatic cardiac arrest due to blunt trauma)

2. Withhold traumatic cardiac arrest resuscitation if unwitnessed with blunt mechanism. Fully document absent signs of life in patient care report.

    - If a first responder prior to EMS arrival has already started resuscitation on an unwitnessed arrest with blunt trauma, EMS providers are to ask about to surrounding circumstances to verify if there was signs of life before resuscitation was started. Resuscitation does not need to be continued if there were no signs of life before first responder arrival.

Penetrating Trauma – Adult

1. Initiate resuscitation using traumatic cardiac arrest protocol if the adult patient had initial Signs of Life when first encountered by public safety [Police, Fire, EMS] after injury prior to cardiac arrest (i.e. a witnessed traumatic cardiac arrest due to penetrating trauma) **or** if the arrest was unwitnessed with suspected downtime less than 10 minutes from first medical contact

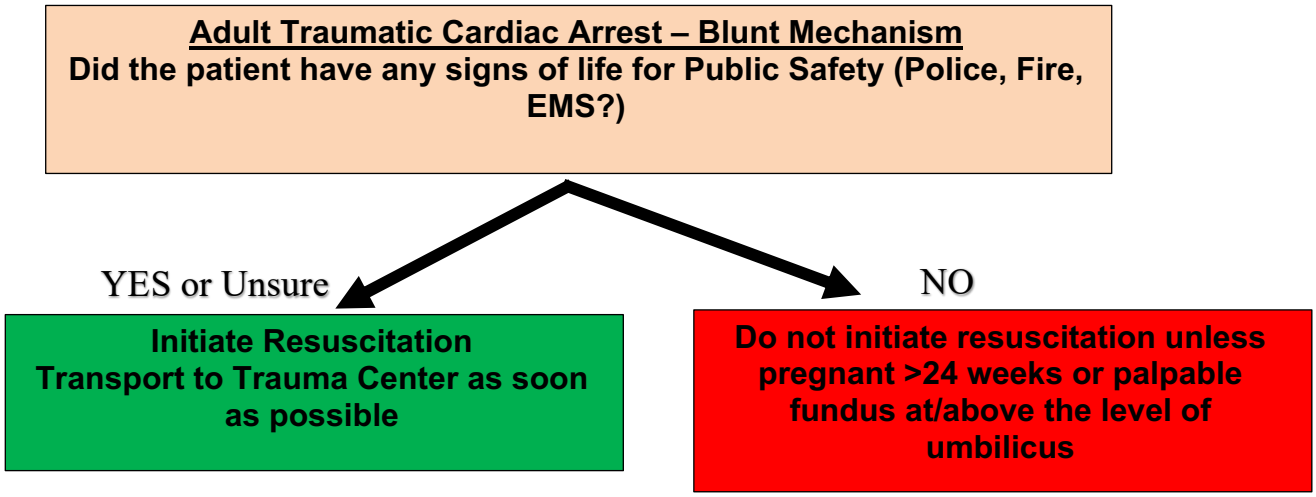
2. Withhold traumatic cardiac arrest resuscitation if unwitnessed with a suspected downtime of >10 minutes with penetrating mechanism. Fully document absent signs of life in patient care report.

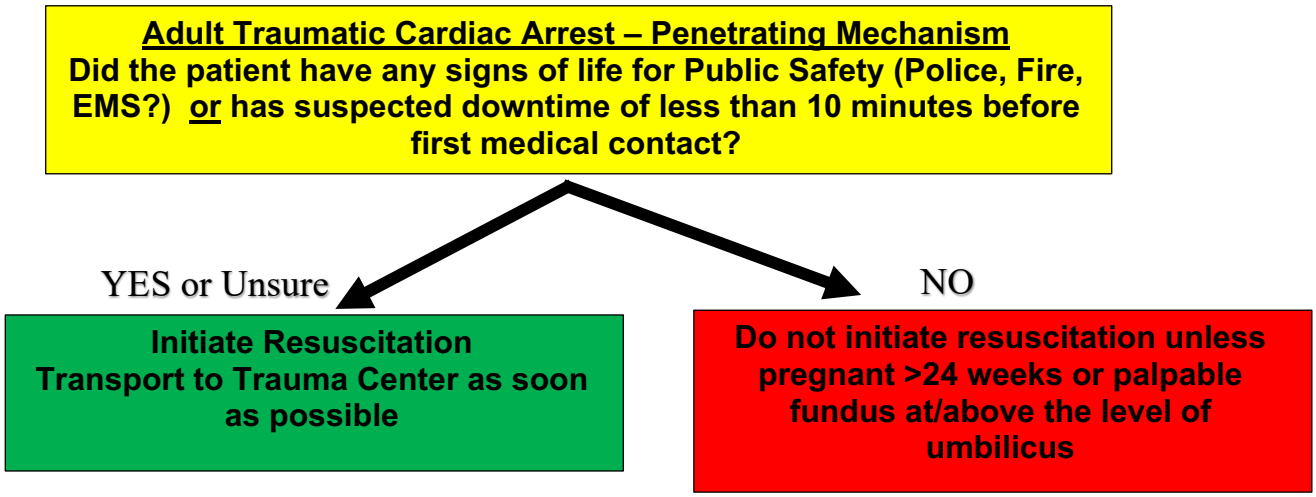
Exceptions

- Pregnancy >24 weeks or palpable fundus at/above the level of umbilicus (transport immediately)
- If in doubt of circumstances, initiate resuscitation and transport.
- Pediatric patients who are in traumatic cardiac arrest should be transported to the nearest pediatric trauma center if the arrest was witnessed or unwitnessed.

If resuscitation started, begin CPR, then:

1. Control obvious external hemorrhage by application of tourniquets and/or direct pressure/wound packing
2. Provide oxygenation and ventilation by BVM or advanced airway
3. If mechanism of injury was blunt or penetrating trauma to chest, **perform bilateral needle thoracostomy**.
4. Evaluate cardiac rhythm and defibrillate if required
5. Transport to the nearest appropriate trauma center
6. Initiate fluid resuscitation by IV/IO access enroute and administer appropriate cardiac arrest medications





Medical Alert Criteria

- Suspected acute MI
- Suspected Sepsis
- Acute neurological deficits of < 6 hours duration
- Inspiratory stridor

Physiological

- Systolic BP (SBP) < 90 mmHg or vital signs outside of physiologic ranges for pediatrics
- GCS < 13
- Respiratory rate < 10 or > 30 (adults), < 15 or > 45 (peds)
- Heart rate < 40 or > 120
- Temp < 92°F or > 105°F
    - Usually determined in the transferring ED
- Oxygen saturation < 88%

Healthcare provider discretion

Major Trauma Criteria

*Transport to **highest** level trauma center*

Vital Signs and Mental Status

• Unable to follow commands (**motor GCS < 6**) at any point during EMS care
• RR < 10 or > 29 breaths/min
• Respiratory distress or need for airway/respiratory support (e.g. BVM, intubation, airway adjunct, cricothyroidotomy or needle decompression)
• Room-air pulse oximetry < 90%
• Patient receiving blood to maintain vital signs

Age 0–9 years

• SBP < 70mm Hg + (2 x age in years)

Age 10–64 years

• SBP < 90 mmHg or
• HR > SBP

Age ≥ 65 years

• SBP < 110 mmHg or
• HR > SBP

Anatomic

- Penetrating trauma to the head, neck, torso, or extremities proximal to the knees and elbows
- Amputation proximal to the wrist or ankle
- Any crushed, degloved, pulseless, or mangled extremity
- Pelvic fracture
- Two or more proximal long bone fractures
- Chest wall instability, deformity or suspected flail chest
- Suspected spinal injury with new motor or sensory loss
- Skull deformity or suspected fracture
- Active bleeding requiring a tourniquet or wound packing with continuous pressure
- Burns > 15% or high voltage (>1000 volts) electrical injury
- Victim of hanging

Mechanism of Injury

- Partial or complete ejection from vehicle

Healthcare provider discretion

Trauma Alert Criteria

Transport to a trauma Center

Mechanism of Injury

- Vehicle roll-over
- Prolonged extrication from vehicle
- Pedestrian struck by vehicle at speed > 20 MPH
- Falls > 20 feet (adults) or > 3x the child's height

Healthcare provider discretion

GLASGOW COMA SCALE

Eye Opening	**Spontaneous**	**4**
	To Voice	**3**
	To Pain	**2**
	None	**1**
Verbal Response	**Oriented**	**5**
	Confused	**4**
	Inappropriate Words	**3**
	Incomprehensible Sounds	**2**
	None	**1**
Motor Response	**Obeys Commands**	**6**
	Purposeful Movement to Pain	**5**
	Withdraw to Pain	**4**
	Flexion to Pain	**3**
	Extension to Pain	**2**
	None	**1**
Total		**3 - 15**

PEDIATRIC ADAPTATION OF GLASGOW COMA SCALE
(for use with children less than school age)

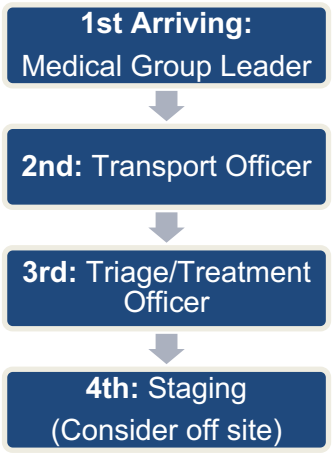
Eye Opening	**Spontaneous**	**4**
	To Sounds	**3**
	To Painful Stimuli	**2**
	None	**1**
Verbal Response	**Appropriate Words or Social Smile**	**5**
	Cries but Consolable	**4**
	Persistently Irritable	**3**
	Restless, Agitated	**2**
	None	**1**
Motor Response	**Spontaneous Movement**	**6**
	Localizes to Pain	**5**
	Withdraw to Pain	**4**
	Flexion to Pain	**3**
	Extension to Pain	**2**
	None	**1**
Total		**3 - 15**

Mass Casualty Procedures

Critical Actions Upon Arrival

- **Don appropriate protective equipment**
- **Report to assigned staging area/ group leader**
- **Park vehicle at location directed by Staging Officer – avoid blocking street**
- **Verify you are on the proper radio channel**
- **Transporting Units:**
  - ➔ **Notify Transport Officer of arrival**
  - ➔ **Remain in vehicle and await assignment from Transport Officer**
  - ➔ **When parking for patient transport, park using "Drive Through Loading" (preferred) or Back in to allow for quicker driving out**
  - ➔ **If Level 1 MCI, mark in service after transport. If Level 2 or 3 MCI return to staging emergent unless released by command.**

EMS Roles to be filled by priority



A. During a declared Mass Casualty Incident:

1. The hospital destination will be determined by the on-scene Transport Officer.
If Transport Officer not yet designated, the role will be the responsibility of the Medical Group leader.
2. The Transport Officer has the authority to require an ambulance transport more than one patient at a time in the same ambulance, if sufficient seat restraints are available.

B. During an Active Shooter/Hostile Event causing a declared Mass Casualty Incident:

1. The primary goal is rapid extraction and transport of patients – do not delay transport for on-scene treatment. Transport Officers should be prepared for police-initiated transport of trauma patients.
2. Use modified "Applied Ballistics" Triage System instead of START Triage

C. During a Mass Casualty Incidents caused by a lightning strike

1. Use "reverse triage" – treat patients who are pulseless or apneic first. CPR and defibrillator use is appropriate.

D. During other types of Mass Casualty Incidents:

1. Use START/JumpSTART Triage

APPLIED BALLISTICS TRIAGE

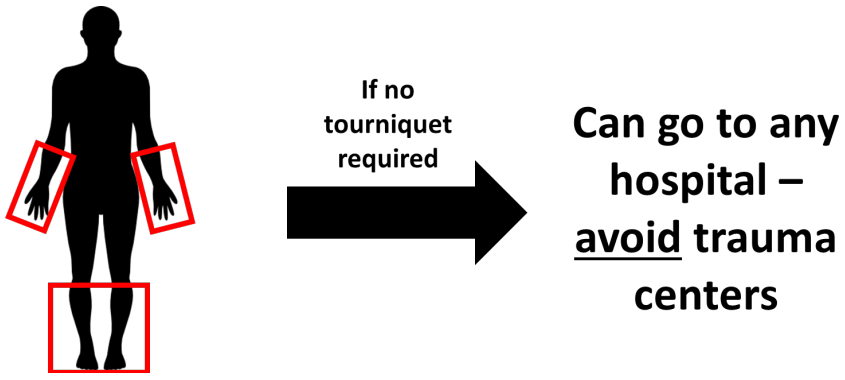
Use during declared Mass Casualty Incident from an Active Shooter/Hostile Event.

1. Perform life-saving interventions, which include:
    - Tourniquet Application/Hemorrhage Control
    - Opening airway
    - Needle decompression (if paramedic)

2. Patients that have penetrating wounds to the **head/torso/abdomen/proximal extremities** and still are breathing should be considered "red/immediate" and prioritized for trauma center transport.

3. Any tourniquet use should be considered "red/immediate" if the patient is still breathing.

4. Patients with penetrating wounds that are **distal to the elbow or knee** without a tourniquet in place should be considered "yellow/delayed" and taken to non-trauma centers.



START TRIAGE

START Triage		Tag:
	Move the Walking Wounded	Minor
	No Resp. after head tilt – jaw thrust	Dead / Dying
☐	Respirations: > 30	Immediate
☐	Pulse: No radial pulse (least injured arm)	Immediate
☐	Mental status: Unable to follow simple commands	Immediate
	Otherwise…	Delayed

Developed by the Newport Beach, CA Fire & Marine Dept

JUMP-START TRIAGE

Jump-START is a modification of the START triage guidelines for pediatric patients and takes into account the normal variation in respiratory rate on the basis of age, and the fact that primary respiratory failure can be corrected easily.

* An apneic child is more likely to have a primary respiratory problem than an adult. Perfusion may be maintained for a short time and the child may be salvageable.
* A respiratory rate of 30 may either over-triage or under-triage a child, depending on age.
* Capillary refill may not adequately reflect peripheral hemodynamic status in a cool environment.
* Obeying commands may not be an appropriate gauge of mental status for younger children.

Jump-START Triage (ages 1-8)	Tag:
Move the Walking Wounded	**Minor**
Apneic or irregular respirations: Open airway	
Resume breathing?	**Immediate**
Still apneic and no peripheral pulse?	**Dead /Dying**
Still apneic but has a peripheral pulse: Mouth-to-Mask for 15 seconds (4-5 breaths)	
Resume breathing?	**Immediate**
Still apneic?	**Dead /Dying**
☐ **Respirations: < 15 or > 45**	**Immediate**
☐ **Pulse: No peripheral pulse (least injured extremity)**	**Immediate**
☐ **Mental status: Unresponsive or responsive to pain only**	**Immediate**
Otherwise…	**Delayed**
Age <1: If all Jump-START "delayed" criteria are satisfied and there are no significant external injuries, the child may be classified as "ambulatory" and tagged	**Minor**

Developed by Lou Romig MD, FAAP, FACEP at Miami Children's Hospital

DECONTAMINATION OF PATIENTS

To decrease potential exposure of emergency and health care personnel, patients exposed to hazardous materials should be decontaminated at the scene as indicated by the exposure, given resources and patient condition. This guideline is for the medical treatment and transportation aspects of these patients, and does not encompass the hazardous materials response or mitigation.

A. Ensure that each receiving hospital is notified as early as possible of

    1. suspected agent(s),
    2. route of exposure (e.g., skin vs. inhalation), and
    3. estimated number of patients.

B. Ensure that the Indiana Poison Center (IPC) is notified as early as possible of the suspected agent(s) and likely receiving hospital(s). Call 317-962-2323 or (800) 222-1222.

C. Perform decontamination as indicated by the exposure.

    1. Upon completion of decontamination and/or removal of contaminated clothing, patients should be covered (including feet).
    2. If the patient's clothing is removed, it should remain at the scene; valuables may come with the patient sealed in a plastic bag.

D. Treat and transport patients per appropriate out-of-hospital care guidelines. Utilize appropriate personal protective devices to decrease likelihood of EMS personnel exposure.

E. For each patient transported, notify the receiving hospital en route of the patient's medical and/or trauma issues, condition, and the type of decontamination performed.

F. Deliver patients to the appropriate area at the Emergency Department.

    1. If additional decontamination is needed, this will typically not be directly into the ED, but rather to the adjacent decontamination area.
    2. Unless otherwise directed, do not drive the ambulance into an enclosed area (e.g., garage)

G. At the conclusion of all out-of-hospital patient assessment and transport activities, ensure that each hospital contacted in #1 and the IPC is notified of

    1. The total number of patients transported (or if no patients are coming).
    2. The conclusion ("all clear") of out-of-hospital EMS activity at the scene.

UNIVERSAL PRECAUTIONS

SINCE MEDICAL HISTORY AND EXAMINATION CANNOT RELIABLY IDENTIFY ALL PATIENTS INFECTED WITH BLOOD BORNE PATHOGENS, BLOOD AND BODY FLUID, UNIVERSAL PRECAUTIONS SHALL BE USED FOR ALL PATIENTS.

A. Universal blood and body fluid precautions (the use of barriers) shall be used for all patients if contact with blood or body fluids is possible regardless of whether a diagnosis is known. EMS providers are responsible to use the personal protective equipment (PPE) made available by their employer.
B. PPE should be removed immediately after patient contact to avoid contamination of other surfaces (i.e. – steering wheel, door handles, clip boards, pens, etc.)
C. Personnel with patient contact responsibilities, who have any open lesions, cuts, or skin conditions such as eczema, should report such conditions to management personnel prior to beginning their scheduled shift. Management may consult the Medical Director or Occupational Health physician when appropriate.
D. Personnel should have been assessed for the need for immunization against the Hepatitis B Virus.
E. Personnel will, upon hire and annually thereafter receive education and training pertaining to infection control guidelines to be observed for their service.
F. Body fluids include: saliva, sputum, gastric secretions, urine, feces, CSF, breast milk, serosanguineous fluid, semen, or any drainage.
G. Immediately after use, sharps will be disposed of in provided biohazard, puncture resistant containers. Containers will be replaced when 3/4 full. Used needles shall not be sheared, bent, broken, recapped, or resheathed by hand. Used needles shall not be removed from disposable syringes. Do not lay or stick used needles in seat cushions.
H. Exposure to Blood and/or Body fluids:
    1. Personnel sustaining an exposure (needle stick, mucous membrane, or skin contact) to blood and/or body fluids shall immediately cleanse the contaminated area with soap and water. If these are not immediately available, waterless hand cleaner shall be used.
    2. In cases of splattering of blood or body fluids to the eyes and/or mouth, flush with copious amounts of water for 15 minutes.
    3. Notify the employee's appropriate leadership personnel.
    4. Complete the Indiana State Board of Health **REPORT OF BLOOD OR BODY FLUID EXPOSURE** form and leave a copy of this at the receiving facility with any other paperwork left following patient care. Remaining copies shall be turned over to Management per the Department policy. This form must be filled out completely and accurately within twenty-four (24) hours.
I. **Hand washing is the most important infection control procedure**. EMS providers should wash their hands:
    1. after removing PPE
    2. after each patient contact
    3. after handling potentially infectious material
    4. after cleaning/decontaminating equipment
    5. after using the restroom
    6. before eating or preparing food

BLOOD AND BODY FLUID EXPOSURE OF EMS PERSONNEL

Background:

The Ryan White Care Act of 1990 and amended in 1996 contains provisions for the notification of emergency response personnel exposed to infectious diseases while attending, treating, assisting, or transporting a victim. In Indiana, IC 16-41-10 provides for an emergency medical services provider (a firefighter, a law enforcement officer, a paramedic, an emergency medical technician, a physician or nurse licensed in Indiana, or other persons who provider emergency medical services in the course of their employment) who is exposed to potentially infectious blood or body fluids to get this notification in the following manner:

A. EMS Provider must notify provider's employer within 24 hours of the exposure on a form designated by the EMS Commission and the State Health Department. A copy of the form goes to:

    1. The Medical Director of the health care facility to which the patient was taken following the exposure OR in the health care facility where the patient was located at the time of exposure, AND
    2. The EMS provider's employer, AND
    3. The State Health Department.

B. A patient (including those unable to consent due to physical or mental incapacity) to whose blood or body fluids the EMS provider is exposed is considered to have consented to:

    1. Testing for the presence of dangerous communicable diseases. These diseases are only those which are life-threatening by carrying a substantial risk of death if acquired by a healthy, susceptible host, and the disease can be transmitted from person to person. The diseases are:

        a. Infectious pulmonary tuberculosis
        b. Hepatitis B, C
        c. HIV
        d. Diphtheria
        e. Hemorrhagic fevers
        f. Meningococcal disease
        g. Plague
        h. Rabies

    2. Release of the testing results to the Medical director of the health care facility (or other designated physician).

    3. However, a medical facility may not restrain a patient in order to test the patient for dangerous communicable diseases, and nothing in the law prohibits a patient from being discharged from the medical facility before such testing is performed or the results of the tests are released.

    4. A provider or a facility that tests patient for the presence of a dangerous communicable disease under this law is immune from liability for the performance of the test over the patient's objections or without the patient's consent.

B. Within 72 hours of being notified of the exposure, the Medical director of the health care facility (or other designated physician) must notify the Medical Director of the EMS provider's employer (or other physician designated in writing by the EMS provider) of the results of the test(s).

C. Within 48 hours of being notified of the results of the test(s), the Medical Director of the EMS provider's employer (or other physician designated by the EMS provider) will

    1. Explain, without disclosing information about the patient, the presence or absence of dangerous communicable disease(s) to which the provider was suspected to have been exposed, if any.

    2. Provide any medically necessary treatment and/or counseling to the EMS provider. Expenses of testing, treating, or counseling the EMS provider are the responsibility of the EMS provider or the provider's employer.

INFECTION CONTROL PROCEDURES

A. All body fluids from all patients will be considered potentially to be infectious. All emergency response employees are to use the personal protective equipment (PPE) made available by their employer. It is the employee's responsibility to wear the appropriate PPE in order to have maximum protection against infectious disease.
B. Handwashing is the most important infection control procedure! Emergency response employees will wash hands:
    1. after removing PPE
    2. after each patient contact
    3. after handling potentially infectious materials
    4. after cleaning or decontaminating equipment
    5. after using the bathroom
    6. before eating
    7. before and after handling or preparing food
C. Handwashing will be performed for at least 10-15 seconds, utilizing soap and water or an alcohol-based solution.
D. Eating, drinking, smoking, handling contact lenses, or applying cosmetics or lip balm is prohibited at the scene of EMS operations.
E. Disposable resuscitation equipment and supplies will be used whenever possible. For CPR, the order of preference is:
    1. Disposable bag-valve mask
    2. Disposable pocket mask with one-way valve
    3. Mouth-to mouth resuscitation
F. After use, all PPE and contaminated disposable patient care materials will be placed in leak proof bags, color coded and marked as a biohazard for disposal as soon as possible.
G. Contaminated work clothes will be removed and exchanged for clean clothes as soon as possible. The crew member will shower if body fluids were in substantial contact with skin under work clothes.

POST EXPOSURE PROTOCOL

A. Any employee exposed to potentially infectious material will immediately wash the exposed area with soap and water or an alcohol-based solution (saline wash if the eyes are involved.)

B. Any employee having an occupational communicable disease exposure will immediately report the exposure to his/her supervisor. Needle stick injuries will be reported to the designated officer immediately.

C. The emergency response employee will fill out the appropriate exposure report forms at the soonest possible time after any exposure occurs.

D. All exposures to infectious or potentially infectious materials should be medically evaluated within the first hour after exposure as some prophylactic treatments are only effective if initiated within that time period. The following events will be considered potentially high risk exposures:

    a. Hollow needle stick injuries.

    b. Breaks in the skin caused by potentially contaminated objects.

c. Splash of blood or other potentially infectious material onto eyes, mucous membranes, or non-intact skin.

E. All potentially high risk exposures will immediately be evaluated by a qualified medical care provider and a plan for prophylactic treatment will be initiated if deemed appropriate:

a. Blood (and urine sample for UPT, if applicable) may be obtained to establish a baseline.

b. The decision to initiate anti-retroviral therapy is made without waiting for lab test results.

i. Current treatment guidelines will be followed.

ii. The patient will be referred to Occupational Health, Infectious Disease, and/or their private physician as appropriate.

F. Whenever possible, the source patient will be traced to the receiving facility by the designated officer. The designated officer will notify the receiving facility that a communicable disease exposure has taken place, and request an infectious disease determination as provided for in IC 16-41-10.

Provider Credentialing and Authorized Procedures

A. The EMS Agency's medical director must authorize the credentialing of individuals to practice as an EMS provider at their agency, as well as the maintenance of said credentials.

B. The EMS Agency's medical director has the authority to determine which clinical procedures are authorized within the scope of practice of each EMS provider.

C. The EMS Agency may remove a provider's credentials, and therefore the provider from active duty as an EMS provider, to ensure patient safety and/or professional standards are met.

REQUEST FOR NEW OR CHANGED PROTOCOL / MEDICAL EQUIPMENT

A. Documentation of the following information should be submitted to the agency's EMS Medical Director for review:

1. Executive Summary (one-paragraph summary of everything below)

    a. Define the problem.

    b. How commonly is the problem encountered (e.g., cases per week, month, or year)

        i. This should be data-based – either retrospectively (looking at patient care records) or prospectively (using a survey after calls)

    c. What is the proposed solution?
        i. Provide a copy of the new protocol (in the usual format) and/or Identify all protocols that will require a change.

        ii. What are the benefits? (e.g., reduced morbidity/mortality, increased patient comfort, increased patient care efficiency or effectiveness)

        iii. What are the risks (e.g., side effects, complications)?

        iv. What is the cost?

            1. Direct costs (e.g., to supply all vehicles/kits plus spare supplies at station(s), how soon will it expire/become obsolete?

        v. Will special storage be necessary (e.g., refrigeration)?

        vi. Indirect costs (e.g., education)

    d. What alternatives were considered? Why is the proposed solution the best choice?

B. Include a list of the keywords used for the medical literature search, and a copy of the salient literature.

Emergency Hospital Transfer: Sending Hospital Staffing Responsibilities

Emergency Transfers from one hospital to another requires the following additional staffing from the sending hospital:

Intervention	Sending Hospital Staffing Responsibility
Fixed IV infusion	Not required
Titratable infusion, on infusion pump **if EMS provider has been untrained** (Example: post-intubation sedation, vasopressors)	Hospital staff member authorized to use infusion pump
IV piggyback infusion/intermittent infusion (e.g. IV antibiotics)	Sending Hospital does not need to send additional staff as long as infusion was started at hospital and there is no planned titration
Blood Products	Sending Hospital does not need to send additional staff if infusion was started at hospital with 20 minutes period of transfusion reaction observation by hospital team
Patient on home ventilator and on home settings	Not required
Patient on hospital ventilator	Hospital staff member authorized to use hospital ventilator
Patient requires manual ventilation during transfer	Hospital staff member able to provide manual ventilation unless paramedic has sufficient staffing in ambulance
Anticipated required administration of ALS medications not part of local EMS Protocol	Hospital staff member authorized to administer physician ordered medications

The paramedic may consult with the sending physician for written orders that may be appropriate EMS substitutions for transport (e.g. changing sedation medications to EMS-carried IV push medications instead of staying on an IV titration pump.)

Medical Capacity Tool

Patient needs further medical evaluation and treatment but does not want to be transported

↓

Is there a mental illness that is causing the patient's refusal for transport?

→ **YES**

Request Law Enforcement to initiate **Immediate Detention** if there are reasonable grounds that the patient is mentally ill, a danger to self or others or gravely disabled AND needs immediate hospitalization and treatment

Ind. Code § 12-26-4-1

Note: The Indiana Code § 12-7-2-130 definition of mental illness includes "intellectual disability, alcoholism, and addiction to narcotics or dangerous drugs"

↓

NO

Tip: Try to enlist family or friends to help convince patient to be transported

Does the patient have Medical Capacity to understand the risks of refusal and benefits of transport?

4 Components of Capacity: Understanding, Appreciation, Reasoning and Communication

- **Understanding**: "What is your understanding of your current medical situation? What do you think will happen if you don't do anything for this right now?" (Verbalize appropriate understanding)
- **Appreciation**: "Why do you think we are recommending to go to the hospital? What could happen if you don't go to the hospital?" (Verbalize appreciation of situation and seriousness)
- **Reasoning**: "What are you thinking about when you're making this decision? How you are deciding/choosing your decision?" (Verbalize how the decision is being made)
- **Communication**: "What do you want to do?" (Patient needs to be able to clearly communicate their choice.)

Ensure there are no critical medical issues that may be affecting cognition, such as hypoxia, significant hypotension, traumatic brain injury or hypoglycemia. Be especially careful if alcohol or drug use is suspected – consider recommending an immediate detention using law enforcement if alcoholism is suspected (see above). Use an interpreter if there is a language barrier.

↓ **YES**

Patient has Medical Capacity and is refusing transport

- Consider Online SOR AMA, especially if high risk
- Consider Community Paramedic referral

CAUTION – CHEMICAL RESTRAINT SHOULD ONLY BE USED IF THE PATIENT IS A DANGER TO SELF, OTHERS OR PERSONNEL ON SCENE. DO NOT USE CHEMICAL RESTRAINT FOR THE SOLE PURPOSE OF FACILITATING TRANSPORT.

↓ **NO**

Patients DOES NOT have Medical Capacity

EMS transport is authorized

As outlined in *Public Law 113* (Passed by HB1198 on 3/30/2020):

a certified emergency medical technician or a licensed paramedic who provides emergency medical services is not liable for transporting any person to an appropriate health care facility when the emergency medical technician or the licensed paramedic makes a good faith judgment that the emergency patient or the emergency patient's primary caregiver lacks the capacity to make an informed decision about the patient's:
(1) safety; or
(2) need for medical attention;
and the emergency patient is reasonably likely to suffer disability or death without the medical intervention available at the facility.

https://legiscan.com/IN/bill/HB1198/2020

Section TWO

Treatment

INITIAL MEDICAL CARE

BLS

1. Follow the Universal Precautions protocol.
2. Follow the Airway Management and Oxygen Administration protocol when appropriate.
3. Place the patient in the position of comfort unless contraindicated by injuries and/or symptoms.
4. Completely assess the patient, including vital signs and history.
5. Reassess patient and record vital signs every 5-10 minutes as condition warrants. Transported patients must have at minimum 2 sets of complete vitals documented. Weight will be recorded in kilograms for all pediatric, overdose/poisoning, and any adult receiving medications.
6. Patient's body temperature should be preserved, especially infants, children, and the elderly

ALS

7. Establish IV access:
    1. to administer pre-hospital medications, or
    2. for fluid replacement, or
    3. if the patient's condition is likely to deteriorate before arriving at the hospital.
8. The IV solution is to be NORMAL SALINE or LACTATED RINGERS unless otherwise stated. *(See Vascular Access Procedures)*. Note: Avoid LR in pediatric patients or if blood products are given in the same line.
9. If an IV cannot be established and an urgent need for vascular access exists, establish IO access. *(See Vascular Access Procedures)*
10. Pre-existing vascular access devices (PVAD) may be used only if:
    1. The patient is in cardiac arrest, or
    2. There is an emergent need to administer fluids or IV medications and a peripheral IV cannot be established and an IO is not appropriate due to the patient's condition. *(See Vascular Access Procedures)*

MEDICAL ALERT CRITERIA

- Suspected acute MI
- Acute neurological deficits of < 6 hours duration
- Suspected Sepsis
- Inspiratory stridor
- Physiological signs:
    - Systolic BP (SBP) < 90 mmHg or vital signs outside of physiologic ranges for pediatrics
    - GCS < 13
    - Respiratory rate < 10 or > 30 (adults), < 15 or > 45 (peds)
    - Heart rate < 40 or > 120
    - Temp < 92°F or > 105°F
        - **i.** Usually determined in the transferring ED
    - Oxygen saturation < 88%

✱ Healthcare provider discretion

AIRWAY MANAGEMENT

BLS

A. Open the airway by use of a chin-lift or jaw thrust without head tilt. Remember to protect the cervical spine at all times when the potential for cervical spine injury exists.

B. Suction if indicated. Consider use of an oral or nasal airway.

C. Apply ETCO2 capnography device to bag mask ventilation if available.

D. BVM use should include the two-hand mask-seal technique whenever possible.

E. If a patient is older than 15 year of age and is in respiratory arrest with no gag reflex, consider inserting an appropriately sized non-visualized airway, if available. Attach ETCO2 capnography device if not already done. **In adult cardiac arrest, performing High Quality CPR, bag mask ventilation and AED defibrillation have priority over the insertion of a non-visualized airway.**

ALS

A. If the above measures prove to be inadequate or there is risk of aspiration or vomiting in the unconscious patient, intubate adults with an endotracheal tube or non-visualized airway.

B. **Bag-valve-mask ventilation is the preferred method of oxygenating and ventilating pediatric patients.** If you cannot adequately ventilate with a BVM, attempt placement of a non-visualized airway if available. If non-visualized airway fails to provide adequate oxygenation, proceed to endotracheal intubation.

C. Apply ETCO2 capnography device to bag mask ventilation circuit to monitor ETCO2 levels and evaluate waveform. This is highly encouraged **before** advanced airway placement to obtain a baseline ETCO2 value.

D. Endotracheal intubation can be performed with a bougie in adults if authorized by the EMS agency's medical director.

E. If unable to place an endotracheal tube after two attempts, place a non-visualized airway, if available.
   1. If the above are unsuccessful, maintain an airway via basic skills utilizing modified jaw thrust, OP airways, BVM, etc.

F. Criteria for performance of cricothyrotomy are as follows:
   1. If basic airway management, non-visualized airways, and intubation are **unable to provide oxygenation and ventilation**
      a) Surgical cricothyrotomy is to be performed on the patient > /= 8 years old.
      b) Needle cricothyrotomy is to be performed on the patient < 8 years old
      c) ***(See Procedures- Cricothyrotomy)***

IF CRICOTHYROTOMY IS ATTEMPTED, A COPY OF THE PATIENT CARE REPORT MUST BE MADE AVAILABLE TO PROVIDER AGENCY SUPERVISORY PERSONNEL AND THE MEDICAL DIRECTOR WITHIN 24 HOURS OF THE RUN.

OXYGEN ADMINISTRATION

BLS

A. Any patient who has difficulty breathing or a SpO_2 < 93% should be given oxygen.

1. Patients with mild respiratory distress *(respiratory rate <25, no cyanosis, and no use of accessory muscles)* may be given oxygen by nasal cannula at 4-6 LPM to maintain an oxygen saturation of 94-99%

2. Patients with moderate respiratory distress *(with or without cyanosis and/or using 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%.

    - Infants and newborns should have oxygen administered by the blow-by method.

3. Patients with severe respiratory distress should be assisted with ventilations by use of a bag-valve-mask with reservoir or, if appropriate, CPAP. (See Dyspnea protocol)

4. Spontaneously breathing patients who are suspected to have been exposed to carbon monoxide or who are suspected of having a pneumothorax should receive oxygen by a non-rebreather mask at 15 LPM.

OBSTRUCTED AIRWAY

BLS

A. Follow AHA guidelines for management of Foreign Body Airway Obstruction
B. Do not perform blind finger sweeps.

ALS

A. Use of the Magill forceps may be necessary to dislodge objects.
B. Consider cricothyrotomy if unable to ventilate despite advanced airway management

PAIN MANAGEMENT

A pain assessment is considered standard of care on every patient, along with an initial set of vitals, and should be documented on the run report along with any pain management intervention and the patient's response.

BLS

Attempt to place patient in position of greatest comfort

For Mild Pain, EMTs can consider the following:

1. Acetaminophen may be administered to patients > 15 years old and > 50 kg as 650 mg PO once
    a. Unless the patient has:
        1. An allergy to acetaminophen
        2. A history of liver dysfunction
        3. Active vomiting
        4. Acetaminophen use within last 4 hours
2. Acetaminophen may be administered to patients older than 6 months and is able to take PO, administer 10mg/kg PO acetaminophen (max dose 650mg).
    a. Unless the patient has:
        1. An allergy to acetaminophen
        2. A history of liver dysfunction
        3. Active vomiting
        4. Acetaminophen use within last 4 hours

ALS

Paramedics should consider offering pain medication to any patient describing pain. Medications should be selected by paramedic judgment of pain severity (mild, moderate, severe) and is not necessarily limited to single pharmacologic agent.

Mild Pain

B. Paramedics should consider offering patients describing mild pain acetaminophen for pain management.
    1. Acetaminophen may be administered to patients > 15 years old and > 50 kg as 650 mg PO once
        a. Unless the patient has:
            1. An allergy to acetaminophen
            2. A history of liver dysfunction
            3. Active vomiting
            4. Acetaminophen use within last 4 hours
    2. Acetaminophen may be administered to patients older than 6 months and is able to take PO, administer 10mg/kg PO acetaminophen (max dose 650mg).
        a. Unless the patient has:
            1. An allergy to acetaminophen
            2. A history of liver dysfunction
            3. Active vomiting
            4. Acetaminophen use within last 4 hours

Moderate Pain

C. Paramedics should consider offering patients describing moderate to severe pain ketorolac (Toradol®) for pain management.

1. Ketorolac is administered in the following doses:
   For patients > 15 years old: 15 mg IV or 30 mg IM once.
   a. Unless the patient has:
      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 within last 6 hours
      6. Pregnancy

Severe Pain

D. Paramedics should consider offering patients describing severe pain fentanyl for pain management.

1. Fentanyl is administered in the following doses:
   Patients >15 years old **and** >50 kg:
   Up to 100 mcg slow IV push, intra-nasal or intramuscular. Up to an additional 50 mcg may be administered every 5 minutes up to a maximum of 300 mcg prn pain > 3/10. Consider lower doses for patients > 65y/o or those with other comorbid conditions.

   Patients <15 **or** < 50 kg:
   Up to 1mcg/kg slow IVP (max 100mcg) or 2 mcg/kg intra-nasal or intramuscular (max 100mcg), can be repeated two more times every 5 minutes prn evidence of significant discomfort.
   a. Unless the patient has:
      1. An allergy to fentanyl; **OR**
      2. A significantly altered level of consciousness (GCS < 14 or below baseline)
2. Additional doses may be administered with approval of Medical Control.

E. Naloxone must be immediately available.

Breakthrough Pain

F. After one dose of fentanyl, paramedics can consider augmenting pain control with intranasal ketamine if pain remains severe. Fentanyl using the Severe Pain protocol can still be administered after ketamine use.

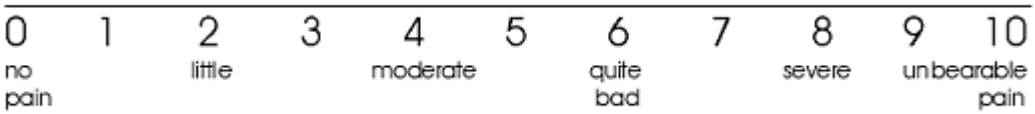
G. Source of pain must be due to serious traumatic injury, which includes, but is not limited to: extensive burns, open fractures, skeletal deformities, limb entrapment or amputation

1. Adults Patients Only (15 years and older): **Intranasal** ketamine is administered in the following dose
   0.5 mg/kg **intranasal**, max 50mg. This is a one time dose only.

Patient's BP, HR, RR, GCS, and pain scale must be monitored regularly (at least once prior to and once after the dose(s) of medication) and documented on the patient care record. ETCO2 capnography must be applied if intranasal ketamine is used.

EXAMPLE PATIENT PAIN ASSESSMENT SCALES

0 – 10 Numeric Rating Scale and Descriptors



Wong-Baker FACES Pain Rating Scale

From Wong D.L., Hockenberry-Eaton M., Wilson D., Winkelstein M.L., Schwartz P.: Wong's Essentials of Pediatric Nursing, ed. 6, St. Louis, 2001, p. 1301. Copyrighted by Mosby, Inc. Reprinted by permission.

Wong-Baker Faces Rating Scale in Spanish

Infant Pain Scale Assessment Tool

Behavior	Scoring			
0	**1**	**2**	**3**	
Facial	Neutral/smiling	Frowning/grimacing	Clenched teeth	Full cry expression
Body Movement	Calm, relaxed	Restless/fidgeting	Moderate agitation or moderate mobility	Thrashing, flailing, incessant agitation or strong voluntary immobility
Sleep	Sleeping quietly with easy respirations	Restless while asleep	Sleeps intermittently (sleep/awake)	Sleeping for prolonged periods of time interrupted by jerky movements or unable to sleep
Verbal/vocal	No cry	Whimpering, complaining	Pain crying	Screaming, high-pitched cry
Consolability	Neutral	Easy to console	Not easy to console	Inconsolable
Response to Movement/Touch	Moves easily	Winces when touched/moved	Cries out when moved/touched	High-pitched cry or scream when touched or moved

NAUSEA AND/OR VOMITING

Assess for potential life-threatening causes of nausea and vomiting (such as myocardial infarction or shock) and initiate appropriate protocols.

BLS

Adults 50 Kg and over: Offer opened alcohol swab to patient, request them to hold swab 1-2 cm from nostril and take inhalations as needed for up to 4 minutes

ALS

A. Ondansetron:

1. Adults 50 Kg and over: 4-8 mg IV push or via oral-dissolving (ODT) tablet.

2. Less than 50 kg: 0.1 mg/Kg IV push or via an appropriate portion of an oral-dissolving (ODT) tablet (e.g., one-quarter or one-half…).

B. If ondansetron is not immediately available or unsuccessful with relief of nausea

Adults 50 Kg and over: Offer opened alcohol swab to patient, request them to hold swab 1-2 cm from nostril and take inhalations as needed for up to 4 minutes

Fever

- Fever is defined in this protocol as 100.4 degrees F or higher (> 38°C).
- Temperatures taken by the patient or family with their own thermometer that documents fever is acceptable.
- Do not administer acetaminophen if any acetaminophen product has been given in the previous 4 hours.
- This protocol does not apply to environmentally induced cases of fever such as heat stroke.
- Acetaminophen does not improve survival in sepsis or serious infection and its administration should not delay transport.

Adult Fever (BLS and ALS)

- If patient is able to take PO, administer 650mg PO acetaminophen.

Pediatric Fever (BLS and ALS)

- If patient is older than 6 months and is able to take PO, administer 10mg/kg PO acetaminophen (max dose 650mg).

DIFFICULTY BREATHING - CROUP

CRITERIA: If the patient with difficulty breathing is at least 6 months of age and the cause is suspected to be croup (e.g., the patient has stridor at rest with retractions and/or accessory muscle use):

BLS

1. Begin Initial Medical Care and follow Airway Management and Oxygen administration protocol.
2. If the patient is in moderate to severe respiratory distress per the Oxygen Administration protocol, call for a paramedic unit.
3. If possible, administer humidified oxygen via the blow-by method.

ALS

1. Administer one of the following treatments:

    a. The preferred treatment is 0.5 ml of 2.25% **racemic epinephrine (Vaponephrine)** diluted with 4.5 ml of 0.9% normal saline (for a total volume of 5 ml) and administered by nebulizer with 5-6 lpm oxygen.

    b. If racemic epinephrine is unavailable administer 5 ml of 1:1,000 **epinephrine** by nebulizer with 5-6 lpm oxygen.

2. Apply the cardiac monitor.

3. If the patient becomes unresponsive or is markedly short of breath, a nebulizer may be connected to a BVM using a "flex connector" to administer racemic epinephrine or epinephrine. Two oxygen connections will be required. The nebulizer will require an oxygen connection at 5-6 lpm in addition to a high flow connector for the BVM.

DIFFICULTY BREATHING - OBSTRUCTIVE OR REACTIVE AIRWAY DISEASES

A. Administer oxygen as indicated - (See **Oxygen Administration Protocol**)

BLS

1. If the patient presents with shortness of breath related to a known diagnosis of COPD or asthma, determine if the patient has physician-prescribed hand-held inhaler or nebulizer. If available, assist with one of the following:
   a. Metered Dose Inhalers **Use with spacer device if possible**
      i. Albuterol (with or without Ipratropium) – one dose (2-4 puffs)
      ii. Levalbuterol – one dose (2 puffs)
   b. Nebulizers (Connect nebulizer to oxygen at 6 LPM)
      i. Albuterol, Albuterol/Ipratropium (Combivent), or Levalbuterol – one dose as prescribed by patient's physician.
      ii. EMTs may utilize EMS-agency equipped medications if the patient does not have the same medication readily available. Use dose of 5mg of albuterol and Ipratropium 0.5mg. ALS should be summoned if not already done.

Common Inhaled Medications

Albuterol aka: Proventil, Ventolin, Combivent,
Ipratropium bromide aka: Atrovent
Xopenex aka: levalbuterol

2. Reassess patient. Anticipate need for assisting ventilations with BVM and high flow O_2 or applying CPAP in adults (see CPAP procedure protocol). Apply pulse oximetry and waveform capnography if available.
3. 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.

ALS

If difficulty breathing is suspected from reactive airway disease or obstructive airway disease and there is no improvement from prescribed inhaler or if no inhaler was administered:

1. Administer albuterol, 2.5 mg and ipratropium 0.5 mg nebulized with 5-6 lpm of oxygen
   - No more than three doses of ipratropium should be administered.
   - Albuterol dose should be increased to 5 mg if the patient uses an albuterol nebulizer regularly.
   - Nebulizer treatments should be repeated as needed.
   - If you suspect the SOB is due to CHF, refer to the **Difficulty Breathing - Pulmonary Edema protocol**
2. Apply the cardiac monitor, pulse oximeter, and waveform capnography to the patient.
3. Initiate a peripheral IV, if necessary.
4. Administer therapy and medications as follows:

If the patient **has a history/suspected history of asthma** AND presents in respiratory arrest, impending respiratory failure (such as altered mental status, poor respiratory effort) administer epinephrine IM.

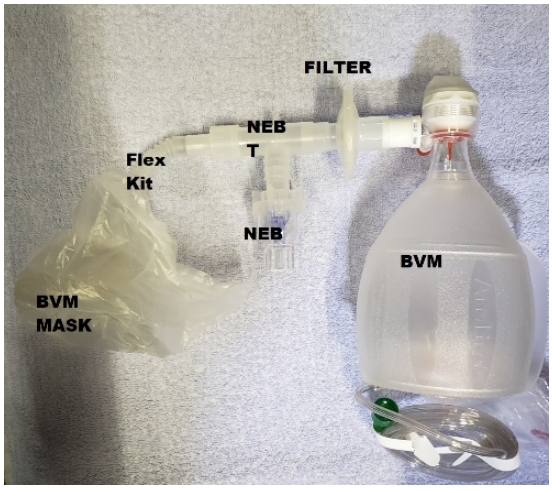
For Adults, administer 0.3mg Epinephrine 1:1,000 IM.

For Pediatric patients over 2 years old, administer 0.01 mg/kg Epinephrine 1:1,000 IM. (Max 0.3 mg)

IM Epinephrine is NOT indicated for COPD exacerbation.

Adults	Pediatrics
1. If the patient is still markedly short of breath, hypoxemic (oxygen saturation <92% on non-rebreather), or in the judgment of the Paramedic immediate CPAP would be beneficial CPAP may be initiated immediately in conjunction with medication therapies (see specific protocol). Alternatively, provide BVM ventilations with in-line treatments. 2. If the patient has a history/suspected history of asthma and continues to decline with treatment (e.g. if you have initiated CPAP or BVM ventilations with in-line nebulized treatment) administer **0.3mg Epinephrine 1:1,000 IM** if not already given 3. *For patients 18 years or older who are receiving a 2nd nebulized treatment OR are being placed on CPAP, give ONLY ONE of the following treatments.* a. Oral Prednisone 50-60mg. b. Methylprednisolone 125mg IV/IM 4. (Optional) Consider the following if the patient does not improve after two (2) albuterol and ipratropium treatments, is still in respiratory distress or begins to worsen, and has been given Corticosteroids AND Epinephrine, a. Normal Saline or LR 500-1000mL Bolus b. Administer Magnesium Sulfate 2g over 20 minutes	1. If the child is markedly short of breath, hypoxemic (oxygen saturation <92% on non-rebreather), BVM ventilations may be initiated immediately in conjunction with medication therapies with in-line treatments 2. If the patient is over the age of 2 years with a history/suspected history of asthma and continues to decline despite treatments administer **0.01 mg/kg Epinephrine 1:1,000 IM. (Max 0.3 mg)** if not already given 3. If the patient is over the age of 2 years with a KNOWN history of asthma AND are receiving a 2nd nebulized treatment, give ONLY ONE of the following treatments. a. Oral Prednisone 50-60 mg IF able to swallow pills and >30kg b. Methylprednisolone 2 mg/kg IV (maximum dose 125 mg IV)

In-Line BVM Setup



Medication Guidelines

For patients 18 years or older who are receiving a 2nd nebulized treatment OR are being placed on CPAP, give ONLY ONE of the following treatments.

1. Oral Prednisone 50-60mg.
    A. This treatment should be used for patients with mild-moderate symptoms who can swallow the medication without difficulty.
    B. Do not give this medication if you believe the SOB is due to a mechanism other than an Asthma or COPD exacerbation.
2. Methylprednisolone 125mg IV/IM.
    A. This treatment should be used for patients with severe symptoms and who are unable to swallow oral medications.
    B. Do not administer this medication if you believe the SOB is due to mechanism other than an Asthma or COPD exacerbation.

Magnesium Sulfate (Adults Only)

3. Administer 2g over 20 minutes

Drop set	10	15	20
gtt/min	25	38	50

Table is for 2g in 50mL

DIFFICULTY BREATHING - PULMONARY EDEMA

BLS

If the patient markedly short of breath and hypoxemic despite supplemental oxygen (oxygen saturation <92% on 100% oxygen) with known history of heart failure, CPAP may be initiated (see specific protocol)

ALS

If difficulty breathing is suspected from pulmonary edema:

1. If SBP is 90 mm Hg or greater, administer up to three (3) 0.4 mg doses of nitroglycerin sublingually (SL) and repeat up to three 0.4 mg SL doses every 3 minutes until the patient's respiratory distress is relieved or the SBP is < 90 mm Hg.
2. ***See note below – Nitroglycerin and Viagra, etc.**
3. If the patient is still markedly short of breath and hypoxemic (oxygen saturation <92% on 100% oxygen) after the first dose of nitroglycerin dosing, CPAP may be initiated (see specific protocol)
4. Nitroglycerin should continue to be administered as above every 3 minutes as long as the patient remains dyspneic and systolic BP > 90 mm Hg.
5. Apply the cardiac monitor, pulse oximeter, and waveform capnography to the patient.
6. Initiate an IV.

The combination of nitroglycerin and Viagra®, Revatio® (sildenafil), Levitra® (vardenafil), or Cialis® (tadalafil) have been found to cause precipitous and irreversible hypotension.

- *Ask every chest pain patient whether or not he/she has been on Viagra, etc. and, if so, when was the last dose? Document this on every run sheet involving the cardiac chest pain patient (even those who deny using Viagra or similar medications).*
- ***DO NOT** automatically administer nitroglycerin to any patient who has had Viagra, etc. within the past week. Consult with the receiving physician for appropriateness.*

DIFFICULTY BREATHING - SMOKE INHALATION

BLS

A. Assess for and manage trauma or burns per the appropriate protocol.

B. Carbon monoxide and cyanide toxicity should be considered for any patient who experiences smoke inhalation in an enclosed space. See Carbon Monoxide Poisoning Protocol.

C. Apply the cardiac monitor, pulse oximeter, and waveform capnography to the patient. (Pulse oximetry monitors may give false readings in patients exposed to carbon monoxide.)

D. Categorize the patient:

Responsive patient	**Unresponsive patient**
1. Provide high flow O_2 2. Request ALS if not already en route	1. Establish airway with OP, NP or non-visualized airway 2. Provide high flow O_2 by NRB mask or BVM 3. Request ALS if not already en route 4. If BLS can transport the patient before ALS can arrive at the scene, do so.

ALS

Responsive patient – no evidence of significant cyanide toxicity	**Responsive patient with soot in airway and 1) altered level of consciousness or 2) hypotension**	**Unresponsive patient**
1. Provide high flow O_2 by NRB mask	1. Ensure an airway and provide high flow O_2 2. For wheezing or stridor, treat with 2.5-5 mg nebulized albuterol as needed. 3. **Adult:** If available, mix both Cyanokit® 2.5 g vials, each with 100 cc of 0.9%NaCl or LR, and administer all of the fluid over 15 minutes (~15 ml/minute). **Pediatrics:** If available, mix one or both Cyanokit® 2.5 g vials, each with 100 cc of 0.9%NaCl, and administer 70 mg/Kg over 15 minutes. 4. If hypotensive, consider fluid challenge(s) 5. Transport emergently to closest appropriate hospital	1. Establish an airway and provide high flow O_2 2. For wheezing or stridor, treat with 2.5-5 mg nebulized albuterol as needed. 3. **Adult:** If available, mix both Cyanokit® 2.5 g vials, each with 100 cc of 0.9%NaCl or LR, and administer all of the fluid over 15 minutes (~15 ml/minute). **Pediatrics:** If available, mix one or both Cyanokit® 2.5 g vials, each with 100 cc of 0.9%NaCl, and administer 70 mg/Kg over 15 minutes. 4. If hypotensive, consider fluid challenge(s) 5. Transport emergently to closest appropriate hospital

DIFFICULTY BREATHING - CARBON MONOXIDE POISONING

Patients suffering from exposure to byproducts of combustion should, when feasible, have a carbon monoxide (CO) level recorded using a co-oximeter device. These situations include fire victims or smoke inhalation exposure to CO, firefighters during rehab activities, patients or families with complaints of general illness or headache. EMS providers should make efforts to assure that firefighters are assessed for elevated levels of CO after structural firefighting activities.

BLS

1. Refer to airway management protocol
2. Obtain vital signs
3. Obtain CO determination using a co-oximeter device if available.
4. CO level 10% or greater and/or symptomatic- 100% NRB O2 and transport to nearest appropriate hospital

ALS

1. Initiate IV Access when appropriate.
2. Treat arrhythmias per appropriate protocol when present.

NOTES:

1. Remember that pulse oximetry should not be used as a determination of oxygenation in the patient with elevated carboxyhemoglobin.
2. Smokers may have a baseline CO level as high as 5-6%

CHEST PAIN – Adult

All patients complaining of chest pain should be treated as having a myocardial infarction, unless other signs indicate pain is obviously from another origin.

The combination of nitroglycerin and Viagra®, Revatio® (sildenafil), Levitra® (vardenafil), or Cialis® (tadalafil) have been found to cause precipitous and irreversible hypotension.

- *Ask every chest pain patient whether or not he/she has been on Viagra, etc. and, if so, when was the last dose? Document this on every run sheet involving the cardiac chest pain patient (even those who deny using Viagra or similar medications).*
- ***DO NOT** automatically administer nitroglycerin to any patient who has had Viagra, etc. within the past week. Consult with the receiving physician for appropriateness.*

BLS

A. Administer oxygen if necessary. *(See Administration of Oxygen Protocol)*

B. If pain is suspected to be cardiac in origin and if no significant allergy to aspirin exists, administer 324 mg aspirin PO and have the patient chew them (if not already taken within the previous 12 hours).

C. 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.

D. If available, BLS providers may acquire 12-lead EKG and provide it to ALS crew. EMT's may only acquire an EKG and are not to attempt to interpret the EKG or use the computer interpretation.

E. If systolic BP is at or above 90 mm Hg and the patient has their own nitroglycerin prescription, assist the patient with taking one dose of his/her nitroglycerin. Nitroglycerin may be administered up to 3 times (every 3-5 minutes) as long as pain is not completely resolved and systolic BP remains above 90 mm Hg.

F. Contact receiving facility for further consultation if ALS is not on the scene. Initiate transport.

ALS

A. Administer ASA 324 mg PO if not already taken within the previous 12 hours.

B. Apply the cardiac monitor. If dysrhythmias are present, refer to the *appropriate protocol.* Obtain a 12-lead EKG as soon as possible, and with any significant change in patient condition.
   I. Time permitting, repeat 12-lead EKG en route and present both with patient.
   II. If the patient's 12-lead EKG demonstrates an acute inferior STEMI, consider obtaining another 12-lead with V4R but do not delay transport to obtain
   III. If ST segment depressions in V1-V3 with no confirmed STEMI, consider posterior ECG

C. If systolic BP is at or above 90 mm Hg, administer a 0.4 mg dose of nitroglycerin sublingually. Nitroglycerin may be administered every 3 – 5 minutes as long as pain is not completely resolved and systolic BP remains at or above 90.

D. Initiate an IV

E. Scene time should be kept to a minimum, as this is a time-critical condition. Contact the intended receiving facility and alert them of a potential myocardial infarction (Medical Alert).

STEMI (ST Segment Elevation Myocardial Infarction) SPECIAL CARE

Patients with a STEMI or patients with chest pain thought to be due to myocardial ischemia and a left bundle branch block (LBBB) will be transported to a receiving facility with a cardiac catheterization laboratory (cath lab) available.

1. Call the intended receiving facility as early as possible to activate the cath lab process. Inform the receiving facility that you are bringing in a "STEMI Alert"

    a. Patients who are hemodynamically stable will be transported to an appropriate hospital of their choice.

    b. Patients who are hypotensive (systolic BP < 90 mm Hg) despite fluids or who have persistent life-threatening dysrhythmias will be transported to the closest hospital with cath lab availability.

    c. Current cath lab availability will be displayed on the EMResource system.

The combination of nitroglycerin and Viagra®, Revatio® (sildenafil), Levitra® (vardenafil), or Cialis® (tadalafil) have been found to cause precipitous and irreversible hypotension.

- *Ask every chest pain patient whether or not he/she has been on Viagra, etc. and, if so, when was the last dose? Document this on every run sheet involving the cardiac chest pain patient (even those who deny using Viagra or similar medications).*
- ***DO NOT** automatically administer nitroglycerin to any patient who has had Viagra, etc. within the past week. Consult with the receiving physician for appropriateness.*

DYSRHYTHMIAS: BRADYCARDIA

BRADYCARDIA CRITERIA: Heart rate <60/minute for children (1-15) and adults; <80/minute in infants. *Bradycardia with hemodynamic compromise is an ominous sign of impending cardiac arrest in infants and children. If newborn, follow newborn resuscitation protocol for management of bradycardia.*

SYMPTOMATIC CRITERIA: Bradycardia with signs of poor perfusion and altered mentation, chest pain or dyspnea with associated hypotension.

BLS

A. Begin Initial Medical Care. Follow Airway Management and Oxygen Administration protocol
B. If patient is symptomatic, call for ALS unit. If the BLS crew is able to deliver the patient to an emergency room within the same time it would take the ALS crew to respond to the scene, the BLS crew should emergently transport the patient.

ALS

1. Apply cardiac monitor and obtain 12-lead EKG
2. If patient is symptomatic, establish IV with 0.9% NaCl or LR. (Avoid LR in Pediatric Patients.) If an IV cannot be established and an urgent need for vascular access exists, establish IO access.
3. If patient remains symptomatic, perform the following in a step-wise fashion. Reassess after each step and proceed to the next step if there is no improvement.

BRADYCARDIA-ADULT	BRADYCARDIA-PEDIATRIC
1. Administer atropine 1 mg every 3-5 minutes until pulse rate is greater than 60 beats per minutes or a total dose of 3 mg is given. a) Atropine administration should not delay pacing in peri-arrest situations. b) Second Degree Type II and wide complex Third Degree blocks should prompt aggressive use of external pacing. 2. Implement pacing procedures: I. Set rate at 70 bpm II. Start mA at 10-30 and gradually increase until the point of electrical capture III. Verify mechanical capture by feeling for a femoral or radial pulse. Muscle contractures initiated by the pacemaker make a carotid pulse unreliable while externally pacing. IV. If sedation or analgesia is indicated during the pacing procedure, midazolam 2.5mg SIVP/IN may be administered. Repeat x 1 as necessary to maintain an adequate level of sedation. Use capnography if given.	1. Perform CPR if HR <60 BPM with signs of poor perfusion 2. Intubate only if BVM ventilations/oxygenation is inadequate 3. Administer epinephrine 0.01 mg/kg (1:10,000, 0.1 mL/kg) IV or IO every 3-5 minutes. 4. For increased vagal tone or primary AV block administer atropine 0.02 mg/kg (min. dose 0.1 mg, max single dose 0.5 mg) IV or IO; may repeat one time 3-5 minutes after initial dose. 5. Continue searching for possible reversible causes of hypoxia

DYSRHYTHMIAS-TACHYCARDIA

BLS

A. Begin Initial Medical Care. Follow Airway Management protocol and Oxygen Administration protocol
D. If patient is symptomatic, call for ALS
E. Rule out underlying causes of tachycardia

ALS

1. Apply cardiac monitor and obtain 12-lead EKG
2. If patient is symptomatic, establish a saline lock or IV with 0.9% NaCl or LR. If an IV cannot be established and an urgent need for vascular access exists, establish IO access.
3. If the adult patient has no signs or symptoms of pulmonary edema, administer 250 mL bolus of 0.9% NaCl or LR solution. Repeat 250 mL boluses every 5 minutes as long as SBP remains below 90 mmHg and no signs of pulmonary edema exist. (For pediatric patients with suspected sinus tachycardia or suspected hypovolemia, use 20 mL/kg fluid boluses. For all other cardiac rhythms use 10ml/kg. Avoid LR in pediatric patients.)
4. If patient remains **symptomatic**, perform the following in a step-wise fashion. Reassess after each step and proceed to the next step if there is no improvement.
5. **For pediatric patients, refer to Pediatric Emergency weight/length-based tape**

NARROW COMPLEX-ADULT	NARROW COMPLEX-PEDIATRIC QRS ≤ 0.12 sec
Urgent: angina chest pain and/or pulmonary edema	**Urgent:** *Infants*-rate usually >220/min *Children*- rate usually > 180/min
1. Have patient perform Valsalva maneuver using the REVERT method. * 2. If rhythm has not converted to a sinus rhythm, and in your judgment the rhythm is believed to be SVT, administer: a. Adenosine, 12 mg RIVP, followed with 10 mL fluid flush. Alternatively, adenosine can be mixed in a 10 or 20 mL saline flush for use as a single syringe. Observe and anticipate AV block(s) and/or transient asystole b. If, after 1-2 minutes, the rhythm does not convert, or no AV block/transient asystole has occurred, repeat adenosine at 12 mg RIVP, followed with 10 mL fluid flush 3. If unable to rapidly establish IV access, or if no response to adenosine, or a rhythm other than SVT is observed, transport.	1. Have patient perform Valsalva maneuver using the REVERT method. * 2. If rhythm has not converted to a sinus rhythm, and in your judgment the rhythm is believed to be SVT, administer: a. Adenosine 0.1 mg/kg (max 6 mg) RIVP, followed with 10 mL fluid flush. b. Second dose of adenosine, 0.2 mg/kg (max 12 mg) RIVP, followed by 10 mL fluid flush.
Emergent: Unconscious, SBP <90 mmHg or no obtainable BP	**Emergent:** Hypotension, acutely altered mentation, signs of shock
Perform synchronous cardioversion at the max energy available. If still conscious, consider 2.5 mg IV/IN midazolam before cardioversion. Use capnography if given.	**Perform synchronous cardioversion in an escalating fashion. Start at 1 Joules/kg then 2 J/kg. Contact medical direction if no conversion after 3 attempts.** If still conscious, consider 0.1mg/kg (max 2.5 mg) IV midazolam or 0.2mg/kg IN (max 2.5mg) before cardioversion. Use capnography if given

* Have patient blow into 10ml syringe to slowly move the plunger (~15 seconds); then quickly position patient supine with legs lifted >45 degrees

WIDE COMPLEX-ADULT (QRS > 0.12 sec)	WIDE COMPLEX-PEDIATRIC (QRS > 0.12 sec)
Asymptomatic	**Asymptomatic**
1. Establish IV access and monitor patient for changes	1. Establish IV access and contact medical control for further instructions
Chest pain or dyspnea	
1. If regular/monomorphic administer adenosine 12 mg RIVP; immediately follow with 10 mL fluid flush. 2. If irregular or VT does not resolve, administer amiodarone 150 mg IV over 10 minutes 3. Do not delay emergent transport 4. If VT does not resolve, an additional 150 mg amiodarone may be administered over 10 minutes 5. If VT persists, contact medical control regarding additional doses of amiodarone	1. Contact medical control for further instructions
Pulmonary edema, SBP<90 mmHg, or unconscious with pulse	**Hypotension, acutely altered mentation, signs of shock**
1. Perform synchronous cardioversion at the highest energy level available. If still conscious, consider 2.5 mg IV/IN midazolam before cardioversion Use capnography if given. 2. Administer amiodarone 150 mg IV over 10 minutes 3. If VT persists, cardiovert with maximum electrical output 4. If VT recurs, administer additional amiodarone 150 mg IV over 10 minutes and cardiovert at the energy level that was previously successful **5.** If VT persists, contact medical control regarding additional doses of amiodarone	1. Perform synchronous cardioversion beginning with 1 J/kg; if not effective, increase to 2 j/kg. Contact medical direction if no response after 3 cardioversion attempts. If still conscious, consider 0.1mg/kg (max 2.5 mg) IV midazolam or 0.2mg/kg IN (max 2.5mg) before cardioversion. Use capnography if given. 2. Contact medical control for further instructions
Unconscious without Pulses	**Unconscious without Pulses**
Treat as Cardiac Arrest, VF/VT	Treat as Cardiac Arrest, VF/VT

SHOCK-CARDIOGENIC

Criteria: Symptomatic hypotension due to a suspected cardiac event with heart rate between 60-150 per minute.

BLS

A. Begin Initial Medical Care and follow Airway Management/oxygen administration protocol
B. 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.

ALS

1. Apply cardiac monitor and obtain 12-lead EKG; if dysrhythmias are present, treat according to the appropriate protocol. If STEMI is suspected, notify the intended receiving facility
2. Establish an IV with 0.9% NaCl or LR. If an IV cannot be established and an urgent need for vascular access exists, establish IO access.
3. If the adult patient has no signs or symptoms of pulmonary edema, administer 500 mL bolus of 0.9% NaCl or LR solution (For pediatric patients, give 10ml/Kg and avoid LR solutions).
4. Contact medical control at the intended receiving facility to discuss additional fluid boluses and/or a norepinephrine infusion (typically beginning at 2-4 mcg/min and titrated to a systolic BP of 90 mmHg. Max infusion 12 mcg/min.).
   Consider epinephrine drip starting at 5mcg/min as an alternative agent if norepinephrine infusion unavailable.

SHOCK-NONCARDIOGENIC

BLS

A. Follow A-B in Shock-Cardiogenic protocol
B. If evidence of trauma or hemorrhage present see Initial Trauma Care Protocol
C. Consider other causes of shock

ALS

1. Apply the cardiac monitor 2. Initiate two large bore IVs (or IO, if IV access in not available) of saline or LR and titrate to a systolic BP of 90 mmHg if patient has no signs or symptoms of fluid overload 3. Reassess vital signs and peripheral perfusion; reassess for signs of pulmonary edema.	1. Administer 20 mL/kg IV or IO saline solution as rapidly as possible. 2. Reassess vital signs and peripheral perfusion; reassess for signs of pulmonary edema. 3. If no improvement in vital signs, peripheral perfusion, and no indication of pulmonary edema is present, repeat saline bolus of 20 mL/kg 4. In cases of hypotension involving infants, perform glucose analysis. If hypoglycemic, see hypoglycemia in ALOC protocol.

CARDIAC ARREST, GENERAL CARE

For EMS witnessed cardiac arrest, quick defibrillation is key – do not delay defibrillation!

High Performance CPR – KEEP HANDS ON THE CHEST!

- **Avoid interruptions to chest compressions.**
- **Ensure full chest recoil**
- **Precharge manual defibrillator before analysis**
- **Do not use a long clearing chant before delivering defibrillation.**
- **Immediately resume chest compressions after shock delivered.**
- **Keep fingers on femoral pulse during CPR and analysis**
- **Keep interruptions to less than 10 seconds.**
- **"Hover" hands over chest during analysis periods**

BLS

A. Follow established AHA BLS guidelines for cardiac arrest

B. Apply waveform capnography to bag-valve-mask if available. If ETCO2 <10 mmHg, evaluate CPR quality to ensure proper rate, depth and recoil is being provided.

ALS

A. **Rapid defibrillation and high-quality uninterrupted CPR takes priority over any ALS intervention.**

B. Do not hyperventilate once advanced airway is in place. Ventilate at a rate of 10 breaths/minute (1 breath every 6 seconds). Ensure ETCO2 capnography is used. **If ETCO2 <10 mmHg, evaluate CPR quality to ensure proper rate, depth and recoil is being provided.**

C. Establish an IV/IO with 0.9% NaCl or LR. **IV access is preferred over IO access if possible in adults**.

D. Follow appropriate Cardiac Arrest Dysrhythmia protocol

E. Treatment of hypoglycemia from blood testing identified during cardiac arrest is not recommended.

- Defibrillate at maximum energy setting.
- Displace the uterus to the left for the obvious pregnant female (palpable uterus above the umbilicus)

PEDIATRIC CARDIAC ARREST, GENERAL CARE

Prior to transport, the patient should first receive on-scene High Quality CPR and include at least 3 rounds of epinephrine. Movement and transport degrade CPR quality.

Oxygenation and ventilation are of utmost importance in pediatric cardiac arrest care! Most pediatric cardiac arrests are secondary to a primary respiratory arrest.

Use of Handtevy for age-based pediatric dosing is preferred. If unavailable, use Broselow® tape (or appropriate equivalent) to obtain approximate weight and determine correct dosing regimen.

For EMS witnessed cardiac arrest, quick defibrillation is key – do not delay defibrillation!

BLS

1) Follow established AHA BLS guidelines for pediatric cardiac arrest
2) Attach AED and follow prompts.
   a) Utilize pediatric pads or pediatric key as appropriate to the AED for children <8 years old or <25kg. The use of an adult AED is acceptable if pediatric supplies are not available
   b) Pads should be placed in the anterior-posterior position.
3) Optimize bag mask ventilation with the use of 2 hands sealing mask and use of nasal/oral airways.
4) Apply waveform capnography to bag-valve-mask if available
5) If the patient regains a pulse, follow Post Cardiac Arrest Care protocol.

ALS

1) Apply cardiac monitor and follow appropriate Cardiac Arrest Dysrhythmia protocol
2) IO is preferred for vascular access over IV access. Establish access with 0.9% NaCl or LR
3) Try to minimize interruptions in chest compressions
4) Respiratory rate of 1 breath every 2 to 3 seconds (20-30 breaths per minute) is adequate for pediatric patients in cardiac arrest when an advanced airway is in place.
5) Apply waveform capnography in line with the bag.

High Performance CPR Checklist

Complete	HIGHEST PRIORITY IS QUALITY CPR AND RAPID DEFIBRILLATION
	Establish enough room to work around patient
	Immediate, minimally interrupted compressions with adequate depth, rate and recoil
	Pads on patient, turn on Monitor/AED ASAP
	Defibrillate every 2 minutes if VF/VT. If manual defib pre-charge before analysis **Defibrillation has highest priority over any other drugs or airway management**
	BVM hooked up to oxygen and capnography with attachment to monitor Ensure capnography button pushed/on (Zoll)
	Change CPR compressor every 2 minutes / Announce time at 1:45 minutes
	IV/IO Access established and secured
	Ensure Suction available
	Ensure Spare oxygen available
	Obtain history from bystanders, including: Was arrest witnessed? Down time? Any bystander CPR performed?
	Liaise with Family

CARDIAC ARREST-VF/VT

BLS

Follow High Performance CPR Checklist. Immediate application of high-quality CPR and an AED has priority.

ALS

Defibrillation has priority over any IV/IO access, medications or advanced airway management

CARDIAC ARREST-ADULT V-Fib/VT	CARDIAC ARREST-PEDIATRIC V-Fib/VT
Persistent or Recurrent VF/VT	**Persistent or Recurrent VF/VT**
1. Apply pads and defibrillate at maximum settings. 2. Immediately resume CPR for 2 minutes. Minimize CPR interruptions to any placement of advanced airway. Use in-line ETCO2. 3. Establish IV/IO. IV is preferred over IO if possible. ASAP after defibrillation administer 1 mg epinephrine 1:10,000 IV or IO push and repeat every 3-5 min. 4. Check for an organized rhythm at 2-minute intervals. Shock if indicated. Immediately resume CPR. 5. If persistent VF/VT after first epinephrine dose and subsequent shock, administer 300 mg amiodarone IV or IO. May repeat one time at half dose (150 mg) 6. Resuscitative efforts should rotate on 2 minute cycles. Pattern should be shock, CPR, drug. 7. If no response to amiodarone, consider 2 grams magnesium sulfate IV or IO. May repeat one time in 3-5 mins.	1. Defibrillate, if indicated at 2J/Kg. Subsequent shocks should be at 4 J/Kg. *The use of pediatric defibrillation pads is preferred if age <8 or <25kg. If adult pads are used, they should be placed in an anterior-posterior configuration.* 2. Defibrillate, immediately resume CPR for 2 minutes. Establish vascular access. 3. BVM is the preferred method of ventilation. Proceed to advanced airway only if BVM ventilation/oxygenation is inadequate. Use in-line ETCO2. 4. Administer 0.01 mg/Kg (0.1 mL/Kg) 1:10,000 epinephrine IV or IO every 3-5 minutes (max dose is 1mg). Goal is to give first dose within 5 minutes of ALS provider arrival – but defibrillation does have priority over epinephrine administration. 5. Check for an organized rhythm at 2-minute intervals. Shock if indicated. Immediately resume CPR. 6. If persistent VF/VT after first epinephrine dose and subsequent shock, administer amiodarone 5 mg/Kg IV or IO (max dose is 300mg). This dose can be repeated up to 3 times as long as the cumulative dose does not exceed a total of 450mg. 7. Resuscitative efforts should rotate on a 2-minute cycle. Pattern should be shock, CPR, drug.

Once VF/VT has Resolved with ROSC – ADULT	**Once VF/VT has Resolved with ROSC - PEDIATRICS**
1. Administer amiodarone if the 300 mg bolus was not given previously: a. Add 150 mg amiodarone to a 50 mL 5% dextrose IV bag b. Infuse over 10 minutes • 100 gtt/min using 20 gtt/mL drip set • 75 gtt/min using 15 gtt/mL drip set 2. Begin a magnesium IV infusion at 33 mg/min (2 g/h) if the 2 g magnesium bolus was used a. Add 2 g magnesium sulfate to a 50 mL 0.9% saline, LR or 5% dextrose IV bag b. Infuse at 50 gtt/min using the 60 gtt/mL drip set.	1. Contact medical control for further instructions.
If VF/VT has <u>NOT</u> Resolved	**If VF/VT has <u>NOT</u> Resolved**
1. Consider Alternate Vector Defibrillation when: a. Refractory to ≥3 standard defibrillations **AND** b. Has already received 300mg amiodarone **AND** c. Ventricular fibrillation/pulseless ventricular tachycardia NEVER converted 2. Refer to Procedures section for further instruction on Alternate Vector Defibrillation. **3. Transport patient if more than 6 shocks have been delivered and the patient remains in VF/VT** Double Sequential External Defibrillation requires base hospital online medical control orders.	Transport patient if VF/VT does not resolve after 3 shocks and patient has received amiodarone.

CARDIAC ARREST-PULSELESS ELECTRICAL ACTIVITY/ASYSTOLE

Consider possible reversible causes of **PEA** such as hypovolemia, hypoxia, tension pneumothorax, cardiac tamponade, hypothermia, acidosis, drug overdose, hyperkalemia, massive acute MI, or pulmonary embolism

Consider possible reversible causes of **Asystole** such as hypoxia, preexisting acidosis, drug overdose, or hypothermia.

CARDIAC ARREST-ADULT	CARDIAC ARREST-PEDIATRIC
PEA/ASYSTOLE	**PEA/ASYSTOLE**
1. High quality CPR has priority over any ALS intervention. 2. If the rhythm is unclear and possibly ventricular fibrillation, defibrillate as for VF. 3. Minimize CPR interruptions to any placement of advanced airway. Use in-line ETCO2. 4. Establish IV/IO. IV access is preferred over IO if possible. 5. ASAP administer 1 mg epinephrine 1:10,000 IV or IO push and repeat every 3-5 min. 6. Check for an organized rhythm at 2-minute intervals. Shock if indicated. Immediately resume CPR. 7. Refer to Termination of Resuscitation guidelines for when it is appropriate to consider ceasing resuscitation. If asystole is identified, verify in multiple limb leads for at least 10 seconds before termination.	1. High quality CPR has priority over any ALS intervention. 2. If the rhythm is unclear and possibly ventricular fibrillation, defibrillate as for VF. 3. BVM is the preferred method of ventilation. Proceed to advanced airway only if BVM ventilation/oxygenation is inadequate. Use in-line ETCO2. 4. Establish vascular access (IO is preferred) 5. ASAP Administer 0.01 mg/kg epinephrine: (1:10,000, 0.1 mL/Kg) IV or IO every 3-5 minutes (max dose is 1 mg). Goal is to give first dose of epinephrine within 5 minutes of ALS provider arrival. 6. Transport patient after providing at least 3 rounds of epinephrine.

Adult Post Cardiac Arrest CARE

Complete?	Consider staying for up to 10 minutes on scene to optimize patient condition
	Maintain fingers on femoral pulse for 10 minutes Turn on VF/VT Detection Alarm (Lifepak 15) or LTA Alarm (Zoll)
	Communicate with team (HAM): **H**OSPITAL - Intended destination hospital **A**CCOMPANY – Determine which personnel will be in the ambulance **M**OVEMENT - How patient will be moved to ambulance
	If not already performed: Placed advanced airway device (supraglottic or ETT) and secure
	Confirm capnography waveform on monitor
	Ventilate 10 breaths per minutes (1 breath every 6 seconds). **No hyperventilation** - target pulse oximetry: 92 to 98%
	Stabilize dysrhythmias with applicable protocol (e.g. bradycardia, tachycardia).
	If advanced airway in place and patient regains consciousness administer: fentanyl 1mcg/kg (up to 100 mcg) **or** midazolam 2.5mg IV/IO **or** ketamine 1mg/kg IV/IO Can repeat once to assist with sedation
	Blood Pressure target = 110 mmHg to 140 mmHg SBP, give 500 mL boluses of crystalloid for hypotension *If no response and SBP is less than 90 mm Hg consider norepinephrine* **or** *epinephrine drip*
	Secure IV before patient movement
	Obtain and transmit 12-lead EKG to destination hospital ASAP after ROSC and repeat in 10 minutes.
	Evaluate and treat for hypoglycemia
	Monitor for seizures and treat with applicable protocol

POST CARDIAC ARREST CARE FOR PEDIATRICS

Complete?	
	Transport **as soon as practical** after ROSC
	Communicate with team (HAM): **H**OSPITAL - Intended destination hospital **A**CCOMPANY – Determine which personnel will be in the ambulance **M**OVEMENT - How patient will be moved to ambulance
	Maintain finger on femoral or brachial pulse for 10 minutes
	Consider placement of advanced airway device (supraglottic) and secure
	Confirm capnography waveform on monitor
	Ventilate 20-30 breaths per minutes (1 breath every 2-3 seconds). **No hyperventilation** - target pulse oximetry: 94 to 99%
	If advanced airway in place and patient regains consciousness administer: fentanyl 1mcg/kg (up to 100 mcg IV/IO) **or** midazolam 0.1 mg/kg (up to 2.5mg IV/IO) Can repeat once to assist with sedation
	Stabilize dysrhythmias with applicable protocol (e.g. bradycardia, tachycardia)
	Blood Pressure target = 70 + 2xPatient Age, give 20ml/kg NS for target BP if rhythm is sinus tachycardia. If cardiac etiology suspected (e.g. history of congenital heart defect) or other cardiac rhythms give 10ml/kg NS. *If BP target not achieved, call destination hospital for orders.*
	Secure IV/IO before patient movement
	Evaluate and treat for hypoglycemia

LEFT VENTRICULAR ASSIST DEVICE (LVAD)

A. The most valuable resource for the LVAD patient is their caregiver. They are trained and familiar with all of the LVAD equipment. The caregiver will be transported with the patient to the Emergency department.

B. Contact VAD coordinator (found on card the patient will give you) for additional guidance.

C. All ALS and BLS protocols are valid for the LVAD patient.

D. You must use clinical judgment to determine the need for CPR. (warm, pink, with good capillary refill)
   a. Peripheral pulses may not be present.
   b. BP can only be measured with a Doppler ultrasound or automated blood pressure cuff.
   c. Pulse oximetry may not be reliable (if there is no pulse).
   d. Listen over the pump for a mechanical whirring sound.
   If the patient is unconscious and there is no whirring sound, start CPR.
   If there is a whirring sound, but the patient is unconscious and has delayed capillary refill or ETCO2 <20 mmHg after advanced airway placement, start CPR.
   e. If CPR is initiated transport patient to the hospital.

E. CPR is performed in the usual manner.

F. Defibrillation and cardioversion are performed in the usual manner.
   a. Not all dysrhythmias need to be treated.
   b. Do not place defibrillator pads over the "pump"

G. If the pump is not working (no mechanical whirring sound):
   a. Check System control panel for alarms.
   b. Check Power Supply connection.
   c. Never disconnect both batteries at the same time.
   d. Contact VAD coordinator (found on card the patient will give you) for additional guidance.

H. Always transport patient with Travel Bag containing extra controller, batteries and cables and if stable transport to a VAD center.

I. Most patients are on sildenafil (Viagra®, Revatio®) and nitrates should not be administered.

ALTERED LEVEL OF CONSCIOUSNESS

BLS

A. Begin "Initial Medical Care" and call for ALS. Follow Airway Management and Oxygen Administration protocol.
B. Investigate for possible causes (medical history, medications, medic alert tag, recent trauma).
C. Perform Blood Glucose analysis if available. If hypoglycemic, administer oral glucose if patient can tolerate oral medication.
D. If the patient has respiratory depression and a history suggestive of possible opiate overdose, **initiate BVM ventilation first**, then administer intranasal naloxone. Wait 2 minutes before providing another dose of naloxone – ensure adequate BVM ventilation is being provided during this time.

ALS

A. Establish a saline lock or an IV with 0.9% NaCl or LR. Avoid LR in Pediatric Patients.
B. Apply cardiac monitor. Obtain a 12-lead electrocardiograph (ECG).
C. If an IV cannot be established and an urgent need for vascular access exists, establish IO access.
D. Perform blood glucose analysis.

HYPOGLYCEMIA-ADULT	HYPOGLYCEMIA-PEDIATRIC
1. If blood glucose < 60 mg/dL, administer 12.5 grams (25ml) D50 or 10 grams (100 ml) of D10 slow IV push. Can repeat once if no improvement in mental status after 5 minutes. 2. If unable to establish IV after 2 attempts, administer glucagon 1 mg IM or intra-nasal 3. Oral glucose may be considered for patients that, in the provider's best judgment, can tolerate oral medications.	1. Hypoglycemia for neonates is < 40 mg/dL, pediatrics <60 mg/dL. 2. For neonate (<30 days), infants or older children give 5 ml/Kg 10% dextrose IV (max 100ml). Alternatively, use: ✱ For Neonates (< 30days): Only use 10% dextrose ✱ For infants or older children: 2 mL/Kg 25% dextrose IV push (max 50ml) ✱ For older children: 1 mL/Kg of 50% dextrose (not to exceed 25 mL) 3. If unable to establish IV after 2 attempts, administer glucagon 0.5 mg IM or intra-nasal for children < 20 Kg, 1 mg IM or intra-nasal for children ≥ 20Kg. 4. Oral glucose may be considered for patients that, in the provider's best judgment, can tolerate oral medications.

OPIATE OVERDOSE – ADULT BLS/ALS	OPIATE OVERDOSE – PEDIATRIC –ALS ONLY
1. If the patient has respiratory depression and a history suggestive of possible opiate overdose, initiate ventilation using BVM and administer 0.4 mg Naloxone IVP. a. If unable to administer IV, administer 2mg of naloxone IN b. IN route by EMT is permitted. 2. **If respiratory depression persists after 2 minutes**, repeat 0.4mg IV or 2mg IN naloxone every 2 minutes until a total of 2 mg IV or 4mg IN. If no response to naloxone maintain ventilation support and consider alternative reasons for respiratory depression (such as intracranial bleed or other non-opiate toxidromes).	1. If the patient has respiratory depression and a history suggestive of possible opiate overdose, initiate ventilation using BVM and administer 0.1 mg/kg (up to 0.4mg) Naloxone IVP or 0.1 mg/kg (up to 2mg) intra-nasally. 2. **If respiratory depression persists after 2 minutes**, contact medical control for recommendations for any further dosing.

BEHAVIORAL EMERGENCIES/PHYSICAL RESTRAINT

A. General approach

1. Violent behavior may be a manifestation of a medical condition such as head injury, drug or alcohol intoxication, metabolic disorders, hypoxia, stroke, or post-ictal state. Field personnel should consider these medical conditions first, and then consider psychiatric disorders in the approach to violent patients. Field personnel should obtain a detailed history from family members, bystanders, and law enforcement personnel, and make particular note of patient surroundings for clues to the cause of the behavior (e.g., drug paraphernalia, medication bottles).

2. EMS personnel shall attempt to de-escalate verbally aggressive behavior with a calm and reassuring approach and manner.

3. At all times, providers must act as an advocate for the safety, medical monitoring, and clinical care of the patient.

B. Physical Restraint Issues

1. Restrained patients shall be placed in a supine position, Fowler's or semi-Fowler's position. Patients shall not be transported in a prone position or "hog-tied." Patients shall not be "sandwiched" between scoop stretchers, backboards, and/or mattresses during transport.

2. Four-point restraint is preferred; additional tethering of the thorax may be necessary. A surgical mask may be placed on the patient to prevent spitting.

3. The method of restraint must allow for adequate monitoring of pulse and respirations, and should not restrict the patient or rescuer's ability to protect the airway should vomiting occur. EMS personnel must provide sufficient slack in the restraint device(s) to allow the patient to straighten the abdomen and chest and to take full tidal-volume breaths. The neck may not be compromised.

4. Once the patient has been restrained, he/she should never be left alone.

5. Restrained extremities should be monitored for circulation, motor function, and sensory function every 10 minutes and upon arrival at the hospital. It is recognized that the evaluation of motor and sensory status requires patient cooperation, and thus may be difficult or impossible to achieve.

6. Out-of-hospital documentation should include behavior, reason for restraint, that the restraints were "applied for the patient's safety", identification of personnel/agency applying restraint, other pertinent clinical information, vital signs, and documentation of monitoring of restrained extremities.

7. Unless mandated for emergency care, restraints are to be left in place until the patient is turned over to hospital ED staff and preparations are made for a smooth and safe transfer.

8. Metal handcuffs for initial restraint may only be applied by law enforcement personnel. Metal handcuffs may be replaced with another method of restraint (e.g., those listed above or hard plastic flex-cuffs) prior to transport. Metal handcuffs may only be used for restraint during transport when law enforcement personnel accompany the patient in the ambulance or directly following behind the ambulance. Only law enforcement personnel may remove metal handcuffs.

Law enforcement responsibilities:

a. Law enforcement personnel are responsible for the capture and/or restraint of potentially violent patients. EMS personnel should obtain assistance from law enforcement to prepare patients for transport.
b. Law enforcement agencies retain primary responsibility for safe transport of patients under arrest or involuntary detention.
c. The hospital destination should be determined by the paramedic's clinical decision and should not be directed by law enforcement.
d. Patients under arrest or involuntary detention shall be searched thoroughly by law enforcement personnel prior to being placed in the ambulance.
    i. Patients under arrest must always be accompanied by law enforcement personnel.
    ii. EMS and law enforcement personnel should mutually agree on need for law enforcement assistance during transport of involuntary detention patients.

C. Transport Issues

1. If an unrestrained patient becomes violent during transport, EMS personnel shall request law enforcement assistance and make reasonable efforts to calm and reassure the patient

2. If the crew believes that their personal safety is at risk, they should not inhibit a patient's attempt to leave the ambulance. Every effort should be made to release the patient into a safe environment. EMS personnel are to remain on scene until law enforcement arrives to take control of the situation.

CHEMICAL RESTRAINT

Chemical restraint is to be used only where the patient can be adequately and repeatedly monitored by paramedic providers. It is to be reserved for patients who cannot otherwise be restrained or restrained only at the risk of significant harm to the patient, law enforcement, or EMS providers. Once applied, patients should be isolated and placed in an ALS ambulance as soon as possible. All patients who are administered midazolam or ketamine are required to be monitored with waveform EtCO2 for adequate ventilation. All patients will be transported to closest appropriate facility for further evaluation.

Law enforcement directed use of chemical restraint is not authorized. The decision to use chemical restraint is solely the decision of the treating paramedic. Providers must not administer sedating medications to an individual to facilitate arrest or to assist law enforcement to take the individual into custody.

ALS

A. Consider other causes of combative or irrational behavior, including but not limited to hypoxia, seizure, head injury and hypoglycemia.
B. Indications for chemical restraint include
    1. Violent, agitated patient who cannot be otherwise restrained or restrained only at the risk of significant harm to the patient, law enforcement, or EMS provider
C. Administer ONE of the following:
    1. Midazolam IV, IM, or via intra-nasal spray. Preferred if known use of sympathomimetic drug such as cocaine or methamphetamine.
        a. If patient >50kg, administer 5mg IV, IM or IN (2.5 mg in each nostril)
        b. If patient <50kg, administer 2.5mg IV, IM, or IN
        c. Consider lower dose if patient is elderly (>65) or has serious comorbid medical conditions
    2. Ketamine IM for patients 12 years of age or older.
        a. If patient estimated >50kg, administer 300mg IM to lateral thigh or deltoid.
        b. If patient estimated <50kg, administer 150 mg IM to lateral thigh or deltoid
        c. Use with caution in patients with history of coronary artery disease. If there is concern for an acute ischemic event such as a stroke or MI, do not administer ketamine.
        d. Laryngospasm is a rare, but serious adverse effect of ketamine administration. If patient develops stridor, apnea, or sudden loss of EtCO2 after administration, suspect laryngospasm.
            (1) Apply airway maneuvers, such as jaw thrust or chin lift. Consider oral or nasal airway.
            (2) Assist with BVM at 100% O2 to apply positive pressure.
            (3) If these methods prove to be inadequate and patient is not being ventilated, follow advanced airway protocols with the modification that only a single attempt to visualize the vocal cords should be made with direct laryngoscopy. If vocal cords can be seen and are open, then attempt to intubate with ET tube. If vocal cords are closed/spasming, DO NOT attempt to pass anything through vocal cords and proceed to cricothyrotomy.
            (4) DO NOT administer any further ketamine.
D. Avoid administering chemical restraint on prone patients. Whenever possible reposition patient off of their stomach before performing chemical restraint. Get patient out of prone position as soon as possible.
E. Patient should be isolated and placed in an ALS ambulance as soon as possible and all patients will be transported to the nearest appropriate facility for further evaluation and released to law enforcement thereafter. The hospital destination should be determined by the paramedic's clinical decision and should not be directed by law enforcement.

F. After sedation is achieved
   1. Treat any immediate life threatening injuries.
   2. Airway, mental status, and vital signs (including **pulse oximetry, waveform EtCO2, and heart rhythm**) must be examined and documented every 5 minutes.
      a. All patients that receive midazolam or ketamine are required to be placed on nasal waveform capnography
   3. Monitor for signs of hypoventilation such as decreased respiratory rate or increase in EtCO2
      a. Provide passive oxygenation via nasal cannula or nonrebreather
      b. Attempt verbal and/or physical stimulation
      c. If severe, apply BVM, and move onto advanced airway options per protocol if continued inadequate ventilation
   4. Establish IV, initiate IVF therapy
   5. Obtain blood glucose level
   6. Keep patient in an upright position and allow for hyperventilation.

G. For situations in which chemical restraint has not been achieved:

   - If midazolam was previously given, can repeat dose 1 time **after 15 minutes** have elapsed since initial dose without needing additional orders. Inform receiving facility a second dose of midazolam has been given.

   - If ketamine was previously given, contact medical control for requests for additional medication or other orders.

   - If medical control recommends additional doses of midazolam or ketamine, either in isolation or in combination, advanced airway preparation should be made, as there is an increased risk for respiratory depression.

H. If patient subsequently has a cardiac arrest, follow ALS protocol for cardiac arrest, but consider early administration of sodium bicarbonate 100mEq IV push if patient initially presented with severe agitation or concerns for suspected drug intoxication.

I. If chemical restraint is used, a copy of the run record must be made available to the Medical Director through the CQI Coordinator within 24 hours.

If chemical restraint is used, a copy of the run record must be made available to the Medical Director through the CQI Coordinator within 24 hours

DIALYSIS PATIENTS

The use of Body Substance Isolation Procedures is especially important because of the possibility of exposure to blood and body fluids and the probability of dialysis patients being carriers of the hepatitis B virus. Treat any presenting problems according to the appropriate protocol and note the following modifications:

BLS

A. Do not take vital signs in an extremity containing a graft or fistula.

If the patient is on the hemodialysis machine, have the dialysis technician disconnect the patient from the machine. If the dialysis technician is not present, or is unable to disconnect the patient, turn off the machine.

1. Clamp off the access device and disconnect the patient from the machine.

2. Remove or have technician remove the needles. Apply fingertip direct pressure as the needle is removed so as to avoid cutting the access device.

- If the patient is on continuous ambulatory peritoneal dialysis (CAPD), unclamp drainage tube and allow fluid in the peritoneal cavity to drain back into the bag.

- Be alert for fractures that might occur.

- If a venous or arterial air embolus is suspected, immediately place the patient in Trendelenburg position on the left side.

- If the site is persistently bleeding, apply direct pressure, using fingertip pressure if needed, and elevate the limb. Do NOT apply a tourniquet device.

ALS

1. Initiate an IV in an extremity containing a shunt or fistula only if an immediate life-threatening situation exists and there is no other IV site. NOTE: This does not mean that inserting an IV **into** the shunt or fistula is allowed – only that another IV site in that same arm is allowed.

2. For patients who may be hyperkalemic (with or without a missed dialysis) refer to hyperkalemia protocol.

DRUG OVERDOSE/POISONING-SUSPECTED

BLS

A. Protect yourself from exposure to poisons.

B. Begin Initial Medical Care when safe to do so.

C. Obtain the following information:

1. Type of poison/medication.
2. Type of exposure - ingestion, injection, absorption, inhalation.
3. Time of exposure.
4. Amount of poison exposure (quantity, strength of agent(s)).
5. If an ingestion, poison/medication taken with water/alcohol/etc.?
6. Time of last food and alcohol intake.
7. Weight of patient (in Kg).

D. Remove the patient from the source of contamination, if necessary, without endangering responders. Instruct patient to remove their own contaminated clothing, cutting away from body using shears if necessary. In the event of topical poisons, decontaminate the patient with copious amounts of water. If no water is immediately available, instruct patient to utilize any clean absorbent material (such as a trauma dressing) to perform dry decontamination by first blotting then rubbing surfaces for at least 10 seconds. Focus on the head, then face, then hands followed by any potentially exposed skin area. Brush away powdered substances prior to irrigation.

E. Categorize type of poison

1. Injected poisons - (e.g., bites, stings, or open wounds caused by an object contaminated with a poisonous substance) – apply a venous constricting band above the site of injection on an extremity, immobilize the extremity and keep it below the level of the heart. For stings, scrape stinger away, do not squeeze stinger.
2. Suspected allergic reactions *(See Allergic Reaction Protocol**)***
3. Inhaled poisons - Administer high flow oxygen to all patients with poisoning by inhalation or who meet criteria for oxygen administration or airway management procedures. *(See Administration of Oxygen Protocol and/or Airway Management Protocol)*

F. If level of consciousness is decreased or vital signs abnormal, transportation by advanced life support is preferred. *(See Altered Level of Consciousness Protocol)*

G. Gather containers or remaining medications that can be taken to the hospital safely.

H. Consider contacting the Indiana Poison Center (IPC) for information on expected toxicity. The Poison Center may be used as a resource for information, NOT for orders for patient care. Call (317) 962-2323 or (800) 222-1222.

BUTTON BATTERY INGESTION
All button battery ingestions should be transported to a pediatric specialty hospital. If the Poison Center already had the patient start use of oral honey for esophageal protection, paramedics and EMTs can continue treatment as long as patient (1) is 12 months or older, (2) is able to protect airway and (3) has no altered level of consciousness. Honey is given 10ml every 10 minutes. Do not delay transport in order to obtain honey.

ALS

1. Follow appropriate protocol for specific presentation/toxin.

CALCIUM CHANNEL BLOCKER OVERDOSE

Consider **calcium chloride** for calcium channel blocker OD with:
- Bradycardia (HR < 60) ***AND***
- Hypotension (SBP < 90 mm Hg adult or SBP < 70 + 2 x age in years for pediatric patients)

Adult dose – Calcium Chloride 1 g slow IVP
Pediatric Dose – 0.2ml/kg of 10% calcium chloride slow IVP (1 gram max)

CYCLIC ANTIDEPRESSANT OVERDOSE

Consider **sodium bicarbonate** for cyclic antidepressant OD with:
- Wide QRS complex (≥ 0.12 sec) ***OR***
- Hypotension (SBP < 90 mm Hg adult or SBP < 70 + 2 x age in years for pediatric patients) **OR**
- Seizures

Adult dose and Pediatric– Sodium bicarbonate 1 mEq/Kg IVP

ORGANOPHOSPHATE/NERVE AGENT POISONING

If unconscious, seizing, apneic, has flaccid paralysis, muscle fasciculations, nausea/vomiting, weakness, shortness of breath:
- Administer atropine until decreased bronchial secretions/ wheezing
  Adults: 2mg IV/IO/IM every 5 minutes
  Peds: 0.02 mg/kg IV/IO/IM every 5 minutes
- If seizing, proceed to seizure protocol after administration of first dose of atropine

Epistaxis

Conscious Patient with Ongoing Epistaxis

a. Remove any packing already in nares placed by the patient.
b. Instruct the patient to blow each nostril separately to remove any clots.
c. Instruct the patient to firmly compress the nostrils together for 10 minutes and tilt head forward if tolerated.
d. If patient is unable to maintain nasal compression themselves, consider applying nostril compression device (see below).

If bleeding persists after 10 minutes:

a. Instruct patient to release the nostrils and blow their nose to clear of clots one nostril at a time.
b. Insert gauze into each nostril and instruct patient to compress the nostrils for another 10 minutes (the number of pieces of gauze placed needs to be documented per each nostril*). If available, a total of 1 gram Tranexamic acid (TXA) may be used to soak the gauze prior to insertion into the nostril for topical treatment.*

Criteria for ALS level care:

- Current patient use of medication that may prevent blood clotting, including aspirin, clopidogrel (Plavix), warfarin (Coumadin), rivaroxaban (Xaralto), dabigatran (Pradaxa), Apixaban (Eliquis)
- History of blood clotting disorder, such as hemophilia or thrombocytopenia (low platelet count)
- Hypoxia (SPO2 <94%) or need for supplemental oxygen
- Altered mental status, unconsciousness, hypotension or tachycardia. ***Note: Use of beta-blockers may mask vital sign abnormalities***
- Concern for massive epistaxis based on history

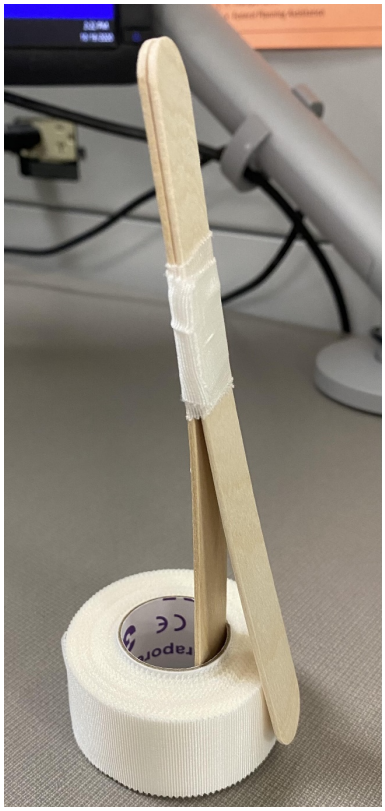
ALS Level Care:

- Establish large bore IV with 0.9% NaCl saline or LR. Titrate fluids to an SBP of 90 mmHg.
- Continuous vital signs monitoring, including SPO2

Unconscious Patient

- Position patient to maintain airway
- Avoid nasal airway insertion
- Significant airway suctioning may be required, follow airway management protocol as required

To assemble a nostril compression device, tape 2 tongue blades together at one end at approximately 1/3 of the length. Consider taping a 4x4 gauze to each tongue blade at the opposite end. Apply directly to nose for continuous pressure.



Hyperkalemia

ALS

Patient that are suspected to have, or are at risk of renal failure (such as dialysis patients or crush injury) should have an EKG performed. Hyperkalemia should be suspected if the patient exhibits a wide QRS (≥ 0.12 sec) or peaked T-waves.

If the patient with suspected hyperkalemia with reasonable clinical history (e.g. missed dialysis) only has EKG changes (QRS ≥ 0.12 sec or peaked T-waves) without other complaints:

a. Administer calcium chloride 1 g SLOW IV/IO push.

If the patient with suspected hyperkalemia is hypotensive, has altered mental status or experiences cardiac arrest, give the following medications in this order:

b. Calcium chloride 1 g SLOW IV/IO push.

c. Albuterol 5 mg nebs back-to-back/continuously for the spontaneously breathing patient or in-line with BVM if an advanced airway has been placed, and

d. If no change in patient condition, consider Sodium Bicarbonate, 100 mEq IV/IO push.
Sodium bicarbonate may form a solid with calcium chloride – ensure line is properly flushed before administration.

Note: It is acceptable to use Lactated Ringers in patients with Hyperkalemia

SEIZURES

A. Follow airway management and oxygen administration protocol. Apply end-tidal capnography.
B. For pediatric patients, determine age by asking a bystander; if unknown estimate and use weight based on length-based tape
C. Protect patient from injury while patient is seizing. DO NOT RESTRAIN PATIENT. DO NOT FORCE A BITE STICK INTO THE PATIENT'S MOUTH. Determine the duration of the seizure. Observe the type of seizure activity and what part(s) of the body it affects.

Not in Status Seizures

A. Initiate transport.
   1. Adult patients who are no longer post-ictal may request not to be transported. You should consult with the hospital for authorization not to transport. *(See Non - Transported Patient Protocol)*

Status Seizures

Criteria: Continuous seizure activity for longer than 3 minutes or two or more consecutive seizures without regaining consciousness. Focal seizure activity meeting the above criteria should also be considered status epilepticus

BLS

A. Request advanced life support.
B. Perform Blood Glucose analysis if available. If hypoglycemic, follow hypoglycemia BLS protocol in "Altered Level of Consciousness".

ALS

STATUS SEIZURE-ADULT	STATUS SEIZURE-PEDIATRIC
1. Administer midazolam **using IM/IN route FIRST**: i. If patient ≥ 50 kg, administer 10 mg IM/IN ii. If patient < 50 kg, administer 5 mg IM/IN 2. *If an IV has been established **prior** to the seizure administer midazolam*: i. If patient ≥ 50 kg, administer 5 mg IV/IO ii. If patient < 50 kg, administer 2.5 mg IV/IO 3. Perform blood glucose analysis. **If blood glucose < 60 mg/dL**, refer to hypoglycemia protocol in "Altered Level of Consciousness". 4. If seizure continues for 5 minutes after initial administration of midazolam, then administer midazolam IM, IN, IO or IV: i. Administer 5 mg IM/IN or 2.5 mg IV/IO 5. *The EMS Administered maximum cumulative dose should **not** exceed 15mg total via all routes.* Contact the receiving facility for further instructions or additional dosing if needed. Note: Patient must be placed on end-tidal capnography, cardiac monitor and pulse oximetry. **If the patient is pregnant in the 3rd trimester, administer 4 grams magnesium IV over at least 4 minutes**	1. Administer midazolam **using IM/IN route FIRST**: a. If patient ≥ 50 kg, administer 10 mg IM/IN b. If patient < 50 kg give **0.2mg/kg** of midazolam (max 5mg) **IM/IN** If IN, divide the dose so that each nares receives half *2. If an IV has been established **prior** to the seizure administer midazolam:* i. If patient ≥ 50 kg, administer 5 mg IV/IO ii. If patient < 50 kg, administer 0.1 mg/Kg IV/IO (max 2.5mg) 3. Perform blood glucose analysis. If blood glucose <60 mg/dL (Newborns <40 mg/dL), refer to hypoglycemia protocol in "Altered Level of Consciousness". 4. If seizure continues for 5 minutes after initial administration of midazolam and the total dose has not yet exceeded 10mg, then administer midazolam IM, IN, IO or IV: a. **0.2mg/kg** of midazolam (up to a maximum of 5 mg) **IM/IN.** If IN, divide the dose so that each nares receives half b. **0.1mg/kg** of midazolam (up to a maximum of 2.5 mg) **IV/IO** 5. *The EMS Administered total dose should **not** exceed 10mg via all routes.* Contact the receiving facility for further instructions or additional dosing if needed. Note: Patient must be placed on end-tidal capnography, cardiac monitor and pulse oximetry

Midazolam may be given if seizure occurs in front of paramedic without waiting for full 3 minutes.
Do not give midazolam if seizure stops prior to administration.

Adult Status Epilepticus

Use IM or IN Route First if no vascular access
Patient ≥ 50 kg → 10mg IM/IN
Patient < 50 kg → 5 mg IM/IN

SZ Continues

If vascular access already obtained
Patient ≥ 50 kg → 5mg IV/IO
Patient < 50 kg → 2.5 mg IV/IO

SZ Continues

After 5 minutes, give:
IM/IN → 5mg or
IV/IO → 2.5mg

SZ Continues

Contact Medical Control for further dosing

Pediatric Status Epilepticus

Use IM or IN Route First if no vascular access
Patient ≥ 50 kg → 10mg IM/IN
Patient < 50 kg → 0.2 mg/kg (max 5mg) IM/IN

SZ Continues

If vascular access already obtained
Patient ≥ 50 kg → 5mg IV/IO
Patient < 50 kg → 0.1 mg/kg (max 2.5mg) IV/IO

SZ Continues

After 5 minutes, if total midazolam dose given is <10mg, give:
IM/IN → 0.2 mg/kg (max 5mg)
or
IV/IO → 0.1mg/kg (max 2.5mg)
Do not exceed a total dose of 10mg without medical control

SZ Continue

Contact Medical Control for further dosing

SEPSIS PROTOCOL - ADULT

Any patient with altered mental status, weakness, or respiratory distress should be screened for inclusion in the sepsis protocol by reviewing a complete set of vital signs, including ETC02.

Patients with:

1. Suspected or possible infection **AND**
2. 2 or more of the following:
    a. Heart rate >90
    b. Respiratory rate > 22
    c. Temp > 38C (100.4F) or < 36C (96.8F) (if available)
    d. ETC02 < 25 mmHg

BLS

1. Minimize scene time
2. Call in Medical Alert – "suspected sepsis" to receiving facility

ALS

1. Alert receiving facility of Medical Alert – "suspected sepsis" prior to arrival including how much fluid has been administered.
2. Establish IV or IO access
3. Give 500ml bolus of NS
4. Repeat IVF bolus until SBP > 90, not to exceed 2L IVF.
5. If SBP < 90 after 2L IVF, call medical control and consider norepinephrine at 2-4 mCg/min and titrate to SBP > 90, not to exceed 12 mCg/min.

How to mix a levophed (norepinephrine) drip;

- Mix 4ml in 500ml bag of D5W or NS or LR (8mcg/ml concentration)
- Start at 2-4 mcg/min and titrate to SBP > 90mmHg. Max infusion 12 mcg/min.
- Rates (using 60 drops/ml set):

mcg/min	2	3	4	5	6	7	8	9	10	11	12
ggt/min	15	22	30	37	45	52	60	67	75	82	90

Consider epinephrine drip at 5 mcg/min if levophed (norepinephrine) infusion unavailable.

STROKE (CVA)

This protocol is intended to reduce the time to thrombolysis in the acute stroke patient. Patient with symptoms of less than 4 hours duration are considered "time-critical." Other patients with symptom onset less than 24 hours should be considered urgent but not "time-critical".
Patients may present as having fallen, experience sudden vision problems in one or both eyes, unable to walk, have new balance problems or with acute altered level of consciousness.

BLS

A. Administer oxygen as indicated. (*See Oxygen Administration protocol*)

B. Perform blood glucose analysis. If blood glucose < 60 mg/dL, refer to hypoglycemia protocol in "Altered Level of Consciousness"

C. Evaluate any patient with suspected stroke using the Cincinnati Stroke Scale. If positive/abnormal, perform **RACE Stroke Scale** and determine, to the best of your ability, the time last known normal (neurologically).

D. **If RACE Scale score is ≥5 transport to an appropriate thrombectomy capable stroke center.** Contact the receiving emergency department and include the following information: time of onset of signs/symptoms, RACE Stroke Scale findings, and blood glucose results. Document all results.

E. Identify a close family member or friend to accompany the patient to the hospital to provide information on baseline function, onset of symptoms, and possible consent for tPA. Include this information in your handover report. If a family member is unable to accompany the patient, obtain a phone number for a family member to provide the hospital with this same information.

F. If level of consciousness is decreased or vital signs abnormal, transportation by advanced life support is preferred.

ALS

1. Obtain a 12-lead EKG
2. Ensure blood glucose analysis has been performed. If blood glucose < 60 mg/dL, refer to hypoglycemia protocol in "Altered Level of Consciousness"
3. Do not treat hypertension

Cincinnati Prehospital Stroke Scale

Facial Droop (have patient show teeth or smile):
Normal – both sides of face move equally well
Abnormal – one side of face does not move as well as the other side
Arm Drift (have patient close eyes and hold both arms out, palms up):
Normal – both arms move the same or both arms do not move at all
Abnormal – one arm does not move or one arm drifts down compared with the other
Speech (have the patient say "you can't teach old dog new tricks"):
Normal – patient uses correct words with no slurring
Abnormal – patient slurs words, uses inappropriate words, or is unable to speak

RACE Stroke Scale

Facial Palsy	Absent **0** Mild **+1** Moderate/Severe **+2**
Arm Motor Impairment	Normal/Minimal **0** Moderate **+1** Severe **+2**
Leg Motor Impairment	Normal/Minimal **0** Moderate **+1** Severe **+2**
Head and Gaze Deviation	Absent **0** Present **+1**
Hemiparesis (Left or Right)	If LEFT hemiparesis *Ask the patient: (1) While showing patient the paretic arm, "Whose arm is this?" (2) "Can you lift both arms and clap?"* Patient recognizes his/her arm and the impairment **0** Does not recognize his/her arm or the impairment **+1** Does not recognize his/her arm AND the impairment **+2**
	If RIGHT hemiparesis *Instruct the patient: (1) Close your eyes" (2) "Make a fist."* Performs both tasks correctly **0** Performs one task correctly **+1** Performs neither task correctly **+2**

SYNCOPE

BLS

1. If patient's mental status remains altered, refer to Altered Level of Consciousness Protocol.
2. Place patient in position of comfort.
3. Perform Blood Glucose analysis if available. If hypoglycemic, follow hypoglycemia BLS protocol in "Altered Level of Consciousness".
4. Perform Cincinnati Prehospital Stroke Scale, if abnormal, refer to Suspected Stroke (CVA) Protocol.

Cincinnati Prehospital Stroke Scale

Facial Droop (have patient show teeth or smile):

Normal – both sides of face move equally well

Abnormal – one side of face does not move as well as the other side

Arm Drift (have patient close eyes and hold both arms out, palms up):

Normal – both arms move the same or both arms do not move at all

Abnormal – one arm does not move or one arm drifts down compared with the other

Speech (have the patient say "you can't teach old dogs new tricks"):

Normal – patient uses correct words with no slurring

Abnormal- patient slurs words, uses inappropriate words, or is unable to speak.

ALS

1. Apply the cardiac monitor and obtain 12-lead EKG.
2. Measure blood glucose.
    a. If less than 60 mg/dL, refer to Altered Level of Consciousness Protocol.
3. Treat abnormal vital signs appropriately.

ALLERGIC REACTION

BLS

A. Begin "Initial Medical Care".
B. Follow "Airway Management" protocol.
C. Follow "Oxygen Administration" protocol.
D. Call for an ALS unit if patient has wheezing, stridor, or shows other signs of respiratory distress or nausea/vomiting.
E. If patient has a prescribed Epi auto-injector and displays signs of anaphylaxis, assist patient with or administer one dose of the patient's own Epi auto-injector.
F. If patient does not have a prescribed Epi-auto injector and displays signs of anaphylaxis, administer epinephrine 1mg/mL (1:1000) at the following dose and route:
    a. Adult (25kg or more) 0.3 mg IM in the anterolateral thigh
    b. Pediatric (less than 25kg) 0.15 mg in the anterolateral thigh
G. If signs of anaphylaxis and hypoperfusion persist following the first dose of epinephrine, additional IM epinephrine can be repeated every 5-15 minutes at above noted doses.

ALS

IF suspected anaphylaxis, proceed directly to IM epinephrine administration FIRST!

ISOLATED ITCHY RASH/HIVES-ADULT	ISOLATED ITCHY RASH/HIVES-PEDIATRIC
Administer Diphenhydramine 25-50mg IV or IM.	Administer Diphenhydramine 0.5 mg/kg IV or IM. (Max 50 mg)

2 or more body systems involved, such as RASH/HIVES + WHEEZING- ADULT	2 or more body systems involved, such as RASH/HIVES + WHEEZING -PEDIATRIC
1. Administer 0.3 mg Epinephrine 1:1,000 IM. 2. If there is dyspnea or wheezing, administer 2.5 mg nebulized Albuterol at a flow sufficient to produce of mist. 3. Administer Diphenhydramine 25-50 mg IV or IM.	1. Administer 0.01 mg/kg Epinephrine 1:1,000 IM. (Max 0.3 mg) 2. If there is dyspnea or wheezing, administer 2.5 mg nebulized Albuterol at a flow sufficient to produce a mist. 3. Administer Diphenhydramine 0.5 mg/kg IV or IM. (Max 50 mg)

STRIDOR &/OR HYPOTENSION-ADULT	STRIDOR &/OR HYPOTENSION-PEDIATRIC
1. Administer 0.3 mg Epinephrine 1:1,000 IM. 2. Administer 2.5 mg nebulized Albuterol. 3. Administer Diphenhydramine 25-50 mg IV or IM. 4. If condition remains unchanged or worsens after 3 minutes, administer additional dose of 0.3mg Epinephrine 1:1,000 IM. 5. If after 3 minutes and second dose of epinephrine condition remains unchanged, mix and infuse epinephrine drip at 5mcg/min. Contact medical control if need for titration.	1. Administer 0.01 mg/kg Epinephrine 1:1,000 IM. (Max 0.3 mg) 2. Administer 2.5 mg nebulized Albuterol. 3. Be prepared for emergent airway management. 4. Administer Diphenhydramine 0.5 mg/kg IV or IM. (Max 50 mg) 5. If condition is unchanged after 3 min. or worsens, administer additional dose of 0.01mg/kg Epinephrine 1:1,000 IM. 6. If after 3 minutes and second dose of epinephrine condition remains unchanged,

	mix and infuse epinephrine drip at 0.25mcg/kg/min (max 5mcg/min). Contact medical control if need for titration.

Epinephrine drip: Inject 1mL of epinephrine 1:1000 (also known as epinephrine 1mg/ml for anaphylaxis) into a 1-liter saline or LR bag and mix.

This yields a final medication concentration of 1mcg epinephrine / 1mL fluid. You must label the medication "Epi Drip: 1mcg/mL"

Use of a 20 gtt drip set is preferred. A 20 gtt drip set allows for:

Adult dosing: Drip rate of 100 drops/min yields drug infusion rate of 5mcg/min.

Drip rate can be easily calculated by counting number of drops over 15 seconds then multiply by 4.

Weight (Estimated by Broselow tape)	**4kg**	**6kg**	**8kg**	**10kg**	**12kg**	**16kg**	**≥20kg or Adults**
Drug Infusion Rate	**1mcg/min**	**1.5mcg/min**	**2mcg/min**	**2.5mcg/min**	**3mcg/min**	**4mcg/min**	**5mcg/min**
Drip Rate with 10 gtt set	10 drops/min	15 drops/min	20 drops/min	25 drops/min	30 drops/min	40 drops/min	50 drops/min
Drip Rate with 15 gtt set	15 drops/min	23 drops/min	30 drops/min	38 drops/min	45 drops/min	60 drops/min	75 drops/min
Preferred: Drip Rate with 20 gtt set	**20 drops/min**	**30 drops/min**	**40 drops/min**	**50 drops/min**	**60 drops/min**	**80 drops/min**	**100 drops/min**

DROWNING

A. PROTECT YOURSELF! Do not enter a body of water unless you are certified in water rescue and have the appropriate equipment.

B. Administer high flow oxygen *(See Oxygen Administration)*

C. Immobilize cervical spine if potential exists for cervical injury.

D. Treat patients for problems as indicated by *appropriate protocol.*

E. If immersed in cold water, consider hypothermia *(See Hypothermia protocol)*. Standard termination protocol does not apply to cold water drowning unless drowning time >30 minutes for adults or >90 minutes for pediatric patients.

F. Transportation by ALS is preferred.

G. All drowning patients, even if they regain consciousness, should be transported to a hospital. Complications such as pulmonary edema may not be immediately recognized.

H. If the patient is persistently hypoxemic (oxygen saturation <92% on non-rebreather), or in the judgment of the Paramedic, CPAP would be beneficial, refer to CPAP protocol.

HYPERTHERMIA

A. Administer high flow oxygen. *(See Oxygen Administration)*

B. Move patient to cool environment.

C. Remove clothing. Cool patient with cold packs around the abdominal, axillary, neck, and groin areas.

D. Do not allow patient to shiver during cooling. If shivering occurs, remove cold packs.

E. If patient presents with altered level of consciousness, *(See Altered Level of Consciousness)*.

Note: Many athletic programs have instituted ice bath cooling for exertional heat stroke. Cold water immersion is the most effective treatment for exertional heat stroke. Permit use of rectal thermometers by on-site medical personnel. If ice bath cooling has been initiated consider the following:

1. Indications for ice bath cooling include altered mental status and elevated temperature.
2. Once initiated, patient may stay in the ice bath for up to 30 minutes.
3. When patient is in the ice bath, monitor vital signs. If ALS, monitor ECG, and start IV.
4. When possible, monitor temperature as best as possible. The most accurate method is a rectal temperature. Oral, axillary and tympanic temperatures may be falsely low during exertional heat stroke – continue cooling even if temperature readings appear normal but patient remains altered.
5. If at any point in time the patient becomes unstable (i.e. inability to protect airway, development of life-threatening arrythmia or worsening vital signs), remove from ice tub and initiate transport
6. Patient may be removed from the ice tub once core temperature falls below 102 or they regain a normal mental status.

If patient appears unstable:

BLS

1. Request ALS if not already en route and initiate transport. Contact receiving facility for further orders if ALS is not on scene.

ALS

1. Apply the cardiac monitor

2. Initiate an IV and titrate to maintain a SBP ≥ 90 mmHg.

HYPOTHERMIA

Any patient with a **suspected** core body temperature of 96° F or less. Hypothermic patients are considered viable until rewarmed and pronounced dead by a physician.

Exception: If in cardiac arrest and chest is completely frozen preventing chest compressions, this is considered incompatible with life – follow DOA criteria protocol.

A. Administer oxygen at 10-15 LPM per non-rebreather *(See Administration of Oxygen Protocol)*

Assist ventilations with BVM as needed and avoid hyperventilation – rapid correction of acidosis may result in cardiac arrest. Refer to Airway Management Protocol as needed. Apply capnography if available.

B. On all patient procedures, handle gently. Do not let the patient walk.

C. Remove wet clothing. Cover patient with dry blankets. Do not rub patient's extremities.

D. Assess vital signs (Check pulse for one full minute).

Pulse Present

BLS/ALS

A. If patient presents with altered level of consciousness, see Altered Level of Consciousness protocol

ALS: Administer Warm IV Fluids if available

Pulse Absent

BLS

A. Begin CPR and request ALS.

ALS

1. If monitor shows an organized rhythm, do not initiate CPR unless capnography reading is 0 mmHg or unobtainable.

2. Initiate CPR if the patient is found to be in asystole or ventricular fibrillation/ventricular tachycardia. Defibrillation can be attempted once before transport for identified VF/VT.

3. Administer Warm IV Fluids if available

INITIAL TRAUMA CARE

- To be performed on all patients following a traumatic or suspected traumatic event.
- As scene evaluation, initial assessment, rapid trauma assessment, focused assessment, on-going assessment, and detailed physical exam are part of the training of EMTs and paramedic, the details of those steps will not be provided in this protocol. It is expected that EMS personnel will perform in accordance to their training.

BLS

A. Begin Initial Medical Care.
B. Control all significant external bleeding. If direct pressure does not rapidly stop the bleeding in an extremity, apply a tourniquet.
C. If bleeding continues despite tourniquet use or wound is not amenable to tourniquet placement (e.g. groin or armpit), pack the wound cavity with a sterile gauze roll and apply direct pressure with a pressure bandage.
    1. Providers may also utilize a TCCC-approved gauze based hemostatic dressing (e.g., Combat Gauze, Chito Gauze, Celox Gauze) if available.
    2. The number of dressings packed into the wound must be documented in the patient care record.
D. Follow Airway Management and Oxygen Administration protocol.
E. Record LOC using AVPU method. Obtain an initial GCS as early as possible.
F. Expose patient to perform a detailed physical exam.
G. Cover and keep patient warm between assessments in order to conserve body heat. Cover patient with blanket as soon as practical, preferably with warmed blanket. Keep ambulance temperature warm.
H. If patient's presentation, or the mechanism of injury, meets "Trauma Alert" criteria:
    1. Call for a paramedic unit. See "ALS and BLS Team Approach".
    2. Rapidly extricate with cervical spine immobilization if indicated.
    3. Try to keep scene time to 10 minutes or less. If scene time exceeds 10 minutes, document the reason for the delay.
I. Patients with major multiple system trauma or penetrating trauma to the head, neck, chest or abdomen should be transported to a Trauma Center. If there are multiple patients with penetrating trauma at an incident, providers must consider trauma center capacity to avoid overwhelming a single facility. During a declared MCI, transportation destination will be made by the Transportation Officer.
J. Patients with serious burns should be transported to a Burn Center.
K. If the patient can be transported by BLS to a Trauma or Burn Center in less time than it would take for ALS to arrive, then transport by BLS.

ALS

A. During transport – Establish 2 large bore IV's of 0.9% NaCl or LR. Titrate fluids to a SBP of 90 mmHg. (LR should not be used if blood products are being administered in the same line.)
B. Apply cardiac monitor.
C. Intubation or supraglottic airway placement with C-spine control may be necessary to maintain a patent airway and/or to prevent aspiration of vomitus.
D. If an IV cannot be established and an urgent need for vascular access exists, establish IO access.

OUT-OF-HOSPITAL SPINAL CLEARING/MOTION RESTRICTION

A. Spinal Motion Restriction is to be provided to blunt trauma patients only if significant evidence of spinal injury exists, see below.
B. Penetrating trauma patients do NOT require full spinal motion restriction on backboard for transport.
C. Patients that are ambulatory upon arrival do NOT require full spinal motion restriction on backboard for transport.

BLS/ALS

If cervical collar cannot be fitted due to improper size or lack of cooperation, consider using rolled towels.

1. Cervical collar application should be used for trauma patients meeting any of the following:
    a. Presence of midline bony tenderness of c-spine to palpation or with movement
    b. Focal neurologic deficit present or reported
    c. Age <8 or >65
    d. Intoxication
    e. Distracting injury present
    f. High risk injury/mechanism of injury or provider discretion

    Cervical collar application should be used for any pediatric trauma patient meeting any of the following:

    a. Age < 8
    b. Presence of midline tenderness to palpation or with movement
    c. Distracting injury present
    d. Complaint of any neck pain
    e. Torticollis
    f. Focal neurologic deficit present or reported
    g. AMS including GCS < 15, intoxication, and other signs (agitation, apnea, hypopnea, somnolence, etc.)
    h. Involvement in a high-risk motor vehicle, high impact diving injury, or has substantial torso injury.
2. Cervical collar and spinal motion restriction, which may include a spinal backboard, should be provided to patients meeting Trauma Alert criteria and any of the following
    a. Unconscious or altered mental status on exam
    b. Neurologic deficit present or reported
    c. Midline spinal tenderness or deformity
    d. Intoxication

    Penetrating head, neck or torso trauma with no evidence of spinal injury <u>does not</u> require backboard application.

* If a long spine board is used for extrication purposes only, and the patient does not meet the above criteria, the patient does NOT need full spinal restriction on a backboard for transport unless necessary for patient safety. The patient can be moved onto the stretcher.
* Patients who are ambulatory upon arrival do NOT require full spinal restriction on a backboard for transport.

SPINAL MOTION RESTRICTION FOR THE PREGNANT TRAUMA PATIENT

A. During the third trimester, transport the patient in the left lateral recumbent position (tilted 20-30 degrees to the left by securing the patient to the backboard and tilting the backboard (if used) with pillow or blankets).
B. If the patient is hypotensive, transport the patient in the left lateral recumbent position (tilted 20-30 degrees to the left) and re-check the vital signs.

EYE INJURIES

A. Assess for the following:

1. Intact globe (do not touch the globe).
2. Hemorrhage, lacerations, contusions.
3. Ability of both eyes to move together.
4. Fluid from the globe.
5. Decreased visual acuity (unable to see light, hand motion, or count fingers)
6. Visible foreign bodies.

B. Do not apply bandage or pressure to eye(s). It is unnecessary to bandage the uninjured eye. If foreign body or open globe is suspected, apply a rigid eye shield (such as a fox eye shield) over the affected eye and secured with 1 piece of tape. Alternatively, undamaged safety glasses or a cup can be used.

C. Do not remove impaled objects – stabilize as best as possible. Cover avulsed eye with paper cup if available.

D. For chemical burns, irrigate the eye with normal saline or water for 20 minutes and then bandage both eyes. If initiating transport will not interrupt eye irrigation, continue irrigation en route to the hospital.

CHEST INJURIES

BLS

A. Assess for flail segments or rib fractures. Do not use sandbags.

B. Cover open chest wounds with an occlusive dressing. If a commercial seal is used, a vented seal is preferred. Apply on exhalation. Watch for signs of increased respiratory distress and decreasing blood pressure. If this occurs lift one edge of the dressing long enough to allow air to escape.

C. Stabilize impaled objects. Secure occlusive (e.g., Vaseline®) gauze at base of impaled objects.

D. Assess breath sounds every 5 minutes.

D. If level of consciousness is decreased or vital signs abnormal; transportation by advanced life support is preferred.

ALS

1. If tension pneumothorax is suspected perform needle decompression (see Needle Chest Decompression).

ABDOMINAL INJURIES

A. If an evisceration is present, keep it covered with moist sterile, non-adherent dressings. Use normal saline. Do not attempt to replace organs. Do not use Vaseline dressing.

E. Transportation by ALS is preferred.

MUSCULOSKELETAL INJURIES

A. Assess distal circulation, movement, and sensation before moving the injured extremity.

B. Cover open wounds with a sterile dressing. If bone is exposed, use a moist, sterile saline dressing.

C. Splint the injured extremity, but be mindful not to cause excess delays in multi-system trauma patients.

D. Do not attempt to straighten the extremity unless pulses are absent. Never attempt to straighten an injury involving a joint. If resistance is met while straightening a limb, splint the injury as it is.

E. Reassess distal circulation, movement and sensation.

F. Elevate the extremity in a supported position and apply cold packs.

G. If the patient is in more pain after splinting of the injured part, reassess and re-splint.

H. Apply pelvic binder if there is suspicion of pelvic fracture, particularly if there is shock or pelvic pain following blunt trauma or blast injury.

I. Care of amputated parts:

1. Rinse away gross contamination with sterile saline.

2. Cover the injured site on the amputated part with a moist, sterile saline dressing and bulky bandage.

3. Place the amputated part in a plastic bag. If ice is immediately available, place the plastic bag on ice. Do not delay transport to obtain ice.

4. Do not clamp bleeders. Apply a compression dressing.

CRUSH INJURY

A. Prior to the release of an extremity or large muscle group from an entrapped position longer than 20 minutes, initiate normal saline or LR infusion "wide open" to encourage diuresis.

B. Consider applying a commercial tourniquet proximal to the entrapped extremity prior to release.

C. Apply EKG prior to release if possible. For patients who exhibit a wide QRS (>0.12 sec), peaked T-waves, experiences cardiac arrythmias or goes into cardiac arrest, refer to Hyperkalemia protocol.

D. If technically complex extrication and further recommendations/advanced procedures are required, consider having Dispatch page **OMD Page Group** for Field Response or OMD Consultation.

BURNS

A. Protect yourself!

B. Remove the patient from the source, put out fire on the patient and remove burned clothing.

C. Address the more life threatening injuries first, and then treat burns.

D. Maintain sterility when treating burns.

E. Estimate the percentage and degree of burns using the rule of nines, or as an alternative for burns less than 10 percent, the palm of the patient's hand is equivalent to ~1% BSA

F. Categorize type of burn and provide appropriate treatment:

Thermal burns –

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

2. For first and second degree thermal burns involving < 10% body surface, soak area with sterile water for 10-15 minutes until temperature is the same as the normal skin, then cover with dry, sterile burn sheets. Do not apply cold packs to burned areas.

3. For all other thermal burns, cover with dry, sterile dressings or burn sheets (If in doubt whether to soak burns, leave dry.)

4. Leave unbroken blisters intact.

Chemical burns –

1. Brush off excess dry agent

2. Copious irrigation with saline or water for at least 20-30 minutes.

3. Transport in dry sterile sheets.

4. Keep warm – protect from hypothermia associated with wet skin.

Electrical burns –

1. Turn off the source.

2. Be aware of musculoskeletal injuries and arrythmias.

3. Look for wounds that may signify electrical pathway.

4. Place the patient on high flow oxygen with a non-rebreather at 10 – 15 LPM.

G. ALS is preferred for:
   1. Any burns complicated by fractures
   2. All electrical burns
   3. Any burns complicated by smoke inhalation, damage to the airway or confinement in an enclosed space.
   4. Pediatric patients
   5. Partial or full-thickness burns of > 10% BSA.
   6. Burns involving hands, feet, face, genitalia or joints
   7. Patients meeting medical alert criteria
   8. Patients meeting trauma criteria

ALS

1. Intubate the patient if indicated. Strongly consider oral intubation if LOC is decreasing and one or more of the following signs are present:

   a. Obvious oral inhalation injury (e.g., increasing hoarseness, stridor)

   b. Soot in the airway or nasal hair burned

2. Apply the cardiac monitor to non-burned skin.

3. Initiate an IV with normal saline for partial or full thickness burns > 20% BSA, other associated trauma, significant dysrhythmias, or need for intubation.

   a. Insert IV catheter preferentially through non-burned skin.

   b. Run wide open until arrival at hospital or 1000 mL infused.

   c. Document total IV fluids given in the field and advise receiving facility upon arrival.

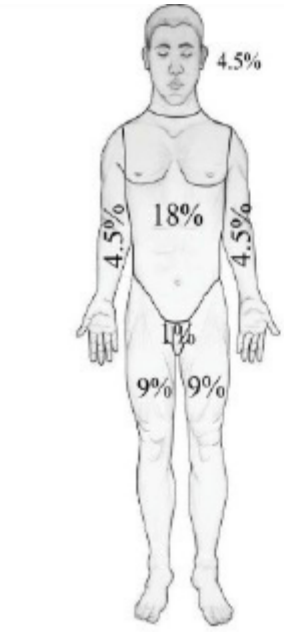
4. Administer fentanyl as appropriate *(See Pain Management protocol)*

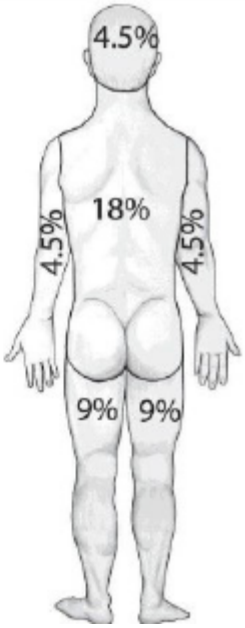
*** Burn injuries that should be referred to a burn center include:**

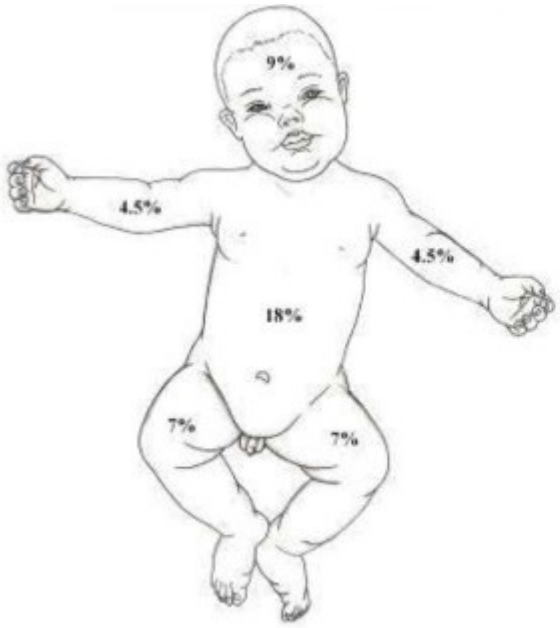
- Partial thickness burns greater than 10% total body surface area (TBSA).
- Burns that involve the face, hands, feet, genitalia, perineum, or major joints.
- Third degree burns in any age group.
- Electrical burns, including lightning injury.
- Chemical burns.
- Inhalation injury.
- Burn injury in patients with preexisting medical disorders that could complicate management, prolong recovery, or affect mortality.
- Any patient with burns and concomitant trauma (such as fractures) in which the burn injury poses the greatest risk of morbidity or mortality. In such cases, if the trauma poses the greater immediate risk, the patient may be initially stabilized in a trauma center before being transferred to a burn unit. Physician judgment will be necessary in such situations and should be in concert with the regional medical control plan and triage protocols.
- Burned children in hospitals without qualified personnel or equipment for the care of children.
- Burn injury in patients who will require special social, emotional, or rehabilitative intervention.

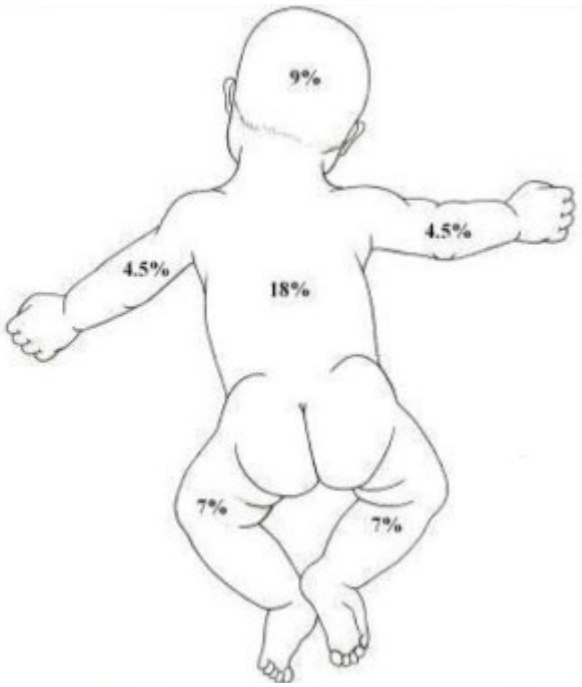
RULE OF NINES

Graphic Source:
Advanced Burn Life Support









Conducted Energy Weapons/Barbed Restraint Devices

This protocol is intended to provide guidelines for care of patients following the use of electromuscular disruption (EMD) weapons (e.g., the X26 TASER®) or barbed restraint devices (e.g. BolaWrap®). For situations involving altered level of consciousness, significant secondary trauma or other medical problems, follow the applicable protocol(s).

A. Assure the scene is secure. Use of this type of weapon to subdue a violent person implies he/she was a risk to him/herself or others.

B. Evaluate and treat for secondary injuries/altered level of consciousness as indicated.

C. Stabilize dart(s) in place and transport patient to ED if the dart(s) is/are embedded in the eyelid/globe of eye, genitalia, or face/neck.

D. Darts in other locations may be carefully removed by gently pulling backwards in the same plane as they entered the body. Assure the dart is intact and no portion of the dart remains inside the patient's skin.

E. Provide the darts to law enforcement officers.

F. Control minor bleeding and clean the wound area(s) with alcohol and/or povidone-iodine solution. Cover with an adhesive bandage.

G. If all darts are out, any minor bleeding is controlled, and no other injuries or symptoms exist, EMS transport is not indicated and an SOR may be obtained.

TRAUMATIC BRAIN INJURIES

AVOID THE 3 "H-BOMBS" IN TRAUMATIC BRAIN INJURY: HYPOXIA, HYPOTENSION AND HYPERVENTILATION

A. Identify patients with physical trauma and a mechanism consistent with the potential to have induced brain injury and:

1. GCS of 12 or less
2. GCS <15 with decreasing mental status
3. Multisystem trauma requiring intubation (whether the primary need for intubation was from TBI or from other potential injuries)
4. Post-traumatic seizures (whether status or not).

B. Elevate head of bed (cot) 30° if possible.

C. Start 15 L/min O_2 via NRB and obtain IV access when applicable.

D. Monitor O_2, BP, HR, and neurologic status every 3-5 minutes.

E. **AVOID HYPOXIA:** Maintain oxygen saturation > 90%.

1. If oxygen saturation falls below 90% despite NRB, reposition airway and start BVM ventilation with airway adjuncts (eg, OP or NP airway when appropriate). **Do not hyperventilate.**
2. If airway compromise or hypoxia persists after these interventions, a non-visualized airway or ETI should be considered (see Airway Management protocol).

F. **AVOID HYPERVENTILATION**. Maintain Normo-Ventilation..

1. If there is evidence of hypoventilation (ineffective respiratory rate, shallow or irregular respirations or periods of apnea) despite high-flow O_2, assist ventilation with BVM and if ineffective, consider non-visualized airway or ETI (see Airway protocol).
2. When assisting ventilation with BVM, maintain respiratory rate according to the following:

   - 25 breaths per minute in infants (0-24 mo)
   - 20 bpm in children (2 yo-14 yo)
   - 10 bpm in children aged 15 or older
   - 10 breaths per minute in adults

3. In intubated patients, use BVM to maintain $ETCO_2$ between 35 and 45 mmHg.

G. **AVOID HYPOTENSION.** Maintain blood pressure according to the following:

- >70 mmHg for infants 0-24 mo
- >80 mmHg for children 2 yo-7 yo
- >90 mmHg for children 8 yo and older and all adults

Prevent even a single isolated episode of hypotension by IV fluid resuscitation with initial bolus of 1 L NS or LR, followed by repeat boluses of 500 ml NS or LR to keep SBP>90 mmHg in adults. For pediatric patients, use 20 ml/kg of NS followed by repeat boluses of 10 ml/kg NS or at sufficient rate to keep SBP as above. Do not treat hypertension, but restrict IVF TKO in adults with SBP >140 mmHg, infants with SBP >100mm Hg and older children/adolescents with SBP >130 mmHg.

H. Check for hypoglycemia.

- If hypoglycemic, follow hypoglycemia protocol in Altered Level of Consciousness

MATERNAL BLEEDING DURING PREGNANCY

BLS

A. Begin Initial Medical Care.
B. Follow "Airway Management" protocol.
C. Administer oxygen at 10-15 lpm by NRB mask.
D. If patient has signs/symptoms of shock, call for a paramedic unit. See "ALS and BLS Team Approach".
E. Have patient estimate the number of pads soaked per hour. Determine when bleeding began.
F. Prepare to treat for shock.
G. Transport emergent in left lateral recumbent position if ≥ 20 weeks gestation or if uncontrollable bleeding is present.

ALS

1. Establish 2 large bore IV's of 0.9% NaCl or LR. LR should not be used in blood products are being transfused in the same line. Titrate fluid to a SBP of 90 mmHg.

Refer to *Non-Cardiogenic Shock* and other protocols as patient condition requires.

PREECLAMPSIA/ECLAMPSIA

Any pregnant or recently delivered (within 4 weeks) woman with the presence of hypertension (BP >140/90) and possibly marked edema of the face, hands, and/or feet.

A. Begin Initial Medical Care.

B. Administer high flow oxygen to mother. *(See Administration of Oxygen Protocol)*

C. Transport non-emergently (without lights or siren) in a darkened ambulance.

D. If patient begins to have seizures, s*ee Seizures Protocol– Note that midazolam is still given before the magnesium.*

PROLAPSED UMBILICAL CORD

A. Administer high flow oxygen to the mother. *(See Administration of Oxygen Protocol)*

B. Place patient in left lateral recumbent position.

C. Elevate presenting part off of the umbilical cord by using a gloved hand in vagina. Keep elevated until relieved at hospital.

D. Call for ALS and initiate transport.

E. Contact receiving facility as early as possible

BREECH PRESENTATION

A. Administer high flow oxygen to the mother. *(See Administration of Oxygen Protocol)*

B. Place patient in left lateral recumbent position.

C. Check for prolapsed cord.

D. Contact receiving facility as early as possible

SHOULDER DYSTOCIA

A. If head delivers but the anterior shoulder obstructs further delivery:

- Maximally flex the mother's hips and bring knees to the chest (McRoberts Maneuver)
- Apply moderate downward pressure above the pubic symphysis using an assistant

B. Transport immediately if shoulder does not deliver

POSTPARTUM HEMORRHAGE

Any patient who has an estimated blood loss exceeding 500 ml following childbirth.

BLS

A. Contact receiving facility for further orders if ALS is not on scene.

B. Call for ALS and initiate transport.

C. Administer high flow oxygen to mother. *(See Administration of Oxygen Protocol)*

D. Massage the fundus of the uterus after delivery of the placenta until firm. Check fundus every 5 minutes for firmness and repeat massage as necessary.

ALS

1. Insert 2 large bore IV's with normal saline or LR and run wide open to maintain a SBP of 90mm Hg. Do not use LR if blood products are being given in the same line.

2. Contact receiving facility as early as possible. **Activate as a medical alert if blood Loss >500ml, HR ≥110 BPM, Systolic BP ≤90mmHg or SPO2 < 94%.**

DELIVERY OF THE NEWBORN

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

A. Obtain the following information:

1. Due date.
2. Frequency of contractions.
3. Number of pregnancies (gravida), number of children born (para)
4. History of pre-term or post-term deliveries.
5. Sensation of the need to move bowels (delivery is imminent).
6. Presence of crowning (delivery is imminent).

B. If no crowning is present, begin transportation in the left lateral recumbent position. If crowning is present, prepare to deliver the infant.

C. Administer high flow oxygen to the mother. *(See Administration of Oxygen Protocol)*

D. Assist with the delivery. (*See Newborn Care Protocol)*

1. Guide and control but do not try to stop the delivery.
2. Don't pull on infant or put traction on cord.
3. If 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.
4. Look for presence of meconium staining. *(See Meconium Staining)*
6. Wait at least 30 seconds before clamping the newborn's cord.

E. Provide post-partum care to the mother. Massage the fundus of the uterus after delivery of the placenta. Wrap up the delivered placenta and take it to the hospital.

E. Contact the receiving facility for early notification.

NEWBORN CARE

A. Stimulate, position and warm. Dry with towels, stimulate with gentle rubbing or heal flicks. Suction oral and nasal passages with bulb syringe only if an obvious obstruction is seen or the neonate requires positive pressure ventilation.
   - Note – **In premature infants with estimated gestational age <32 weeks DO NOT towel dry. Instead, wrap in plastic or put infant in a plastic bag (not the head) and put on a hat if available.**

B. Patients who meet all of the following three criteria do not require immediate newborn resuscitation and can be kept with the mother for initial routine care.
   1. The neonate is of full term AND
   2. The neonate has good muscle tone AND
   3. The neonate is crying or breathing

   Otherwise, immediately start Newborn Resuscitation protocol (see below).

C. Keep baby at the same level of the perineum for 30-60 seconds. Clamp and cut the cord after waiting at least 30 seconds from delivery. Place one clamp six inches from the infant, the second clamp three inches distal from the first clamp. Cut the cord between the clamps. If cord continues to bleed, apply additional clamps.

D. Record the time of birth. Determine APGAR scores at one and five minutes after birth. See below for normal preductal oxygen saturations in the neonatal period (in the right arm/hand.) If the newborn is healthy and well-appearing, skin-to-skin contact with mother's bare skin for several minutes is recommended before transport. Newborn should not be held in mother's arms during ambulance transport – use newborn restraint and keep warm.

E. Contact the receiving facility for early notification. Newborns are prone to hypothermia even in summer months. Use warmed blankets and newborn cap.

Targeted Preductal SpO2 After Birth	
1 Min	60%-65%
2 Min	65%-70%
3 Min	70%-75%
4 Min	75%-80%
5 Min	80%-85%
10 Min	85%-95%

APGAR Scoring Chart			
SIGN	**0**	**1**	**2**
ACTIVITY	Limp	Some extremity flexion	Good extremity flexion
PULSE	Absent	<100	≥100
GRIMACE	Absent	Some facial grimace	Strong grimace
APPEARANCE	Blue	Blue extremities, pink torso	All pink
RESPIRATORY EFFORT	Absent	Weak cry	Strong cry

MECONIUM STAINING

Presence of green amniotic fluid or green/black particulate material on face or in upper airway.

BLS

2. Request ALS if not already en route. Contact receiving facility for further orders if ALS is not on scene
3. Wipe away any collection of meconium in the upper airway with gauze-wrapped finger.

ALS

1. See Newborn Resuscitation protocol.

2. Perform tracheal suctioning with meconium aspirator for newborns born through meconium only if (1) the newborn is nonvigorous (presenting with apnea or ineffective breathing effort) AND (2) there are signs of airway obstruction during positive pressure ventilation

NEWBORN RESUSCITATION (TIME OF DELIVERY)

Successful positive pressure ventilation is the most important intervention for newborn resuscitation. If unable to achieve successful PPV, troubleshoot ventilation with MR SOPA and achieve successful PPV before proceeding to next step.
** Successful PPV is defined as seeing gentle rise and fall of the chest.*

BLS

A. Warm, dry, stimulate, position airway and suction if needed. **Newborns are very prone to hypothermia even in summer months. Use warmed blankets and newborn cap .**

B. If apneic, gasping, or has a HR < 100/min

1. Start positive pressure ventilation at rate of 40-60 breaths per minute. Start by using room air. **Positive pressure ventilation and thermoregulation are the most important priorities in newborn resuscitation.**

IF UNABLE TO ACHIEVE SUCCESSFUL POSITIVE PRESSURE VENTILATION, TROUBLESHOOT AIRWAY:
M – Mask Adjustment – ensure good seal of the mask on the face
R – Reposition Airway – verify sniffing position
S – Suction mouth and nose
O – Open Mouth to ensure it is slightly open with lifted jaw
P – Pressure Increase – Squeeze BVM with gradually increasing force
A – Alternate Airway (find provider who can insert advanced airway into neonate, may require transport and intercept with ALS asset or immediate transport to hospital)

2. Start oxygen saturation monitoring with pulse oximeter on right arm/hand, if available

3. Consider 3-lead EKG monitoring to determine heart rate

C. Reassess after 30 seconds following **successful*** PPV:

1. If HR between 60-100 BPM continue PPV.
2. If HR < 60/min, begin chest compressions with a ratio of 3:1 compressions to breaths (90 compressions and 30 respirations per minute) and increase oxygen to 100%

** Successful PPV is defined as seeing gentle rise and fall of the chest.*

D. If HR >100/min, transport to closest pediatric facility with continued close monitoring

ALS

E. Warm, dry, stimulate, position airway and suction if needed. **Newborns are very prone to hypothermia even in summer months. Use warmed blankets and newborn cap .**

F. If apneic, gasping, or has a HR < 100/min

1. Start positive pressure ventilation at rate of 40-60 breaths per minute. Start by using Room Air. **Positive pressure ventilation and thermoregulation are the most important priorities in newborn resuscitation.**

IF UNABLE TO ACHIEVE POSITIVE PRESSURE VENTILATION, TROUBLESHOOT AIRWAY:
M – Mask Adjustment – ensure good seal of the mask on the face
R – Reposition Airway – verify sniffing position
S – Suction mouth and nose
O – Open Mouth to ensure it is slightly open with lifted jaw
P – Pressure Increase – Squeeze BVM with gradually increasing force
A – Alternate Airway (supraglottic or intubation, but supraglottic is preferred)
DO NOT PROCEED TO CHEST COMPRESSIONS UNTIL SUCCESSFUL PPV ACHIEVED

2. Start oxygen saturation monitoring with pulse oximeter on right arm/hand

3. Apply 3-lead EKG monitoring to determine heart rate

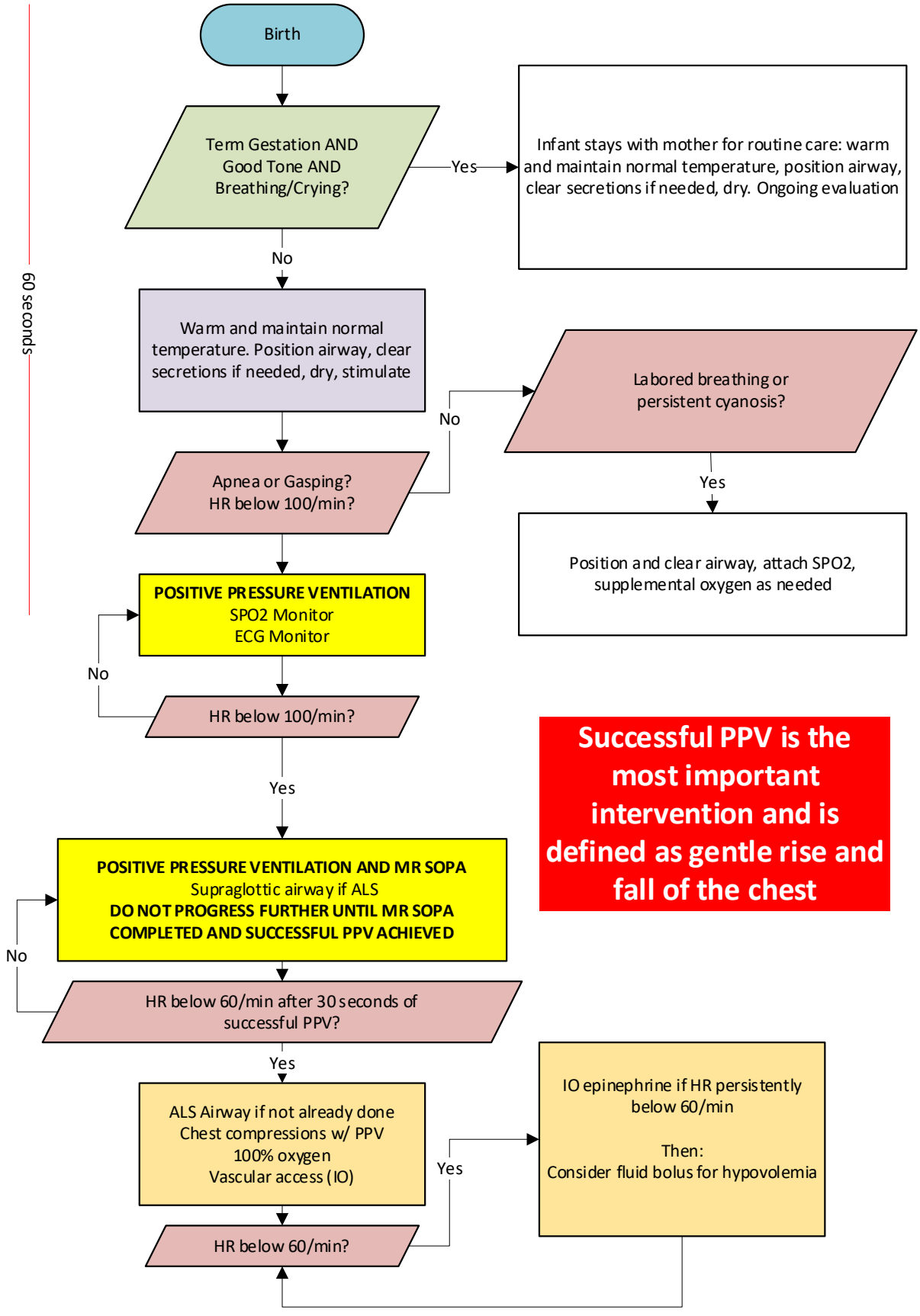
G. Reassess after 30 seconds following **successful*** PPV:

1. If HR between 60-100 BPM continue PPV.
2. If HR < 60/min, begin chest compressions with a ratio of 3:1 compressions to breaths (90 compressions and 30 respirations per minute) and increase oxygen to 100%
   a. If HR < 60/min after 30 seconds of performing 3:1 CPR, place alternate airway (supraglottic or intubation) if not already done, *then*
   b. If HR < 60/min after an additional 30 seconds of 3:1 CPR with alternate airway, administer epinephrine 0.01mg/kg of 1:10,000 IV/IO
   c. HR < 60/min after epinephrine, administer 0.9% NS bolus 10ml/kg, slow IV push over 5-10 minute

** Successful PPV is defined as seeing gentle rise and fall of the chest.*

H. If HR >100/min, transport to closest pediatric facility with continued close monitoring

Targeted Preductal SpO2 After Birth	
1 Min	60%-65%
2 Min	65%-70%
3 Min	70%-75%
4 Min	75%-80%
5 Min	80%-85%
10 Min	85%-95%


60 seconds
Birth
Term Gestation AND
Good Tone AND
Breathing/Crying?
Yes
Infant stays with mother for routine care: warm and maintain normal temperature, position airway, clear secretions if needed, dry. Ongoing evaluation
No
Warm and maintain normal temperature. Position airway, clear secretions if needed, dry, stimulate
Labored breathing or persistent cyanosis?
No
Apnea or Gasping?
HR below 100/min?
Yes
Position and clear airway, attach SPO2, supplemental oxygen as needed
POSITIVE PRESSURE VENTILATION
SPO2 Monitor
ECG Monitor
No
HR below 100/min?
Successful PPV is the most important intervention and is defined as gentle rise and fall of the chest
Yes
POSITIVE PRESSURE VENTILATION AND MR SOPA
Supraglottic airway if ALS
DO NOT PROGRESS FURTHER UNTIL MR SOPA COMPLETED AND SUCCESSFUL PPV ACHIEVED
No
HR below 60/min after 30 seconds of successful PPV?
Yes
ALS Airway if not already done
Chest compressions w/ PPV
100% oxygen
Vascular access (IO)
Yes
IO epinephrine if HR persistently below 60/min
Then:
Consider fluid bolus for hypovolemia
HR below 60/min?

Section THREE

Procedures

VERIFICATION OF ENDOTRACHEAL TUBE AND SUPRAGLOTTIC AIRWAY DEVICE PLACEMENT

End-Tidal-Carbon-Dioxide detection (EtCO2) should be used to confirm the initial placement of all advanced airways (in addition to physical exam) per EtCO2 standard operating procedure, on any ambulance that has the capability of performing capnography. Continuous EtCO2 monitoring should be used throughout patient encounter on ALL patients with advanced airways.

Advanced airways are to be confirmed and secured prior to moving the patient. Any time the patient has been moved (i.e. from the scene to the vehicle, in the vehicle, from the vehicle to the ED) the airway placement is to be re-confirmed.

Documentation on the run sheet is to include:

1. Bilateral breath sounds, absence of epigastric sounds
2. Size of advanced airway. For ET tubes document depth of insertion in centimeters.
3. Method of securing the advanced airway
4. EtCO2 measurement (initial reading and any changes during patient encounter)

For patients receiving care from multiple agencies, the following documentation elements are required for the respective provider in their own agency's documentation system:

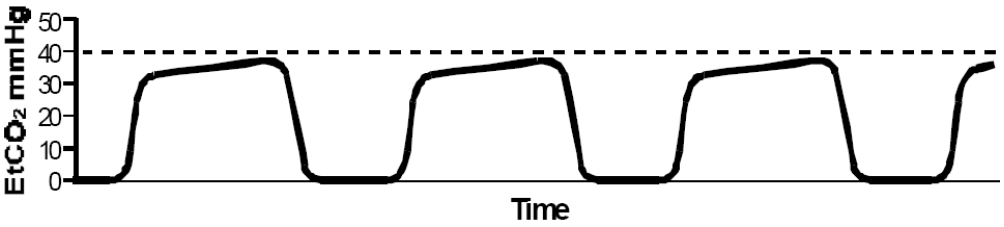
Provider Placing Airway	Transporting Paramedic
Airway type, size and depth for any attempts	Airway type, size and depth at time of transport
Presence of capnography waveform	Presence of capnography waveform during transport
ETCO2 value	ETCO2 value during transport
Method of securement	Method of securement
Documentation of breath sounds/ absent epigastric sounds after insertion	Airway signature from receiving facility

Confirmation signature of *successful placement of an advanced airway (ETT, King, LMA, Cric)* at the receiving facility is required upon *arrival* in the Emergency Department from the physician managing the airway.

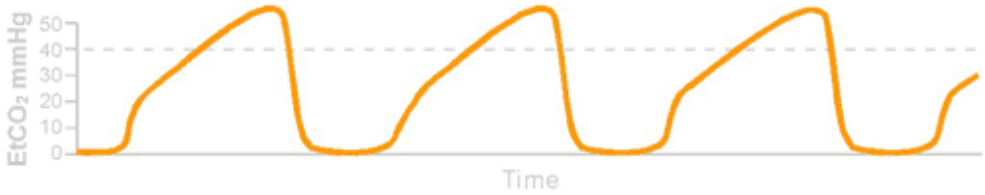
Confirmation signature of *a tracheostomy airway is required if the EMS provider manipulated the tracheostomy (e.g. attached BVM for ventilation, exchanged trach tube, etc.)*.

If the EMS provider fails to get the airway confirmed at the receiving facility or if the confirming entity assesses that the device is misplaced a copy of the patient care report must be made available to provider agency supervisory personnel and the Medical Director within 24 hours.

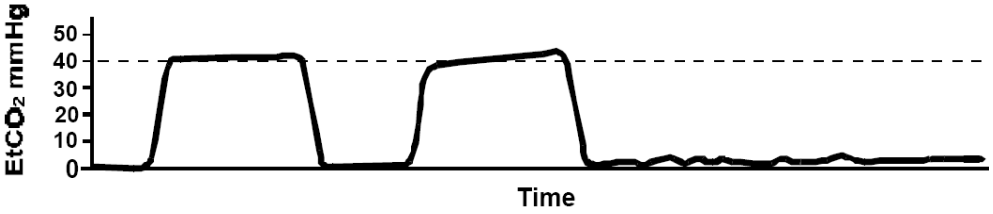
Capnography Waveform Review



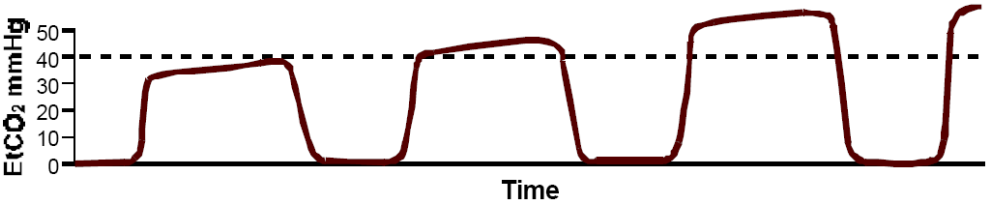
Normal waveform



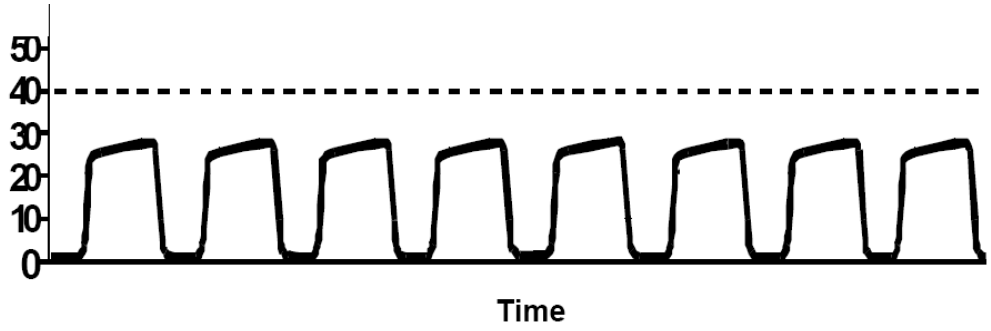
"Shark fins" – indicates bronchospasm



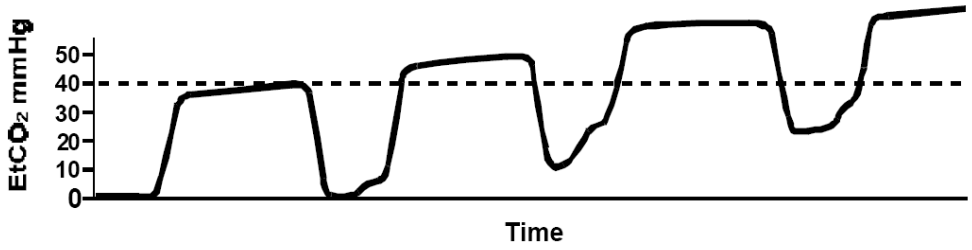
Displaced ET tube / Apnea



Hypoventilation



Hyperventilation



Air trapping or inadequate exhalation as in COPD or asthma

VERIFICATION OF ENDOTRACHEAL TUBE PLACEMENT WITH ESOPHAGEAL DETECTOR DEVICE/COLORIMETRIC-ALS

The following shall be used **ONLY** if capnography is not available:

If capnography available, see "*Verification of Endotracheal Tube (ETT) and Supraglottic Airway Device Placement Procedure*"

The Esophageal Detector Device (EDD), while not preferred, may be used to verify initial endotracheal tube placement:

1. Intubate the patient
2. Inflate the cuff
3. Apply the EDD
   a. Pull back on plunger
   b. Measure ease of filling of EDD*

Correct Placement	Incorrect Placement
Easy filling / plunger moves easily to 40 ml.	Poor filling / plunger resistant at 10 ml
	Reassess tube and return to step 1 (one).

- False negatives may include obesity, blood in the airway, pulmonary edema, pneumothorax, and deep mainstem intubation. False positives may be seen with excessive gastric insufflation prior to intubation.

4. Auscultate for positive breath sounds and negative epigastrium sounds.
5. Secure the tube.

A. The colorimetric carbon dioxide detector may be used to verify initial airway device placement in patients who have a palpable pulse:

1. Place colorimetric carbon dioxide detector and ventilate patient 6 times.
   a. Observe for color changes to "C"/yellow range – this is suggestive of appropriate tube placement.
   b. Observe for no change (remains in "A"/purple range) or minimal change (goes to "B"/tan range). Critically evaluate tube placement and rule out low cardiac output.

The Colorimetric C02 Detector and Esophageal Detector Device are adjuncts to assessment of the ETT placement. They are not substitutes for other methods of evaluation (e.g., auscultation of breath/epigastric sounds).

CRICOTHYROTOMY-ALS

SURGICAL CRICOTHYROTOMY

A. Position adult patient (age greater than 8 years) by hyperextending the neck unless c-spine concerns mandate neutral positioning.

B. Locate the cricothyroid membrane.

C. Clean the incision site, if possible.

D. Incise the skin vertically over the membrane.

E. Bluntly dissect down to the cricothyroid membrane.

F. Incise the lower portion of the membrane horizontally with scalpel and rotate the blade 90°.

G. Enlarge and maintain the opening with hemostats or the end of the scalpel.

H. Insert cuffed endotracheal tube and inflate cuff. A bougie is authorized to facilitate passage of the endotracheal tube.

I. Confirm correct placement by use of the EtC02, if available, or Esophageal Detector Device/ colorimetric $ETCO_2$ detector and auscultating for breath sounds over both lungs and stomach.

J. Cover wound with occlusive dressings and secure the tube.

K. Reassess breath sounds.

COMPLICATIONS OF CRICOTHYROTOMY	
Hypoxemia	Injury to the thyroid/parathyroid glands
Hypercarbia (C02 toxicity)	Subcutaneous and mediastinal emphysema
Perforation of the esophagus	Infection
Hemorrhage	Damage to tracheal cartilage involving disruption of vocal cords

If cricothyrotomy is attempted, a copy of the run record must be made available to the Medical Director through the CQI Coordinator within 24 hours of the run.

CRICOTHYROTOMY-ALS

NEEDLE CRICOTHYROTOMY

A. Position pediatric patient (age 8 years or less) by hyperextending the neck unless c-spine concerns mandate neutral positioning.

B. Locate the cricothyroid membrane.

C. Clean the puncture site, if possible.

D. Connect a syringe to the end of the catheter/needle.

E. Insert the catheter/needle into the cricothyroid space at less than 90 degrees to the longitudinal axis of the neck and caudally. Maintain suction with the syringe until air freely flows into the syringe or until bubbles are noted (if the syringe is partially filled with saline)

F. Advance the catheter over the needle, and then remove the needle.

G. Reconfirm placement with free-flow aspiration or the syringe bubble technique.

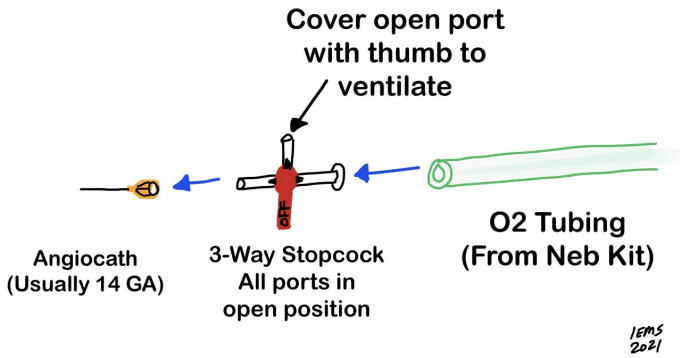
H. Attach a mechanism to provide high flow oxygen through the catheter (e.g., a 3.0 ET tube adapter plus BVM or an oxygen supply tubing, 3-way stopcock, and extension set) and begin oxygenation.

I. Watch for prompt chest inflation and auscultate for breath sounds over both lungs and stomach

J. Secure the catheter carefully; avoiding kinking the cannula.

K. Reassess breath sounds.

COMPLICATIONS OF CRICOTHYROTOMY	
Hypoxemia	Injury to the thyroid/parathyroid glands
Hypercarbia (C02 toxicity)	Subcutaneous and mediastinal emphysema
Perforation of the esophagus	Infection
Hemorrhage	Damage to tracheal cartilage involving disruption of vocal cords



If cricothyrotomy is attempted, a copy of the run record must be made available to the Medical Director through the CQI Coordinator within 24 hours of the run.

CONTINUOUS POSITIVE AIRWAY PRESSURE (CPAP)

Indication: Along with medical (pharmacologic) management, treatment for respiratory distress as evidenced by:

- Persistent dyspnea/hypoxemia
- History consistent with heart failure, volume overload, COPD or asthma exacerbation
- Drowning
- Paramedic judgement

Patients must meet the following criteria for CPAP administration:

1. Age greater than or equal to 18 y/o
2. Has the ability to maintain and protect an open airway
3. Systolic BP at or above 90 mm Hg
4. Pulse oximetry < 92% on 100% oxygen plus at least two (2) of the following:
   - Severe or sudden onset of shortness of breath
   - RR rate > 25/minute
   - Use of accessory muscles
   - Dyspnea at rest
   - Rales or wheezes

Contraindications:

1. Respiratory or cardiac arrest
2. Agonal respirations
3. Suspected or confirmed pneumothorax or penetrating chest trauma
4. Inability to maintain a patent airway
5. Any impediment to proper mask placement or seal (facial trauma, stroke, facial anomalies, epistaxis)
6. Tracheostomy
7. Persistent nausea and vomiting/Upper GI bleeding
8. Inability to comply with the device due to severe anxiety or altered mental status

Procedure

1. Assure patent airway, place patient on EKG monitor and pulse oximetry; capnography if available.
2. Explain procedure to the patient and reassure.
3. CPAP does not replace pharmacology – initiate medications per applicable dyspnea protocol (NTG or COPD/Asthma)
4. Ensure adequate oxygen supply to device, if needed, set manufacturers recommended liter flow.
5. Place mask and hold in place as patient adjusts to ventilatory support. Encourage patient to breathe deeply.
6. Secure mask, check for air leaks and if recommended by manufacturer, increase liter flow as needed.
7. Contact receiving hospital as early as possible to allow Respiratory Therapy to prepare their equipment.
8. Monitor and document patient VS and pulse oximetry (watch for decreased respiratory rate and/or mental status).
9. If patient deteriorates, remove device and consider BVM ventilations or advanced/supraglottic airway placement.

Documentation

Documentation should include all of the following:

1. CPAP level (cm H_2O)
2. SpO_2 every 5 minutes
3. Vital signs (HR, RR, BP)
4. Response to treatment including, SpO_2, RR and work of breathing
5. Adverse reactions
6. Clinical Impression on patient care form (respiratory distress and/or CHF/Asthma/COPD/Drowning)

NEEDLE DECOMPRESSION-ALS

A. Auscultate the chest to confirm which side has a suspected tension pneumothorax (indicated by absence/decrease in breath sounds, hypotension, SPO2 <90% and/or significant respiratory distress)

B. Locate the second intercostal space at the midclavicular line.

C. Clean the skin.

D. For adults, insert a 3.25" 14-gauge needle over the superior border of the 3rd rib perpendicular to the floor/cot and with the bevel pointing toward the midline. Do not insert needle medial to the nipple line. For pediatric patients, use a 14- or 16-gauge needle that is no longer than 1.5 inches in length.

- When the needle reaches the visceral pleura, you may feel a "pop" and/or air may rush out

E. In adults, the 5th intercostal space (ICS) in the anterior axillary line (AAL) may also be used as an alternate needle decompression location. In pediatric patients, the AAL landmark is not authorized.

A. Reassess and re-auscultate for improvement of breath sounds, pulse, respirations, and blood pressure.

F. Remove the needle and tape the catheter in place.

G. Reassess and re-auscultate for improvement of breath sounds, pulse, respirations, and blood pressure.

COMPLICATIONS OF NEEDLE DECOMPRESSION
Hemorrhage from laceration of intercostal vessels
Hemorrhage from laceration of a pulmonary vessel
Puncture of the lung

If needle decompression is attempted, a copy of the run record must be made available to the Medical Director through the CQI Coordinator within 24 hours of the run.

APPLICATION OF EXTERNAL PACEMAKER-ALS

Criteria: Any patient 18 years or older with a non-traumatic presentation of atropine-refractory symptomatic bradycardia

A. Assess for signs of instability.

1. Heart rate < 60/min and

2. SBP < 90 mmHg and

3. Signs and symptoms of shock

B. Apply pacing electrodes.

1. The anterior-posterior (AP) placement of the pacing electrodes is preferred. If absolutely necessary, anterior-anterior (AA) placement may be used.

AP placement-

a. Place negative electrode on left anterior chest halfway between the xyphoid process and the left nipple with the upper edge of the electrode below the nipple line.

b. Place the positive electrode on the left posterior chest beneath the scapula and lateral to the spine.

AA placement-

a. Place negative electrode on left chest, midaxillary over the fourth intercostal space.

b. Place positive electrode on anterior right chest, inferior to clavicle.

c. This position should only be used if AP placement is not possible.

C. Pacing procedure:

1. Maintain EKG monitoring during pacing procedure.

2. Attach pacing electrodes and connect pacing cable to pacemaker.

3. Power up pacemaker.

D. Observe monitor for a "sense" marker. One mark should appear on each QRS complex. If it does not appear or only appears intermittently, the pacemaker is not sensing the intrinsic rhythm of the patient. Adjust EKG size (larger) or change from Lead II to Lead I or III in order to achieve sensing. If more than one sensing mark appears for each QRS, the EKG size is probably too high. If intrinsic beats are not present, omit this step.

E. Adjust pacing rate to 70 bpm.

F. Adjust milliamp (mA) output to start at 10-30 mA. Gradually increase mA until electrical capture is noticed on the monitor.

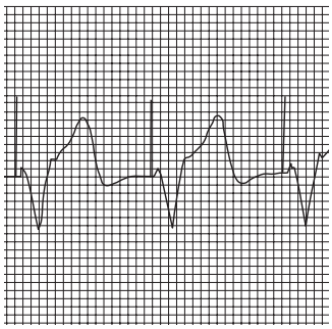
G. Assess for mechanical capture by checking for a pulse and blood pressure.
***If electrical capture is present but no pulse is present, increasing the mA is of** no benefit.

H. Record time of application and obtain rhythm strips before and after application.

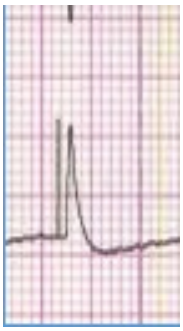
- If the patient's intrinsic rate exceeds the pacing rate, the pacemaker will sense the activity and not discharge.

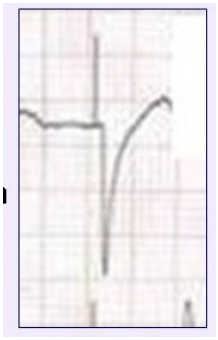
- Musculoskeletal discomfort may accompany external pacing. If this is a problem and the patient's vital signs will allow it, sedation and/or analgesia may be appropriate.

True Capture Example



False Capture Examples





GUIDELINES FOR IV/IO-ALS

A. IVs should only be initiated for patients needing out-of-hospital IV medication administration, rapid fluid replacement, or for those patients who are likely to decompensate before arriving at the hospital.

1. Aseptic technique must be observed.

2. Peripheral sites, including the external jugular, are the routes of choice. Upper extremity placement is preferred to lower.

3. IV/IO placement attempts should not delay appropriate and timely patient care.

B. An IO may be considered if an IV cannot be placed in the following patient situations:

1. Cardiac arrest (medical or traumatic) – *In adult cardiac arrest, IV is preferred over IO when possible*

2. Profound hypovolemia (shock) with significantly altered mental status

3. Emergent need for an IV but veins are not immediately available

Whenever an IO has been established or attempted unsuccessfully, identify the site(s) and/or the attempt(s) to the receiving hospital personnel. Document the time of insertion.

C. An IO may not be attempted more than one time in the same extremity.

D. In order to minimize dislodgement, humeral head placement requires securing the upper extremity to limit external rotation.

E. Advanced EMTs may initiate IV's in order to assist the paramedic. Patient care and transport are to be continued by the paramedic.

COMPLICATIONS

- Abscess from prolonged insertion
- Leakage around the needle with compartment syndrome
- Tibia fractures
- Osteomyelitis from prolonged insertion
- Potential injury to the bone marrow cavity
- Skin necrosis

INTRAOSSEOUS INFUSION-ADULT

A. Prepare the IO insertion device and needle

B. Locate insertion site
   1. Proximal humerus (preferred)
   2. Tibia plateau

C. Cleanse insertion site.

D. Stabilize extremity and insert the needle following the manufacturer's recommendations.

E. Remove driver from needle set while stabilizing catheter hub

F. Remove stylette from needle set and secure until it can be placed in a sharps container.

G. Confirm placement. It may be possible to aspirate bone marrow at this point with a 20 or 30 mL syringe.

H. If the patient is awake and alert administer *prime all tubing with lidocaine instead of saline and* 2 mL 2% lidocaine slowly over 60 seconds, then allow 30-60 seconds for the lidocaine to affect the visceral nerves. Follow with a brisk 10 mL saline flush. Another 1 mL 2% lidocaine may be administered in the same manner.

I. Connect primed IV line and begin infusion

J. Place a pressure bag (or IV infusion pump) on solution being infused where applicable

K. Secure tubing and dress site using commercial stabilizer if available, secure tubing

L. Frequently monitor IO catheter site and patient condition

COMPLICATIONS

- Abscess from prolonged insertion
- Leakage around the needle with compartment syndrome
- Tibia fractures
- Osteomyelitis from prolonged insertion
- Potential injury to the bone marrow cavity
- Skin necrosis

INTRAOSSEOUS INFUSION- PEDIATRIC

A. Place the child in the supine position.

B. Identify the tibia tuberosity, 1-3 cm below the tuberosity on the medial surface of the tibia, approximately one finger's breath below and just medial to the tuberosity.

   a. The following alternate locations can be used:
      i. Distal Femur - Secure the leg out-stretched to ensure the knee does not bend. Insertion site is just proximal to the patella (maximum 1cm) and approximately 1–2cm medial to midline
      ii. Distal Tibia: 1 - 2 cm proximal to the medial malleolus on the anteromedial surface of the distal tibia.

C. Clean the skin.

D. The leg should be supported on a firm surface. Grasp the thigh and knee above and lateral to the insertion site. Do not allow any portion of your hand to rest behind the insertion point.

E. With the stylette in place, insert the needle at a 90°angle to the skin.

   1. Using gentle pressure that is steady, begin to advance the needle through the skin until you touch the bone, then check needle depth. If at least 5mm of needle remains exposed (the last black line) drill through the bone.

   2. Stop advancing the needle when a sudden decrease in resistance to forward motion of the needle is felt. Do not pull back or recoil when entering the medullary space. Unscrew the cap and remove the stylet. It may be possible to aspirate bone marrow at this point with a 20 or 30 mL syringe.

F. Stabilize the IO.

G. If the patient is awake and alert, *prime all tubing with lidocaine instead of saline and* administer 1 mL 2% lidocaine over 60 seconds, and then allow 30-60 seconds to affect the visceral nerves. Follow with a brisk 10 mL irrigation of saline. A second dose of 0.5 mL 2% lidocaine may be repeated in the same manner

H. Check for any signs of increased resistance to injection, increased circumference of the soft tissues of the calf, or increased firmness of the tissue.

   1. The needle is in the bone marrow when:

      a. there is a lack of resistance

      b. the needle passes through the cortex

      c. the needle stands upright without resistance

      d. there is no infiltration

e. blood and marrow are aspirated (less common)

f. fluid flows freely through the needle without evidence of subcutaneous infiltration

I. Attach the IV tubing and begin the infusion. A pressure infusion bag or in-line 60 mL syringe may be required to infuse the solution.

I. If unsuccessful, remove the needle and move to the other leg.
Exception – Only one of the 2 distal femurs sites should be attempted. The other femur should be preserved for vascular attempts by the Emergency Department.

K. Secure tubing and use commercial stabilizer if available or secure with tape.

COMPLICATIONS

- Abscess from prolonged insertion
- Leakage around the needle with compartment syndrome
- Tibia fractures
- Osteomyelitis from prolonged insertion
- Potential injury to the bone marrow cavity
- Skin necrosis

PRE-EXISTING VASCULAR ACCESS DEVICE (PVAD) USE-ALS

PVADs (pre-existing vascular access devices) include any indwelling catheter/device placed into one of the central veins to provide vascular access for those patients requiring long term intravenous therapy and hemodialysis shunts or grafts.

A. Types of Catheters

1. External indwelling catheters/devices

    a. Heparin/Saline Lock - A temporary venous catheter placed in a peripheral vein and occluded with a cap. Heparin or saline is instilled periodically to maintain its patency. It may be accessed directly through the injection cap.
    b. Peripherally inserted central catheter (PICC) - a long catheter inserted in the upper arm or antecubitally into the subclavian vein or superior vena cava. It may be accessed through the injection cap.
    c. "Broviac®", "Hickman®", "Groshong®", and others - a long catheter that is inserted into the right atrium through a central vein. The catheter enters the skin through an incision in the chest. The line may be heparinized and may be accessed directly through the injection cap. These catheters are usually multi-lumened and any lumen can be used, but a red-colored port is preferred.

2. Internal indwelling devices – **NOT TO BE USED**

    a. Internal subcutaneous infusion ports - an access device embedded subcutaneously and must be accessed through the skin using special equipment.
    b. Hemodialysis fistula or graft - A permanent access device that diverts blood flow from an artery to a vein and is usually located in the forearm or upper arm. It is used for dialysis.

B. Indication for use of external indwelling catheters/devices (other than a heparin/saline lock, which may be used as needed):

1. Cardiac arrest

2. Other emergent need to administer fluids and/or medications:
    a. which can only be given by the IV route, and
    b. a peripheral IV site is not readily/immediately available (after 2 tries), and
    c. intraosseous access is not appropriate due to the patient's condition, and
    d. with approval by on-line medical control.

3. All ALS medications and fluids (approved for IV administration) may be given through a PVAD.

C. Procedure for external indwelling catheters/devices:

1. Assemble necessary equipment
    a. 10 mL syringe
    b. 0.9 normal saline for injection
    c. IV tubing and fluid
    d. alcohol wipes

e. 18 gauge needles

2. Disconnect any existing IV lines.
3. Prepare syringe with 10 mL NS and set up IV line.
4. Clean injection cap or needleless-port with alcohol wipe.
    - If there is a red port, use this preferentially
5. If clamped, unclamp catheter.
6. Slowly inject 5 ml of saline – if resistance is met, discontinue procedure.
7. Attach IV tubing to port (using an 18 ga. Needle if an injection cap is in place) and initiate fluid and/or medication therapy
8. Flush line with IV fluid after medication administration.

D. Complications

1. Infection. Due to the location of the catheter end, strict adherence to aseptic technique is crucial when handling these devices. The injection cap or needleless port must be cleansed thoroughly. Sterile gloves are preferred. Care must be used not to contaminate the needle used to access the line or the IV tubing used.
2. Air embolism. These devices provide a direct line into the circulation; therefore the introduction of any air into the device will go straight to the heart. Do not ever remove the injection cap or needleless port from the catheter. Do not allow IV fluids to run dry. Clear all air from the IV tubing and syringes prior to administration of fluids or medications.
3. Thrombosis. Improper handling and maintenance of the device may dislodge a clot causing pulmonary embolus or vascular damage. Check patency of the line by slowly injecting 5 mL of NS. Do not inject medications or infuse fluids if resistance is met when establishing patency of the catheter. Flush line with 5 mL of normal saline after medication administration.
4. Catheter damage. These catheters are meant for long-term use. They usually require an invasive or surgical procedure and are costly to insert. Care must be taken to avoid any damage to the catheter. If damage to the catheter outside the skin occurs, immediately clamp the catheter between the skin exit site and the damaged area to prevent air embolism or blood loss. Always use a 10 mL or larger syringe to prevent catheter damage from excess pressure when injecting directly. Use caution when inserting the needle into the injection port.

ALTERNATE VECTOR AND DOUBLE SEQUENTIAL EXTERNAL DEFIBRILLATION-ALS

Criteria: Any patient with refractory ventricular fibrillation or pulseless ventricular tachycardia that has not responded to ≥3 standard defibrillation attempts (i.e. - NO break in Vfib/tach)

A. Ensure all necessary cardiac arrest interventions have been applied up to this point, including high quality CPR and administration of amiodarone.
   1. Ensure defibrillation at maximum output for **at least 3 shocks** (including first responder AED shocks.) This first set of pads is referred to as "Pads-A".
   2. Consideration of possible causes of cardiac arrest

B. Prepare sites for attachment of an additional set of external defibrillation pads.
   1. Appropriately dry the desired sites on A/P chest.
   2. Minimize interference of hair and other obstacles to good pad adhesion.

C. Apply a new set of external defibrillation pads in the anterior/posterior position while assuring they do not contact the initial set of pads. This second set of pads if referred to as "Pads-B".

D. **Perform Alternate Vector Defibrillation.** Using the same monitor, change the defibrillator cable to connect "Pads-B" and defibrillate using maximum energy setting. Continue using "Pads-B" placement for subsequent shocks.

Double Sequential External Defibrillation

Only permitted after approval from Base Hospital online medical direction due to poor evidence of clinical efficacy.

Requires a second monitor. One monitor will be connected to "Pads-A" and the second monitor connected to "Pads-B".

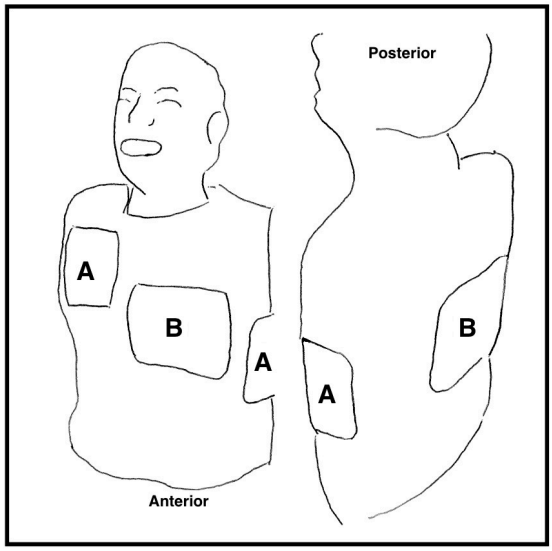
1. Designate a primary monitor to obtain all event recording and data capture
2. Primary monitor shall be the ONLY monitor uploaded or included in the ePCR.

A. Select maximum energy setting for both devices. Charge devices 15 seconds in advance of the anticipated break in CPR.
   1. Ensure that chest compressions continue while the device is charging.

B. At the designated time in the compression cycle discontinue compressions and assess rhythm.

C. If a shock is indicated, assertively state, "CLEAR" and visualize from the patients head to toe to make certain no one is touching the patient and deliver the Double Sequential Defibrillation by depressing both shocks simultaneously.

D. Once criteria for Double Sequential Defibrillation have been met, all subsequent shocks delivered shall be administered using this method.



≥3 conventional shocks delivered, refractory VF using first set of pads (Pads-A)

↓

Apply 2nd set of pads (Pads-B)

↓

Attempt defibrillation using alternate vector:

Shock using Pads-B

↓

Continue subsequent shocks with Pads-B

↓

If DSED considered, consult online medical control for orders

HOW TO MIX LEVOPHED (Norepinephrine) DRIP

- Mix 4ml in 500ml bag of D5W or NS or LR (8mcg/ml concentration)
- Start at 2-4 mcg/min and titrate to SBP > 90mmHg. Max infusion 12 mcg/min.
- Rates (using 60 drops/ml set):

mcg/min	2	3	4	5	6	7	8	9	10	11	12
ggt/min	15	22	30	37	45	52	60	67	75	82	90

HOW TO MIX EPINEPHRINE DRIP

Epinephrine drip: Inject 1mL of epinephrine 1:1000 (also known as epinephrine 1mg/ml, usually used for anaphylaxis) into a 1-liter saline or LR bag and mix.

This yields a final medication concentration of 1mcg epinephrine / 1mL fluid. You must label the medication "Epi Drip: 1mcg/mL"

Use of a 20 gtt drip set is preferred. A 20 gtt drip set allows for:

Adult dosing: Drip rate of 100 drops/min yields drug infusion rate of 5mcg/min.

Drip rate can be easily calculated by counting number of drops over 15 seconds then multiply by 4.

Weight (Estimated by Broselow tape)	**4kg**	**6kg**	**8kg**	**10kg**	**12kg**	**16kg**	**≥20kg or Adults**
Drug Infusion Rate	**1mcg/min**	**1.5mcg/min**	**2mcg/min**	**2.5mcg/min**	**3mcg/min**	**4mcg/min**	**5mcg/min**
Drip Rate with 10 gtt set	10 drops/min	15 drops/min	20 drops/min	25 drops/min	30 drops/min	40 drops/min	50 drops/min
Drip Rate with 15 gtt set	15 drops/min	23 drops/min	30 drops/min	38 drops/min	45 drops/min	60 drops/min	75 drops/min
Preferred: Drip Rate with 20 gtt set	**20 drops/min**	**30 drops/min**	**40 drops/min**	**50 drops/min**	**60 drops/min**	**80 drops/min**	**100 drops/min**

TRACHEOSTOMY / VENTILATOR MANAGEMENT

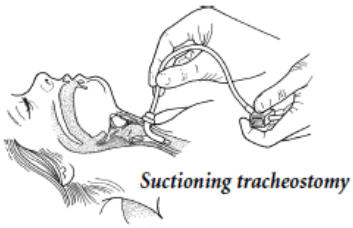
If a patient is in significant respiratory distress, is not breathing or is in cardiac arrest with a tracheostomy, **replacement of the tracheostomy tube may be lifesaving**.
BLS providers should immediately direct trained caregivers to replace trach tube.
ALS providers should locate emergency replacement trach tubes that are usually kept near the patient and attempt tube replacement.

BLS

A. Existing Tracheostomy Care

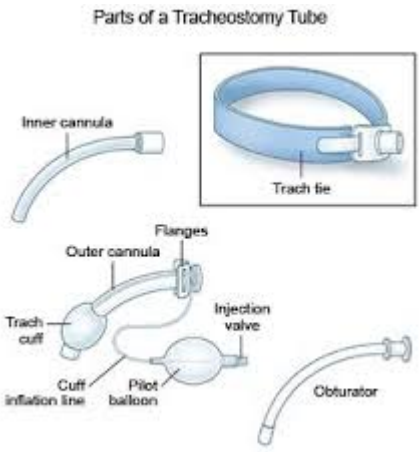
Suctioning

1. Utilize appropriate PPE
2. Suction tracheostomy as needed using appropriate sized soft suction catheter
   - A. Sterile technique is preferred when suctioning. Clean technique may also be utilized if sterile technique cannot be performed
   - B. Pre-oxygenate if at all possible
   - C. Suction no more than 4-6" or until resistance is felt. For pediatric patients, refer to safe suction card for appropriate suction depth. If a "safe suction card" is not available suction the tracheostomy approximately the estimated length of the tube. Providers may measure the suction catheter on a spare tracheostomy tube or obturator. If an obturator is used to measure length add approximately 1-1/2 cm
   - D. Apply suction only after insertion and upon withdrawing the catheter
   - E. Suction for no more than 10 seconds at a time


Suctioning tracheostomy

Ventilation

1. Most adult tracheostomy tubes require an inner cannula to adapt to a standard BVM. Pediatric tracheostomy tubes naturally attach to a standard BVM. The use of omni-flex/accordion tubing can make attaching easier and give better flexibility
2. Utilize capnography when ventilating a patient using an existing tracheostomy if available



Displaced Tracheostomy Tube

1. In the event of tracheostomy tube dislodgement ALS intervention is preferred
2. BLS providers may place a gloved finger or palm over the stoma area and provide BVM ventilations via nose and mouth until ALS arrives or if the patient is breathing adequately provide supportive care.
   - a. If ventilation via the nose and mouth does not work use a small BVM mask and ventilate over the stoma.
   - b. In some cases it may be necessary to occlude the nose and mouth to obtain chest rise.

ALS

1. If the patient is breathing inadequately determine if a spare tracheostomy tube is available on the scene - (if no spare tracheostomy present go to Step 4)
2. Insert the new tracheostomy tube using the same size of the existing trach tube into the existing stoma carefully and secure into place. If tube does not fit, skip to step 3
    a. For adults, a soft suction catheter may be inserted thru the new tracheostomy tube and used as a guide (see photo)
    b. If patient is still in distress, attempt suctioning to appropriate depth
    c. If patient does not respond to suctioning after an appropriate amount of time or suction catheter does not reach correct depth go to Step 3
    d. Confirm the placement utilizing waveform capnography

Threading suction tubing through trach tube to use as probe/guide for reinsertion

3. Same sized Trach Tube does not fit: Utilize the smaller/emergency trach tube
    a. Insert the new tracheostomy tube using the existing stoma carefully and secure into place (if smaller size tracheostomy tube does not go in, skip to Step 4)
    b. If patient is still in distress, attempt suctioning to appropriate depth
    c. If patient does not respond to suctioning after an appropriate amount of time or suction catheter does not reach correct depth go to Step 4
4. If the same size and smaller size tracheostomy tube does not insert into the stoma, does not allow appropriate suction depth to be achieved or relieve distress with good suctioning, or the tracheostomy tubes are not available, use an ET tube. For most adults, first attempt using a 6.0 ET tube. For pediatric patients, use an ET tube the same size diameter as the patient's tracheostomy tube.
    a. Advance the ET tube so that the balloon advances into the stoma and inflate the balloon, DO NOT force the ET tube
    b. Utilize waveform capnography to confirm placement
    c. Secure the ET tube in place and monitor for leaks
5. If these procedures fail consider intubation or ventilation via BVM covering the stoma

Ventilator Patients

A. Many tracheostomy patients will be on portable ventilator systems
B. If the patient is NOT in cardiorespiratory arrest and the ventilator is determined to be functioning appropriately it may be in the best interest of the patient to be transported on their own ventilator
    a. Family members typically are well trained in the operation of portable ventilators and should be transported with the patient to operate the ventilator
    b. If a family member is not available to operate the ventilator and the EMS provider is not familiar with the ventilator the patient should be transported using BVM ventilation via their existing tracheostomy
    c. If there is a question regarding the appropriate functioning of the ventilator then patient should be removed from the ventilator and ventilated using BVM attached to the existing tracheostomy
C. If a patient is removed from a portable ventilator the portable ventilator should be transported with the patient if at all possible
D. Settings for the portable ventilator should be noted and relayed to the receiving hospital.
E. In-line capnography should be utilized if available and documented.

Section FOUR

APPENDIX

ADULT PIT CREW CPR

REFERENCE FOR BEST PRACTICE

Adapted from High Performance CPR concepts from Resuscitation Academy

Pit crew CPR is a high performance model of CPR that maximizes compressions and minimizes interruptions by pre-assigning provider roles based on order of arrival to the patient. Below is a description of the positions that are to be assumed by those arriving on scene to a cardiac arrest.

A. Positions:
   a. Position #1: (ASSESSOR)
      i. Check pulses and signs of life
      ii. Announced cardiac arrest when identified
      iii. Attaches AED/defibrillator and follows prompts
      iv. Alternate compressions with position #2 on 2-minute intervals
   b. Position #2: (COMPRESSOR)
      i. "Hovers" over chest and prepares to start chest compressions while Assessor does initial assessment
      ii. Start chest compressions as soon as Assessor determines cardiac arrest
      iii. Alternate compressions with position #1 on 2-minute intervals
   c. Position #3: (VENTILATOR)
      i. Initiate airway management as per protocol
      ii. Apply waveform capnography to bag-valve-mask if available
   d. Position #4: First arriving Paramedic after Positions 1-3 are filled.
      i. Verify if patient needs defibrillation before vascular access
      ii. Obtain IV/IO access and administer medications as per ACLS protocol. IV access is preferred over IO when possible.
      iii. Temporarily slide to position #3 if advanced airway required
      iv. Directs ACLS interventions based on rhythm, EtCO2 and femoral pulse
   e. Position #5: "Quality Assurance/Time Keeper"
      i. Verify positions are appropriately filled and performing required interventions
      ii. Announced time at 1:45 minutes every analysis cycle
      iii. Records rhythm and if shock delivered every 2 minutes
      iv. Records time of administration of ACLS medications
   f. Position #6: "Liaison"
      i. Liaisons with family, bystanders and maintains scene safety.
      ii. Assist with determining down time, if the arrest was witnessed and if bystander CPR was given

PEDIATRIC PIT CREW CPR

REFERENCE FOR BEST PRACTICE

Adapted from High Performance CPR concepts from Resuscitation Academy

Pit crew CPR is a high performance model of CPR that maximizes compressions and minimizes interruptions by pre-assigning provider roles based on order of arrival to the patient. Below is a description of the positions that are to be assumed by those arriving on scene to a cardiac arrest.

A. Positions:
    a. Position #1: (ASSESSOR)
        i. Check pulses and signs of life
        ii. Announced cardiac arrest once identified
        iii. Attaches AED/defibrillator and follows prompts
        iv. Alternate compressions with position #2 on 2-minute intervals
    b. Position #2: (COMPRESSOR)
        i. "Hovers" over chest and prepares to start chest compressions while Assessor does initial assessment
        ii. Start chest compressions as soon as Assessor determines cardiac arrest
        iii. Alternate compressions with position #1 on 2-minute intervals
    c. Position #3: (VENTILATOR)
        i. Initiate airway management as per protocol
        ii. Apply waveform capnography to bag-valve-mask if available
        iii. Focus on achieving and maintaining an excellent seal with 2 handed technique
    d. Position #4: First arriving Paramedic after Positions 1-3 are filled.
        I. IO access is preferred over IV access. The administration of epinephrine should ideally be given within 5 minutes of paramedic arrival.
        II. Directs PALS interventions based on rhythm, EtCO2 and femoral pulse
        III. Temporarily slide to position #3 if advanced airway required
    e. Position #5: "Quality Assurance"
        (a) Verify positions are appropriately filled and performing required interventions
        (b) Announces 1:45 minutes into each analysis cycle
        (c) Records rhythm and if shock delivered every 2 minutes
        (d) Records time of administration of PALS medications
        (e) IF ROSC OBTAINED – Verify all tasks have been completed.
    f. Position #6: "Liaison" (if available)
        i. Liaisons with family, bystanders and maintains scene safety.
        ii. Assist with determining down time, if the arrest was witnessed and if bystander CPR was given

ABBREVIATION LIST

The following is a list of acceptable abbreviations to be used when completing patient care records. This list is not all inclusive but to be used as a quick reference of more commonly used abbreviations. If other abbreviations are used, be sure they are proper and widely understood.

A	Asian
A&O	alert and oriented
ab	abortion
abd	abdomen
ACLS	Advanced Cardiac Life Support
AED	automatic external defibrillator
adm	administered
Af or afib	atrial fibrillation
AF	atrial flutter
AIDS	Acquired Immune Deficiency Syndrome
AKA	above the knee (amputation)
AMI	acute myocardial infarction
amt.	amount
ant.	anterior
AP	anteroposterior
AT	atrial tachycardia
AVPU	alert, responsive to verbal stimuli, painful stimuli, or unresponsive
B	Black (Race)
BBB	bundle branch block
BBS	bilateral breath sounds
BKA	below the knee (amputation)
Bld.	blood
BOW	bag of waters
BS	blood sugar, breath sounds, or bowel sounds
Brady	bradycardia
BSA	body surface area
BVM	bag valve mask
BW	body weight
C-c	cervical collar
C-spine	cervical spine
C1, C2…C7	1st cervical vertebrae, etc.
CA or ca	carcinoma, cancer
CAD	coronary artery disease
CC	chief complaint
c/e or c&e	clear and equal
CHF	congested heart failure
CHI	closed head injury
CHD	coronary heart disease
CNS	central nervous system
C/O	complains of
CO	carbon monoxide
CO_2	carbon dioxide
COPD	chronic obstructive pulmonary disease
CP	chest pain
CSF	cerebral spinal fluid
D_5W	dextrose 5% in water
d/c	discontinue
DCAP-BTLS	Deformities, Contusions, Abrasions, Punctures, Burns, Tenderness, Lacerations, Swelling
dc'd	discontinued
DEX or DS	dextrostick
disp	disposition
DKA	diabetic ketoacidosis
DM	diabetes
DNR	Do Not Resuscitate
DOA	dead on arrival
DOB	date of birth
DOE	dyspnea on exertion
DSD	dry sterile dressing
DT's	delirium tremens
Dx	diagnosis
ECG or EKG	electrocardiogram
EMT	Emergency Medical Technician
EMT-P	Paramedic
ETOH or EtOH	alcohol/ethanol
ER (ED)	emergency room (emergency dept)
ETT	endotracheal tube
Ext	extremities
FB	foreign body
Fib	fibrillation

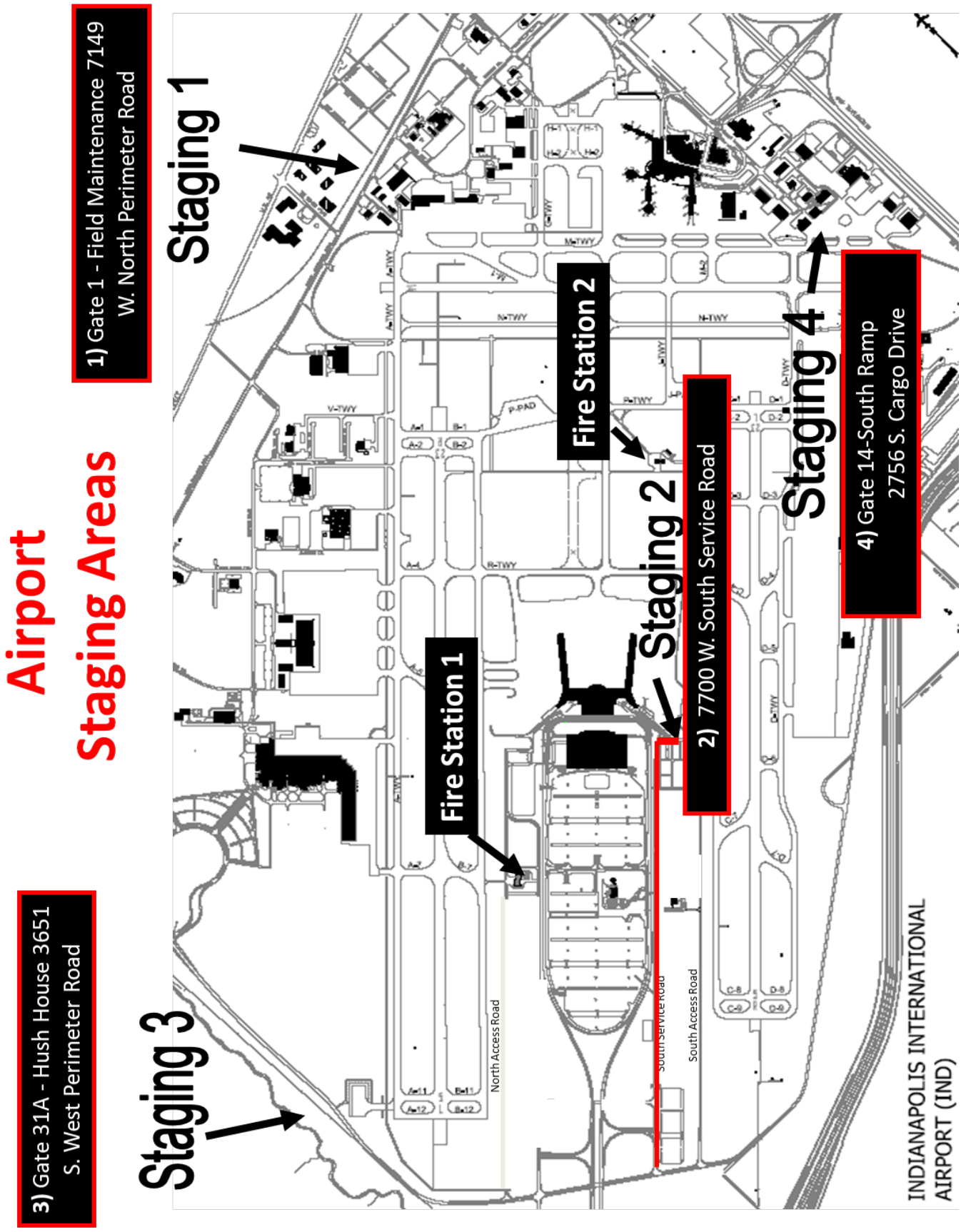
FH or FHx	family history
FROM	full range of motion
FSP	Full spinal precautions (c-collar and long back board)
Ft	foot
F/U	follow-up
Fx	fracture
GCS	Glasgow coma scale
G-1, 2…	primigravida, second pregnancy…
GSW	gunshot wound
gtt(s)	drop(s)
H	Hispanic
H/A	headache
HBP	high blood pressure (HTN)
HEENT	head, eyes, ears, nose, throat
Hep. A	hepatitis A
Hep. B	hepatitis B
HIV	Human Immune Virus
H/O	history of
HPI	history of present illness
HR	heart rate
HTN	hypertension
Hx	history
IDDM	insulin dependent diabetes
i.e.,	that is
IM	intramuscular
imp	impression
inf.	inferior
Inj	injection
Insp	inspiration
ICS	intercostal space
IV	intravenous
IVF	IV fluids
IVP	IV push
IVPB	intravenous piggyback
Jt	joint
JVD	jugular venous distention
l	liter
lpm	liters per minute
L1, L2-L5	1st lumbar vertebrae, etc.
L-spine	lumbar spine
lac	laceration
lat	lateral
LBP	lower back pain or low blood pressure
LE	lower extremity
Lg	large
LLE	left lower extremity
LLL	left lower lobe (lung exam)
LLQ	left lower quadrant (abdomen)
LMP	last menstrual period
LOC	loss of consciousness, level of consciousness
LR	Lactated Ringers
LUE	left upper extremity
LUL	left upper lobe (lung exam)
LUQ	left upper quadrant (abdomen)
mA	milliamps (pacing current)
MAE	moves all extremities
mcg	micrograms
MCL	midclavicular line
mec	meconium
med	medial
mEq	milliequivalents
meds	medications
mg	milligram
MI	myocardial infarction
min.	minute
mL	milliliter
m/o	month old
mod	moderate
mvmt	movement
MVC	motor vehicle crash
N or NL	normal
NA or N/A	not applicable, not available
NB	newborn
nc	nasal cannula
neg	negative
NKA	no known allergies
NKDA	no known drug allergies
NS	normal saline
NSR	normal sinus rhythm
NT tube	nasal tracheal tube
NTG	nitroglycerin
n/v	nausea and vomiting
O	Other (Race)
Ox1	oriented to person
Ox2	oriented to person and place

Ox3	oriented to person, place and time
O_2	oxygen
O_2 sat.	oxygen saturation
O/A	on arrival
Ob	obstetrics
obs	observation
Occ	occasional
OD	overdose
opp	opposite
p	pulse
P0, P1…	nulliparous, 1 child born…
PAT	paroxysmal atrial tachycardia
PCN	penicillin
PE	physical exam
PEA	pulseless electrical activity
Ped.	pediatric
PERL	pupils equal/react to light
PERLA	pupils equal/reactive to light and accommodation
PERRLA	pupils equal, round, reactive to light and accommodation
P/W/D	pink, warm, and dry
PIV	peripheral IV
PMH or PMHx	past medical history
pn	pain (described as n/10)
PO	by mouth
post	posterior
PSVT	paroxysmal supraventricular tachycardia
Pt	patient
PVC	premature ventricular tachycardia
rec'd	received
Resp	respirations
ROM	range of motion
RR	respiratory rate
RSR	regular sinus rhythm
RUE	right upper extremity
RUL	right upper lobe (lung exam)
RUQ	right upper quadrant (abdomen)
Rx	treatment
SAED	semiautomatic external defibrillator
SCA	sickle cell anemia
SCC	sickle cell crisis
SCD	sickle cell disease
Sev	Severe
SIDS	sudden infant death syndrome
SL	sublingual
SOB	short of breath
Sol. or sol.	solution
SOR	signature of release
SQ or subq.	subcutaneous
S/S	signs and symptoms
STD	sexually transmitted diseases
SVT	supraventricular tachycardia
Sx	symptoms
Sz. or sz.	seizure
T1, T2-T12	1st thoracic vertebrae, etc.
T-spine	thoracic vertebrae
tach.	tachycardia
TB	tuberculosis
TCA	tricyclic antidepressant
TIA	transient ischemic attack
TKO	to keep open
trach.	tracheostomy
Tx	treatment
UE	upper extremity
Unk	unknown
UTI	urinary tract infection
v-fib or VF	ventricular fibrillation
vol.	volume
VS	vital signs
VSS	vital signs stable
V-Tach or VT	ventricular tachycardia
W	White (Race)
WC or W/C	wheelchair
W/D or WD	warm and dry
wt	weight
wk	week
wks.	weeks (gestational age)
WNL	within normal limits
x	times
YOF or Y/F	year old female
YOM or Y/M	year old male

Legend of Symbols

≈ or ~	approximately	♀	female
Δ	change	♂	male
↓	decrease	L	left (circle around)
↑	increase	®	right (circle around)
/	per	B	bilateral (circle around)
%	percent	<	less than
1°	primary, first degree	>	greater than
2°	secondary, second degree	+	positive (circle around)
3°	tertiary , third degree	-	negative (circle around)
c	with (line over top)	&	and
s	without (line over top)	@	at
a	before (line over top)		
p	after (line over top)		
x	except (line over top)		
m	murmur (circle around like @)		

AIRPORT STAGING AREAS



Reference: Patient Safety Pearls

General Operations and Medical Care

1. Routine use of lights and sirens is not warranted in most situations

2. Even when lights and sirens are in use, always limit speeds to level that is safe for the emergency vehicle being driven and road conditions on which it is being operated

3. Be aware of legal issues and patient rights as they pertain to and impact patient care (e.g. patients with functional needs or children with special healthcare needs)

4. Be aware of potential need to adjust management based on patient age and comorbidities, including medication dosages

5. The maximum weight-based dose of medication administered to a pediatric patient should not exceed the maximum adult dose except where specifically stated in a patient care guideline

End of Life Care

1. Careful and thorough assessments should be performed to identify complaints not related to the illness for which the patient is receiving hospice or end-of-life care

Mass Casualty Procedures

1. Ensure patients remain in safe area. Re-assess scene safety as incident progresses as needed

2. Continuously triage and prioritize within the delayed/minor patient group for transport

3. Patient triage category may change with subsequent triage. If need for up-triage occurs, perform life-saving interventions, and move patient to appropriate triage area (delayed or immediate)

4. During an Active Shooter/Hostile Event response, quick establishment of public safety unified command between fire/EMS/law enforcement is essential

Airway Management

1. Avoid excessive pressures or tidal volumes during BVM ventilation. The goal is to avoid barotrauma as well as overventilation and related reduction of venous return/preload/cardiac output.

2. Once initiated and patient is tolerating a CPAP mask, DO NOT discontinue CPAP until patient is on the emergency department stretcher and hospital CPAP/BiPAP is immediately available for patient to be switched over, or physician is at bedside and requesting CPAP/BiPAP be discontinued. Breaking the mask seal unnecessarily causes a significant decrease in airway pressures and may lead to abrupt decompensation due to atelectasis and alveolar collapse. *Exception: it is acceptable to release mask to administer key medications (e.g. nitroglycerin).*

Carbon Monoxide Poisoning

1. Provide instruction to the patient, the patient's family, and other appropriate bystanders to not enter the environment (e.g., building, car) where the carbon monoxide exposure occurred until the source of the poisoning has been eliminated

2. Do not look for cherry red skin coloration as an indication of carbon monoxide poisoning, as this is a late finding

3. CO oximeter devices may yield inaccurate low/normal results for patients with CO poisoning. All patients with probable or suspected CO poisoning should be transported to the nearest appropriate hospital based on their presenting signs and symptoms

Cerebrovascular Accident

1. Prevent aspiration, such as elevating head of stretcher 15–30 degrees, use of the recovery position and/or oral suctioning

2. Protect paralyzed limbs from injury

Syncope

1. Patients suffering from syncope due to arrhythmia may experience recurrent arrhythmias and should therefore be placed on a cardiac monitor

2. Geriatric patients suffering falls from standing may sustain significant injury and should be diligently screened for trauma.

Hypothermia

Devices that self-generate heat (e.g., heat packs) should be wrapped in a barrier to avoid direct contact with the skin and to prevent burns. Heat packs with peak temperatures above 45°C (113°F) are most likely to cause burns. In patients who are unresponsive, or unable to recognize a developing injury, check the area in which the heating pad is placed regularly to ensure no tissue damage occurs.

Spinal Motion Restriction

1. Be aware of potential airway compromise or aspiration in a patient with nausea/vomiting or with facial/oral bleeding when spinal motion restriction is applied

2. Excessively tight immobilization straps can limit chest excursion and cause hypoventilation

3. Prolonged immobilization on spine board can lead to ischemic pressure injuries to skin

4. Children are abdominal breathers therefore immobilization straps should go across chest and pelvis and not across the abdomen

5. Children have disproportionately larger heads. When securing pediatric patients to a spine board, the body should be elevated approximately 1–2 cm with padding to accommodate the larger head size and avoid neck flexion when immobilized

Reference: Functional Needs

Assessment

1. Identify the functional need by means of information from the patient, the patient's family, bystanders, medic alert bracelets or documents, or the patient's adjunct assistance devices

2. The physical examination should not be intentionally abbreviated, although the way the exam is performed may need to be modified to accommodate the specific needs of the patient

Treatment and Interventions

Medical care should not intentionally be reduced or abbreviated during the triage, treatment, and transport of patients with functional needs, although the way the care is provided may need to be modified to accommodate the specific needs of the patient

Patient Safety Considerations

For patients with communication barriers (language or sensory), it may be desirable to obtain secondary confirmation of pertinent data (e.g., allergies) from the patient's family, interpreters, or written or electronic medical records. The family members can be an excellent source of information and the presence of a family member can have a calming influence on some of these patients

Key Considerations

1. Communication Barriers

a. Language Barriers:

i. Expressive and/or receptive aphasia
ii. Nonverbal
iii. Fluency in a different language than that of the EMS professional
iv. Examples of tools to overcome language barriers include:

1. Transport of an individual who is fluent in the patient's language along with the patient to the hospital
2. Medical translation cards
3. Telephone-accessible services with live language interpreters
4. Methods through which the patient augments his/her communication skills (e.g.,eye blinking, nodding) should be noted, utilized as able, and communicated to the receiving facility
5. Electronic applications for translation

b. Sensory Barriers:

i. Visual impairment
ii. Auditory impairment
iii. Examples of tools to overcome sensory barriers include:

1. Braille communication card
2. Sign language
3. Lip reading
4. Hearing aids
5. Written communication

2. Physical Barriers:

a. Ambulatory impairment (e.g., limb amputation, bariatric)
b. Neuromuscular impairment

3. Cognitive Barriers:

a. Mental illness
b. Developmental challenge or delay

Pertinent Assessment Findings

1. Assistance Adjuncts. Examples of devices that facilitate the activities of daily living for the patient with functional needs include, but are not limited to:

a. Extremity prostheses
b. Hearing aids
c. Magnifiers
d. Tracheostomy speaking valves
e. White or sensory canes
f. Wheelchairs or motorized scooters

2. Service Animals

As defined by the American Disabilities Act, “any guide dog, signal dog, or other animal individually trained to do work or perform tasks for the benefit of an individual with a disability, including, but not limited to guiding individuals with impaired vision, alerting individuals with impaired hearing to intruders or sounds, providing minimal protection or rescue work, pulling a wheelchair, or fetching dropped items”

a. Services animals are not classified as a pet and should, by law, always be permitted to accompany the patient with the following exceptions:

i. A public entity may ask an individual with a disability to remove a service animal from the premises if:

1. The animal is out of control and the animal's handler does not take effective action to control it; or

2. The animal is not housebroken

b. Service animals are not required to wear a vest or a leash. It is illegal to make a request for special identification or documentation from the service animal’s partner. EMS clinicians

may only ask the patient if the service animal is required because of a disability and the form of assistance the animal has been trained to perform.

c. EMS clinicians are not responsible for the care of the service animal. If the patient is incapacitated and cannot personally care for the service animal, a decision can be made whether to transport the animal in this situation.

d. Animals that solely provide emotional support, comfort, or companionship do not qualify as service animals.

Protocol Medications

MEDICATION	INDICATION	SIDE EFFECTS	CONSIDERATIONS
acetaminophen	Pain and fever	Minimal	*DO NOT GIVE if known sensitivity.*
adenosine	PSVT, monomorphic (regular) VT	Dyspnea, chest pain, atrial tachy - dysrhythmias, nausea, throat tightness, AV block, asystole.	***DO NOT GIVE:*** ***AV block, sick sinus syndrome, atrial flutter, atrial fib , known Wolff-Parkinson-White***
albuterol	Asthma Reactive Airway Disease Hyperkalemia	Tremors, anxiety. Rare: tachycardia, hypertension, dysrhythmias.	***USE WITH CAUTION:*** ***Cardiac disorder, hyperthyroidism, hypertension.***
amiodarone	Tachy-dysrhythmias (VT or VF)	Hypotension, bradycardia	***In the non-arrest situation, 150 mg must be administered slowly over 10 minutes.***
aspirin	Chest pain/discomfort suspected to be of cardiac origin	Tinnitus, nausea / vomiting. GI bleeding	***DO NOT GIVE:*** *If known hypersensitivity to aspirin*
atropine	Brady-dysrhythmias, organophosphate/nerve agent poisoning.	Dilated pupils, headache, Dry mouth, tachycardia, PVC's.	***DO NOT GIVE:*** ***Tachydysrhythmias*** ***USE WITH CAUTION:*** ***Pregnancy, CHF, hyperthyroidism, COPD, hepatic disease.***
calcium chloride	Hypocalcaemia, calcium channel blocker overdose, hyperkalemia	Possible heart block, VF.	***USE WITH CAUTION:*** ***Pt. on digitalis, renal failure*** ***DO NOT MIX WITH:*** ***sodium bicarbonate***
Dextrose 10% **Dextrose 25%** **Dextrose 50%**	Hypoglycemia	Impaired neurologic recovery following stroke or cardiac arrest	***Tissue necrosis if infiltrates. Should not be used in cardiac arrest or in ischemic CVA unless documented hypoglycemia.***

diphenhydramine (Benadryl®)	Allergic reaction.	Dizzy, drowsy, hypotension, dry mouth, tachycardia, dilated pupils, blurred vision.	***DO NOT USE:*** ***Acute asthma*** ***USE WITH CAUTION:*** ***Renal disease, cardiac disease, HTN, asthma, seizure.***
Epinephrine 1:10,000 (1mg in 10ml) **Epinephrine 1:1,000** (1mg in 1ml)	Cardiac arrest, anaphylaxis, asthma. Can be made into a vasopressor drip.	Tremors, tachycardia, dysrhythmias, hypertension.	***USE WITH CAUTION:*** ***Angina, hypertension, hyperthyroidism*** ***NO CONTRA-INDICATIONS IN CARDIAC ARREST or ANAPHYLAXIS***
Epinephrine, Racemic	Croup	Tremors, tachycardia, palpitations, n/v, hypertension.	***USE WITH CAUTION:*** ***Known cardiac problems, HTN***
fentanyl	Pain, post-cardiac arrest sedation if advanced airway is in place	Hypotension, sedation, vomiting, bradycardia, respiratory depression.	***USE caution if hypotensive, significant head injury, or other depressants (e.g., EtOH) taken.***
glucagon	Hypoglycemia β-blocker OD	Nausea, vomiting, hypersensitivity.	***Additional carbohydrates needed for patient after awakening.***
glucose (oral)	Hypoglycemia.	Nausea, vomiting, hypersensitivity	***Additional carbohydrates needed for patient after awakening.***
ipratropium	Respiratory distress, wheezing	Cough, headache, dizziness, palpitations	***Always administered with albuterol. Do not give more than three (3) 0.5 mg doses***

ketorolac	Pain	Headache, dizziness, nausea	***DO NOT USE:*** ***Renal insufficiency, PUD, GI bleed, 1st trimester pregnancy, allergy to NSAIDS, head bleed***
ketamine	Severe agitation, post intubation sedation, breakthrough pain	Apnea, laryngospasm, vomiting, tachycardia, hypertension	***Relative contraindication with known coronary artery disease. Head injury is not a contraindication.***
lidocaine	Pain from IO infusion	Drowsiness, confusion, seizures, hypotension, heart blocks	***DO NOT USE:*** ***Heart rate < 60, heart block*** ***USE WITH CAUTION:*** ***Renal or liver disease, CHF, pts > 60 years old***
magnesium sulfate 50%	Pregnant pts. experiencing severe pre-eclampsia or eclampsia; Asthma Refractory VF/VT	Decreased muscle strength which may lead to hypoventilation, esp. if patient is also taking depressant medications.	***May occasionally lead to A-V block &/or respiratory arrest. Calcium chloride may reverse these effects. NOT INDICATED in patients with heart block or significant heart disease.***
methylprednisolone	Difficulty breathing, asthma, COPD, allergic reaction	Nausea, sweating, dizziness, sleep problems.	***Hypersensitivity, caution in patients with GI bleeding***
midazolam (Versed®)	Seizures, post cardiac arrest sedation, procedural sedation and chemical restraint	Respiratory depression and respiratory arrest	***Hypersensitivity, acute narrow angle glaucoma, shock, hypotension, head injury, and drug or alcohol use.***
naloxone (Narcan®)	Narcotic overdose		***Titrate to improve respirations only. Do***

		Vomiting, acute withdrawal, ventricular dysrhythmias	***not fully arouse addicted patient.***
nitroglycerin	Angina, chest pain of suspected cardiac origin, pulmonary edema.	Hypotension, headache, dizziness, flushing.	***DO NOT USE: Systolic BP<90, ED medication use, increased ICP.***
norepinephrine (Levophed)®	Hypotension unresponsive to fluid resuscitation	Tachycardia, hypertension, extravasation can cause tissue necrosis	**Use extreme caution in patients receiving monoamine oxidase inhibitors (MAOI) or TCA medications, can cause prolonged hypertension**
ondansetron (Zofran®)	Nausea and/or vomiting	Constipation, headache, lightheadedness	***Minimal sedation, if at all***
prednisone	Difficulty breathing, asthma, COPD, allergic reaction	Nausea, sweating, dizziness, sleep problems.	***Hypersensitivity, caution in patients with GI bleeding***
sodium bicarbonate	ventricular arrhythmias secondary to tricyclic OD Hyperkalemia	Alkalosis, hypervolemia, hypokalemia, tetany.	***DO NOT MIX with epinephrine or calcium.***
tranexamic acid (TXA)	Epistaxis (topical only)	Hypotension, seizures	***IV use only permitted by authorized providers***

INDEX

A

B

C

D

E

F

G

H

I

J

L

M

N

O

P

R

S

T

U

V

Ascension St. Vincent Specialty Protocols 2023

Emergency Field Extremity Amputation

Overview: This protocol is intended to provide the out of hospital EMS provider (paramedic) with a brief overview of the emergency field extremity amputation protocol. Limb amputation can result in harm to patients and providers and should be performed only by qualified medical professionals when possible. Some life threatening situations may require emergency limb amputation by a paramedic in a limited number of circumstances. This protocol is intended for educational purposes, and to supplement, not replace, proper training by qualified individuals. Medical Control should be consulted prior to any initiation of an emergency field extremity amputation.

Indications: There are four main indications for field extremity amputation.

1. The patient has an entrapped extremity, extrication will not occur rapidly, the patient is hypotensive and is considered a non-responder to initial IV fluids (life before limb)
2. The patient has an entrapped extremity, extrication will not occur rapidly and the patient is in the situation where further structural collapse or bodily injury is imminent if they are not rapidly extricated.
3. The patient has an entrapped extremity, extrication will be extended, the patient was initially hypotensive but responded to initial IV fluids and currently has an adequate blood pressure.
4. That patient has an entrapped extremity, the patient is hemodynamically normal and in the best judgment of the scene commander and paramedic in coordination with medical control, extrication is likely to take many hours, if it can be done successfully at all.

Prior to initiating this procedure:

1. Perform initial physical assessment according to PHTLS or ATLS and provide routine medical care.
2. Ensure the patient has a secured airway and obtain IV/IO access.
3. Obtain consent from patient and or family whenever possible.
4. Provide appropriate analgesia and sedation to the patient.
5. Ensure you have appropriate body substance isolation and protective gear in place.

Procedure:

1. Remove clothing from the patient's injured extremity and expose the skin to the fullest extent possible.
2. Apply tourniquet to the affected limb proximal to the site of injury. The ideal location is one that preserves as much viable tissue as possible while providing enough room to complete the extremity amputation.
    a. Do not place the tourniquet over a joint.
    b. Tighten the tourniquet until all visible bleeding has stopped.
    c. Mark the time that the tourniquet was applied.
3. Drape the extremity with sterile towels, sheets, or drapes to minimize exposure to debris and other potentially infectious material.
4. Cleanse the extremity with betadine, alcohol, chlorhexidine or other acceptable antiseptic. If betadine is used, be sure to allow 3-4 minutes of drying time when applicable.
5. Incise the soft tissue from medial to lateral using a scalpel. Cut firmly and deeply as to maximize tissue penetration. Cut all the way down to the bone.

6. Insert curved Kelly clamp, hemostat, bougie or other rigid device below the bone to facilitate dissection of the tissue and to open a space between the under surface of the bone and soft tissue.
7. Insert a towel, kerlix, bougie or other long strip of gauze type tissue under the bone and pull distally to open and expose bone and site of amputation.
8. Place saw blade over exposed bone and make a perpendicular cut from the top to the bottom of the bone. Stop sawing when bone is completely cut through. CAUTION: Bone edges can be sharp.
9. Use the scalpel to complete the amputation by cutting the remaining tissue.
10. If bleeding continues apply a second tourniquet proximal to the first.
11. Only clamp bleeding vessels if bleeding cannot be control with tourniquet use.
12. Apply saline soaked dressing and ace wrap to the extremity stump.
13. Retrieve the amputated limb and place in a saline soaked gauze. This should be transported in a biohazard bag and transported with the patient when possible.

Perimortem C-section

EMS involves the movement of critically ill patients between in the out-of-hospital setting. This protocol is intended to provide guidance to the paramedic level provider in the event of an out-of-hospital cardiac arrest of a 24 week or greater obstetric patient when additional medical resources are not available. Standard ACLS measures should always be undertaken in an attempt to achieve return of spontaneous circulation (ROSC) prior to performing a perimortem C-section delivery (PMCD). Every effort should be made to divert to the closest medical facility for assistance from a licensed physician.

Indications to PMCD include the following:

- Known gestation of 24 weeks or greater
- Maternal cardiac arrest
- No return of spontaneous circulation within four minutes of loss of pulses despite aggressive standard ACLS maneuvers

Contraindications to PMCD include the following:

- Known gestation less than 24 weeks
- Return of spontaneous circulation after brief period of resuscitation

Procedure:

1. Make a vertical incision from xiphoid to the pubis using a scalpel (ideally #10 Blade)
2. Cut through subcutaneous tissue to get to peritoneal wall
3. Use fingers to bluntly dissect to the peritoneum
4. Cut through peritoneum vertically (ideally with scissors or use a scalpel to initiate an opening inferiorly)
5. Deliver the uterus, then cut into the lower half of the uterus vertically to avoid the placenta and then use scissors to extend the incision upwards until you reach the baby
6. Deliver the baby (neonate will likely need resuscitation)
7. Clamp and cut the umbilical cord
8. Squeeze the uterus and grasp firmly near the base
9. Place packing/towels in the opened uterus and abdomen as available
10. Hand the baby off to another qualified healthcare provider for resuscitation
11. Continue maternal resuscitation

ANTIBIOTICS FOR OPEN FRACTURE

1. Assess distal circulation, movement, and sensation before moving the injured extremity.

2. Cover open wounds with a moist sterile dressing and rinse any gross contamination away with sterile saline.

3. IF the patient has all of the following:

   - An open fracture
   - Age ≥ 15 yo and estimated wt > 50 kg
   - NO allergy to cephalosporins or known anaphylaxis to penicillin

   THEN, give 2g Cefazolin slow IV push over 3-5 mins or hang mixed solution (2g cefazolin in 50-100ml D5W) to run over 30 mins.

4. Splint the injured extremity as best as possible.

5. Do not attempt to straighten the extremity unless pulses are absent. Never attempt to straighten an injury involving a joint. If resistance is met while straightening a limb, splint the injury as it is.

6. Reassess distal circulation, movement, and sensation.

7. Elevate the extremity in a supported position and apply cold packs.

8. When in doubt, splint.

9. If the patient is in more pain after splinting of the injured part, reassess and re-splint.

10. Care of amputated parts as necessary:

    a. Rinse away gross contamination with sterile saline.
    b. Cover the injured site on the amputated part with a moist, sterile saline dressing and bulky bandage.
    c. Place the amputated part in a plastic bag. If ice is immediately available, place the plastic bag on ice.
    d. Do not delay transport to obtain ice.
    e. Do not clamp bleeders.
    f. Apply a compression dressing as necessary.

ESMOLOL FOR REFRACTORY VENTRICULAR FIBRILLATION

Criteria: Any patient with refractory ventricular fibrillation or pulseless ventricular tachycardia that has not responded to ≥3 standard defibrillation attempts (i.e. - NO break in Vfib/tach) and meets the following criteria.

3. Uninterrupted and effective CPR
4. Defibrillation at maximum output for **at least 3 shocks** (including first responder AED shocks.)
5. Administration of Amiodarone 300mg
6. Administration of three rounds of epinephrine
7. Consideration of all possible causes of cardiac arrest

Procedure:

1. Administer Esmolol 500mcg/kg IVP
2. Continue CPR per ACLS
3. Continue defibrillation attempts as indicated
4. Double sequential defibrillation may also be attempted as available

HYPERTHERMIA

A. Administer high flow oxygen. *(See Oxygen Administration)*

B. Move patient to cool environment.

C. Remove clothing. Cool patient with cold packs around the abdominal, axillary, neck, and groin areas.

D. Do not allow patient to shiver during cooling. If shivering occurs, remove cold packs.

E. If patient presents with altered level of consciousness, *(See Altered Level of Consciousness)*.

Note: Many athletic programs have instituted ice bath cooling for exertional heat stroke. If ice bath cooling has been initiated consider the following:

7. Indications for ice bath cooling include altered mental status and elevated temperature.
8. Once initiated, patient may stay in the ice bath for up to 30 minutes.
9. When patient is in the ice bath, monitor vital signs, ECG, and start IV per protocol.
10. When possible, monitor temperature as best as possible.
11. If at any point in time the patient becomes unstable, remove from ice bath and initiate rapid transport.
12. Patient may be removed from the ice tub once core temperature falls below 102 or they regain a normal mental status.

If patient appears unstable:

BLS

2. Request ALS if not already en route and initiate transport. Contact receiving facility for further orders if ALS is not on scene.

ALS

1. Apply the cardiac monitor

2. Initiate an IV and titrate flow to a systolic BP of 90 mmHg.

Specialty Protocol

Law Enforcement Officer Requested Blood Draw

(For participating EMS provider agencies only)

Any Paramedic or Advanced EMT is authorized under this protocol to obtain a blood sample on a person at the request of a law enforcement officer under the following circumstances:

1. The person the sample is being taken from must have consented to provide the sample; or

2. The officer has read an implied consent warning to the person (Indiana Code 9-30-6 or 9-30-7), and the person consents to provide a blood sample.

3. If the person has not consented to provide a blood sample, then the officer must have obtained a search warrant for the blood sample signed by a judge; the person must be unconscious (implied consent invoked); or the blood sample must be obtained pursuant to Indiana Code 9-30-6-6 (person involved in serious bodily injury or fatality crash).

The sample is to be provided to law enforcement for toxicological testing.
The following procedure shall be followed:

1. Obtain Indiana State Department of Toxicology Blood/Urine Collection Kit or its equivalent

2. Use universal precautions.

3. Using an aseptic technique clean the skin with non-alcohol disinfectant (*i.e. Povidone-Iodine).*

4. Draw blood with a clean (alcohol-free) needle or syringe.

5. If drawing blood with a syringe, add samples to blood tube via needle (do not remove stoppers).

6. To ensure proper mixing of anticoagulants, slowly invert the tubes completely at least five times (do not shake vigorously).

7. Complete required documentation for the Indiana State Department of Toxicology and EMS provider. “Location” refers to place where blood draw was performed.

8. Dispose of all sharps properly.

Head Up Cardiac Arrest Protocol

For authorized EMS Provider Agencies Only

Adult Only. Requires ITD and Mechanical CPR Device

- Manual Compressions
  - Rate 100-120
  - Depth 2 in
  - Allow FULL chest recoil
- Place defib pads in the anterior/posterior position
  - Apply CPR feedback device if available
  - 4 second pause allowed to place posterior pad
- Place the iGel and attach to ITD, ETC02 monitor, and then ambu bag with high flow 02.
  - Ventilations begun at rate 8-12. DO NOT HYPERVENTILATE
  - BVM or Intubation may be used for failure of the iGel
  - No pause allowed in compressions for airway management
- Analyze Rhythm
  - If see-through CPR is not available, pause compressions to print rhythm strip.
  - Restart compressions prior to rhythm analysis.
  - 2 second pause allowed.
- Immediately resume compressions.
  - IF Shockable rhythm and ETC02 > 20 – Defibrillate
  - If Shockable rhythm and ETC02 < 20 – Do 5 mins of CPR, then defibrillate
- Place Mechanical CPR Device.
  - 5 second pause allowed to place backboard of device.
  - Manuel compressions immediately resumed while anterior part of device set-up and activated.
- Move patient to the EMS Cot and slowly elevate HOB to 30 degrees over 2mins.
  - No pause allowed
- Place blood pressure cuff and Sp02 monitoring devices.
- IV/IO access
  - Epinephrine q 5 mins
  - Other medications per protocol
- Continue resuscitation on scene for a minimum of 30 mins
  - If see-through CPR not available, pause CPR device for 2 seconds q2 mins to print strip, analyze rhythm, and defibrillate as needed.
  - Monitor for spike in ETC02. If detected, check for SBP > 90 prior to pausing CPR and checking for pulses.
  - At 30 mins, if ETC02 > 20 or persistent shockable rhythm, transport to PCI capable facility.