PEND OREILLE COUNTY EMERGENCY MEDICAL SERVICES PROTOCOLS

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Contents

The following protocols and procedures have been approved for use by pre-hospital providers in Pend Oreille County.

Sara Ragsdale, DO
Medical Program Director Pend Oreille County

Section 1: County Operating Procedures

Abandoned Babies Newborn Safety Act

If a parent wishing to leave a newborn at a fire station approaches any fire department employee, the employee will immediately bring the newborn, with parent if possible, inside the fire station.

Procedure:

- Assure the parent there is no need to give any identifying information in order to leave the newborn at this location, and that the fire department personnel want to ensure the health and safety of both the parent and the newborn.
- Notify fire department EMS personnel if the person who has accepted the transferred newborn is not EMS certified. EMS personnel will notify appropriate authorities. If on duty crew not available, call 911.
- Accept the newborn from the parent. Assess the need for emergency intervention. Assign incident number.
- Assign the appropriate triage category for medical care. This category is determined by the highest level of prehospital care provider available and depends on infant's and parent's needs.
- Provide the Parent Information Packet immediately, in case the parent leaves the facility prior to interview.
- Interview the parent immediately to obtain as much prenatal, birth, and medical history as possible, regardless of triage category assigned. If the parent is unwilling to provide information, encourage completion and return of the medical/social history form included in the Parent Information Packet.
- Encourage the parent to complete the "Parental Message to the Newborn" found in the Parent Information Packet.
- Notify your Chief.
- Offer treatment to the parent as indicated in the following Care of the Parent section.
- Inform medical control of newborn and mother (if mother is the parent leaving the infant), consistent with assigned triage category.
- Report incident to **Child Protective Services (CPS)** at **509-363-3333** as soon as possible.
- Transfer newborn by ambulance (or department vehicle if infant does not need attention en route and the vehicle is equipped with an infant seat) to the nearest hospital emergency department for observation/treatment or while awaiting CPS.

Care of the Parent:

- If the parent leaving the newborn is, or appears to be, the newborn's mother, offer/encourage a medical screening exam and any indicated treatment to ensure postpartum stability. Protect the mother's anonymity during the exam and treatment (i.e., parent is entered into the system as Jane Doe).
- Give the parent a copy of the Parent Information Packet. Encourage the parent to complete and return the packet, including any medical/social history information not obtained during the interview.

Follow up:

Requests for information about the newborn's medical condition and status should be referred to the hospital or CPS.

EMS Provider Supervisory Organization (ESSO)

Definition: An affiliate service is an organization that is not required to be licensed under the Revised Code of Washington (RCW) 18.73, but may be recognized by the Department of Health as a participant in the EMS and Trauma Care System. Affiliated services provide response for rescue and/or care of patients in accordance with approved regional and state plans, regional patient care procedures, and Pend Oreille County patient care protocols and county operating procedures, but do not respond with an EMS vehicle.

Examples of these types of services, which may request affiliation, are:

- Law enforcement;
- Park/Forest Service personnel;
- Rescue agencies (includes ski patrol, dive rescue, and mountain rescue);
- Corporations or large private businesses which employ many employees over a large area and are likely to need to perform emergency medical or trauma services on employees or visitors;
- Government agencies, including the military;
- Emergency medical training organizations, only for use by instructors who are otherwise unable to be recertified.

State requirements

- Ensure EMS personnel employed by or associated with the service who have patient contact, are currently Washington State certified.
- Maintain a record of certification, which includes the level of certification and the expiration date of certification for all EMS personnel.
- Follow all state and local laws, rules, protocols, county operating procedures and patient care procedures to ensure standards for the health, safety and welfare of the citizens of this state.
- Follow medical control and protocols established by the county Medical Program Director (MPD).

Pend Oreille County requirements

- The affiliate must annually send a letter to the Pend Oreille County EMS Council stating endorsement and compliance with Pend Oreille County EMS protocols, county operating procedures, and the East Region EMS Patient Care Procedures and Protocols.
- The affiliate must annually provide the Pend Oreille County EMS Council with evidence of liability coverage of a minimum of $1 million/$3 million and notify them immediately if such coverage lapses.
- The affiliate must comply with all State of Washington, East Region, and Pend Oreille County data collection and submission requirements. Specifically, all patient encounters will be documented and reviewed by physician advisor or MPD.
- The affiliate must document their specific commitment to the 911 system for all trauma and medical emergencies.
- **Non-compliance:** the EMS Council may recommend to the DOH any revision, revocation, suspension, modification, or denial of an individual EMS certification or an affiliate recognition.

Blood Draws

Indications for blood draws will be limited to:

1. Medical cases requiring laboratory documentation (see blood tube information)
    a. Suspected hypoglycemia (prior to IV glucose)
    b. Suspected drug overdose
    c. Unconscious patient, unknown cause
    d. Trauma patients
    e. Hypotensive patients, unknown cause
    f. Suspected MI
    g. Suspected stroke
    h. Unstable medical condition
2. Method of transporting field blood samples
    a. The blood tubes will be checked to ensure the tubes have not exceeded their expiration date prior to drawing blood.
    b. The blood tubes will be labeled with the patient's name, date, time of draw and the initials and agency of person drawing blood.
    c. The blood tubes will then be placed in a sealable plastic bag with biohazard logo and taped to the patient's IV bag.
3. Legal blood specimen:
    a. Use aseptic technique with povidone-iodine.
    b. DO NOT use alcohol swabs.
    c. Blood may be drawn at the request of law enforcement as provided in RCW 46.20.308. Document law enforcement request on "Direction to Take Blood Test".

SEE NEXT PAGE FOR EXAMPLE FORM

Directions to Take Blood Test

The undersigned states that _____ is either:

- Unconscious;
- Has had a search warrant issued for blood to be drawn;
- Is under arrest or is in custody for the crime of vehicular homicide as provided in RCW 46.61.520 or vehicular assault as provided in RCW 46.61.522;
- Is under arrest/in custody for the crime of driving while under the influence of intoxicating liquor or drugs as provided in RCW 46.61.502 and/or RCW 46.20.308.

The undersigned directs Pend Oreille County EMS to administer a blood test without the consent of the individual so unconscious or so arrested.

OFFICER_____DATE_____

Cancellation/Slow Down

It is recognized that it is in the best interest of patient care and public safety to slow or cancel units responding in the emergency mode to calls when it is determined that the patient does not require an additional emergency response. However, all patients having an altered mental status, complaint of breathing problems, or chest pain must have an assessment and transport to the hospital.

1. Rescue only: First responding agencies (fire or police) may slow ALS or BLS ambulances when a patient does not require Advanced Life Support. They may cancel ambulances when there is no patient or no transport required (department policy to apply).
2. ALS ambulances may slow or cancel other responders once the patient has been evaluated at the scene and the determination is made that no other units are required or no other units are required in the emergency mode.
3. Additional reasons for cancellation:
    a. No patient found
    b. Cancelled by dispatch
    c. No emergency health care needed

Determination of Patient Transport Destination

Patient destination shall be determined per the following criteria* (see Levels of Trauma chart):

1. Trauma patients:
    a. Patients meeting major trauma triage criteria (step 1 and step 2) as defined by State of Washington Prehospital Trauma Triage Destination Procedures (page 56) will be transported by air to Providence Sacred Heart Medical Center, a level II trauma facility, OR closest available facility by ground for stabilization, whichever is fastest;
    b. Patients meeting step 3 and 4 criteria shall be transported to the closest appropriate designated trauma facility.
2. Stroke patients:
    a. Follow the State of Washington Prehospital Stroke Triage Destination Procedure (page 61).
3. Acute coronary syndrome patients:
    a. Follow the State of Washington Prehospital Cardiac Triage Destination Procedure (page 58).
4. General patients
    a. Patient request
    b. Judgement of the most highly trained medical personnel at scene
    c. Physician to physician arrangement

*Patient requests and physician to physician referrals must, in general, be accepted. However, if the medical authority at the scene judges that a critical patient requires transport to an alternative hospital for stabilization, it is the medical authority's responsibility to explain this to the patient or physician. If a conscious patient who, in the judgement of the medical authority, can make a rational decision persists in requesting transport to a different facility, the patient and/or physician request should be followed (see Patient Treatment Rights). Attempt to obtain a signature on a medical release form.

Dispatch of Medical Personnel

Purpose:

- To provide appropriate timely care to all emergency medical and trauma patients as identified in WAC 246-976-390.
- To ensure properly licensed and recognized emergency ambulance service designated by fire districts, county or municipalities are dispatched to all calls that fall within established 911 dispatch policies and guidelines.

Standard:

- Licensed ambulance and/or aid services shall be dispatched to emergency medical incidents per emergency medical dispatch (EMD) protocol.
- Verified aid and/or verified ambulance services shall be dispatched to all incidents, whether injury is known or unknown per EMD protocol.
- All licensed and verified ambulance and aid services shall operate 24 hours per day, seven days per week.
- All communications/dispatch centers charged with the responsibility of receiving calls for emergency medical services shall use an EMD system approved by the Pend Oreille County EMS Council.
- Emergency calls placed by citizens directly to communications/dispatch centers and not through the 911 system shall be triaged per an EMD system approved by the Pend Oreille County EMS Council and forwarded to the appropriate first response agency with jurisdiction.
- Successful transfer of an emergency call to the 911 system that was initially placed directly to an ambulance service fulfills that ambulance service's obligation to ensure the purpose of the ambulance/response policy is met.
- Ambulance services shall not respond to an emergency call independently of the 911 system without a request to do so by the communication center if the communication system is intact.

Procedure:

- The dispatcher shall determine appropriate response category of call using EMD guidelines approved by the Pend Oreille County EMS Council.
- Following Pend Oreille County's PCPs, the nearest verified agency with jurisdictional authority shall be dispatched per above standards.

Documentation

An EMS incident report must be appropriately documented and filed for any call for EMS assistance within Pend Oreille County, regardless of patient transport. This will apply to both basic and advanced life support units and includes public assist calls.

Cooperative charting is essential when more than one agency is documenting the same call. Sharing of pertinent information will help ensure accuracy and adequacy of the prehospital care record and will help avoid unnecessary duplication.

All documentation must be finalized within 24 hours of patient care (WAC 246-976-330).

At the time of arrival at the receiving facility, a minimum of a brief written or electronic patient report including agency name, EMS personnel, and:

- Date and time of the medical emergency;
- Time of onset of symptoms;
- Patient vital signs including serial vital signs where applicable;
- Patient assessment findings;
- Procedures and therapies provided by EMS personnel;
- Any changes in patient condition while in the care of the EMS personnel;
- Mechanism of injury or type of illness.

Within twenty-four hours of arrival, a complete written or electronic patient care report that includes at a minimum:

- Names and certification levels of all personnel providing patient care;
- Date and time of medical emergency;
- Age of patient;
- Applicable components of system response time;
- Patient vital signs, including serial vital signs if applicable;
- Patient assessment findings;
- Procedures performed and therapies provided to the patient; this includes the times each procedure or therapy was provided;
-Patient response to procedures and therapies while in the care of the EMS provider;
- Mechanism of injury or type of illness;
- Patient destination.

Any written hand-off patient documentation from a non-transporting care provider of the patient shall be transported with the patient and immediately left with the patient's receiving facility. The document shall not be edited, appended to or altered by the transporting agency.

Emergency Transports and ALS Rendezvous

General Trauma

- Injuries resulting in unstable vital signs, altered level of consciousness, or severe anatomic injuries.
- Injuries associated with severe mechanism or comorbid factors which increase the likelihood of immediate complications or deterioration which would require immediate hospitalization or ALS intervention.

General Medical

- Medical emergencies resulting in unstable vital signs or altered level of consciousness.
- Medical emergencies associated with the potential for significant complications requiring immediate hospitalization or ALS intervention.

Specific Injury Considerations Requiring Emergency transport and/or ALS Rendezvous

1. Vital signs and level of consciousness:
    a. Shock: blood pressure < 90
    b. Respiratory distress: respiratory rate <10 or >29
    c. Altered mentation: Glasgow Coma Scale score < 13
2. Anatomy of injury:
    a. Penetrating injury of head, neck, torso or groin
    b. Combination of burns > 20% of total body surface or involving face, airway, hands, feet or genitalia
    c. Amputation above the wrist or ankle
    d. Spinal cord injury
    e. Flail chest
    f. Two or more obvious long bone fractures
3. Consider emergency transport and/or ALS rendezvous if the following conditions apply:
    a. Biomechanics of injury
        i. Death of same car occupant
        ii. Ejection of patient from enclosed vehicle
        iii. Falls > 20 feet
        iv. Pedestrian hit at > 20 mph or thrown >15 feet
        v. Rollover
        vi. Motorcycle, ATV or bicycle accident
        vii. Extrication time > 20 minutes
        viii. Significant intrusion
    b. Comorbid factors
        i. Extremes of age (<12 years old or > 60 years old)
        ii. Hostile environment (extremes of heat or cold)
        iii. Medical illness, such as COPD, CHF, renal failure, etc.
        iv. Presence of intoxicants
        v. Second or third trimester of pregnancy
    c. Emergency care provider judgement of injury severity

Specific medical conditions requiring emergency transport and/or ALS rendezvous

1. Cardiopulmonary arrest
2. Acute myocardial infarction

3. Respiratory distress
4. Altered level of consciousness (GCS < 13)
5. Seizures
6. Stroke
7. GI bleeding
8. Anaphylaxis
9. Near drowning
10. Imminent birth

Emergency Transport of the Physically Disabled

A patient's service animal should receive special considerations, provided these measures will not adversely affect the provision of care to the patient.

- If the animal is handled by the EMS provider, they will use extreme gentleness.
- Ambulance transport of the service animal with their owner should be provided unless it jeopardizes patient care or the safety of EMS personnel. If so, the transport of the service animal will be requested of family, friends, or other civil services.

A patient's medical equipment should be transported with the patient unless it jeopardizes patient care. This includes any adaptive equipment, such as wheelchair, crutches, cane, prosthetics, hearing aids, electrolarynx, tablet, or any other equipment that allows the patient to communicate or to move independently or more freely.

EMS- No CPR

A sample of the POLST (Physician Oder for Life-Sustaining Treatment) form can be found in Section 11: Reference, page357. This was developed as a recognition tool for emergency care providers in cases in which a patient does not desire full resuscitation due to a rapidly deteriorating medical circumstance. When you find the form in use with a patient, make sure the attending physician, ARNP, or PA-C has signed it.

Other forms of written documentation may appear from time to time. When they clearly express a wish for limited measures and are signed by a physician, ARNP, or PA-C, they, too, should be respected. The presence of a signed DNR order or physician's order should be recorded in the prehospital care record. Telephone orders are to be discouraged, unless the EMS provider can identify the physician on the phone. Consultation with the emergency physician on duty at the potential receiving hospital (medical control) is an additional option to provide some guidance.

In the absence of an EMS-No CPR form and/or bracelet, or in case of uncertainty, you are obligated to undertake full resuscitative measures to the full level of your training.

EMS Personnel Endangerment

The first goal of protecting responding EMS personnel from criminal assault relates to the importance of respecting law enforcement's responsibility for assuring scene security prior to responding to a patient in a known hazardous situation. Our desire to render emergency medical care must be tempered by our recognition of the limitations of our role as well as our responsibility to our fellow EMS responders. However, unanticipated physical threats may develop during treatment and transport of emergency patients. In their most extreme form, they may represent an immediate life threat to EMS responders. Should this occur at the scene or during transport, immediately notify the appropriate law enforcement jurisdiction. To help ensure a means by which EMS personnel could request law enforcement assistance in a covert fashion, a Code 99 category communication patch may be used as follows:

1. EMS personnel should contact their dispatch center and/or receiving facility to notify them of a Code 99 situation or transport.
2. In anticipation of the arrival of a Code 99 transport at out receiving facilities, the hospital should alert local law enforcement.

EMS Scene Management and Inter-Agency Relations

Objective:
Provide consistent, countywide guidelines that promote positive inter-agency relationships on the scene of EMS emergencies, with patient care being the focus of the patient care team.

General Guidelines:

- Safety of response personnel is the highest priority.
- Following that, patient care and customer relations will be given the next highest priority.
- For scene safety and security, personnel shall secure clearance from the Incident Commander (IC) prior to entering the scene.
- On-scene Medical Authority will be in accordance with Pend Oreille County patient care protocols.
- First personnel on-scene will bring adequate equipment to the patient area to provide complete patient care.
- The stretcher will be brought to the patient area by transport personnel unless otherwise directed.

Communications:

- Responding apparatus/units will monitor the appropriate radio frequencies assigned to the incident by CCC.
- All agencies will provide timely communication with CCC when arriving on-scene and at other times during the incident.
- Units will contact the IC on arrival for assignment.
- Updates to incoming units should be unit to unit and not through CCC.
- Incoming units will be briefed as soon as practical by IC or designated personnel.

Incident Commander:

- Fire department will establish Incident Command on all emergencies. If other agency is on scene, IC will get a briefing as soon as practical.
- The IC will remain in charge of the overall scene, regardless of who oversees patient care.
- Requests for additional resources will be made by the IC. Requests form field units will be made to the IC.
- IC will be responsible for staging (placement) of all apparatus and vehicles.
- IC will be conducted in accordance with the Pend Oreille County Incident Command Plan.

MVA and Hazardous Area:

- Once command is established, anyone without proper personal protective equipment (PPE) in the Hot Zone will be replaced or removed as soon as possible. Motor vehicle accidents are hazardous areas.
- No one will enter the hot zone from that time forward without proper PPE until the IC determines the scene is safe.
- Incoming apparatus/units will stage out when responding to larger incidents, hazardous material incidents or major motor vehicle accidents.

Transfer of Patient Care:

- The person in charge of patient care will remain in charge until a report has been provided detailing the condition of the patient treatment provided and any other pertinent information.
- Transfer of patient care will be formally completed and will not be assumed.
- Where there is no agreement in transfer of patient care between paramedics, no transfer of care will occur. Both paramedics will complete patient care reports for submission to the QI committee at a later date.

Transport:

- No attempt will be made to dissuade patients from being transported. In the event the patient openly refuses transport, a medical release will be obtained by on-scene medical authority.
- Transport destination will be in accordance with Pend Oreille County protocols.
- Patient transport agency will be determined by the incident commander or their designee representing the jurisdictional EMS agency.
- In circumstances of mass casualty, the Patient Transport Group Supervisor shall determine the most appropriate vehicle and staffing for emergency transport.
- Moving the patient is the transporting agency's responsibility. Fire department assistance may be requested.
- The use of BLS personnel to assist with patient care during transport will be agreed upon by on-scene medical authority.
- All written documentation available will be provided to transport personnel.
- The highest level of certification personnel will attend patient during transport.
- The decision to allow passengers to ride in the transporting vehicle will rest solely with the transporting agency.

Conflict Resolution:

It is recognized that differences of opinion will occasionally occur. Differences of opinion shall not delay therapy or negatively impact the outcome of patient care. If a particular therapy is recognized as potentially harmful, the patient care team will consult medical control to ensure appropriate therapy. The on-scene medical authority will be responsible for making the final determination when such conflict arises. Personnel are encouraged to resolve differences of opinion at their level, whenever possible. In all cases, both parties will exercise professionalism and respect. Any action that is considered to be unprofessional or disrespectful will not be tolerated by any agency.

- Conflict shall never be exhibited in front of a patient, the patient's family, hospital staff or the general public. When a difference of opinion arises, the personnel from the respective agencies should professionally discuss the incident in private. It is expected that this occur as soon as possible so that differences can be resolved to the satisfaction of all parties.
- If no resolution of an issue can be achieved, the involved parties should contact their respective agencies and follow the chain of command. In most cases, this will be the individual's immediate supervisor.
- The supervisors will then contact each other and discuss the differences in an attempt to remedy any conflict. If no resolution can be achieved at this point, the administration of each agency will be contacted for final resolution. Under no circumstances shall an employee contact another agency's administration.
- Final resolution, when administration is involved, will be achieved collaboratively. The resolution will be clearly communicated to the involved parties and will be binding upon all parties.

Field Resuscitation

Withholding CPR

1. CPR must me initiated on all cardiac arrest victims, unless a condition exists which warrants the withholding of CPR.
    a. CPR may be withheld on adult or pediatric patients who present with any of the following
        i. Injuries obviously incompatible with life, such as decapitation or hemicorporectomy
        ii. Total incineration
        iii. Decomposition
        iv. Dependent lividity
        v. Rigor mortis without vital signs
        vi. Apnea in conjunction with separation from the body of the brain, liver or heart
        vii. Mass casualty incidents where triage principles preclude CPR from being initiated on every victim
        viii. Documentation of Do Not Resuscitate Orders
    b. CPR may be withheld on adult victims of unwitnessed medical cardiac arrest or witnessed/unwitnessed trauma arrest who present with ALL the following
        i. No CPR in progress
        ii. No vital signs
        iii. Documented in 2 or more leads on a properly functioning monitor electrical asystole on patients who have had CPR or who have a non-capturing pacemaker
        iv. Documented lack of ventricular fibrillation by attaching defibrillator and recording “no shock advised”
        v. No evidence of hypothermia, drug ingestion, or poisoning
2. Notify appropriate law enforcement agency as soon as possible.
3. Complete a prehospital care record, documenting clinical conditions which warranted not initiating CPR and law enforcement agency notification.

Discontinuing CPR

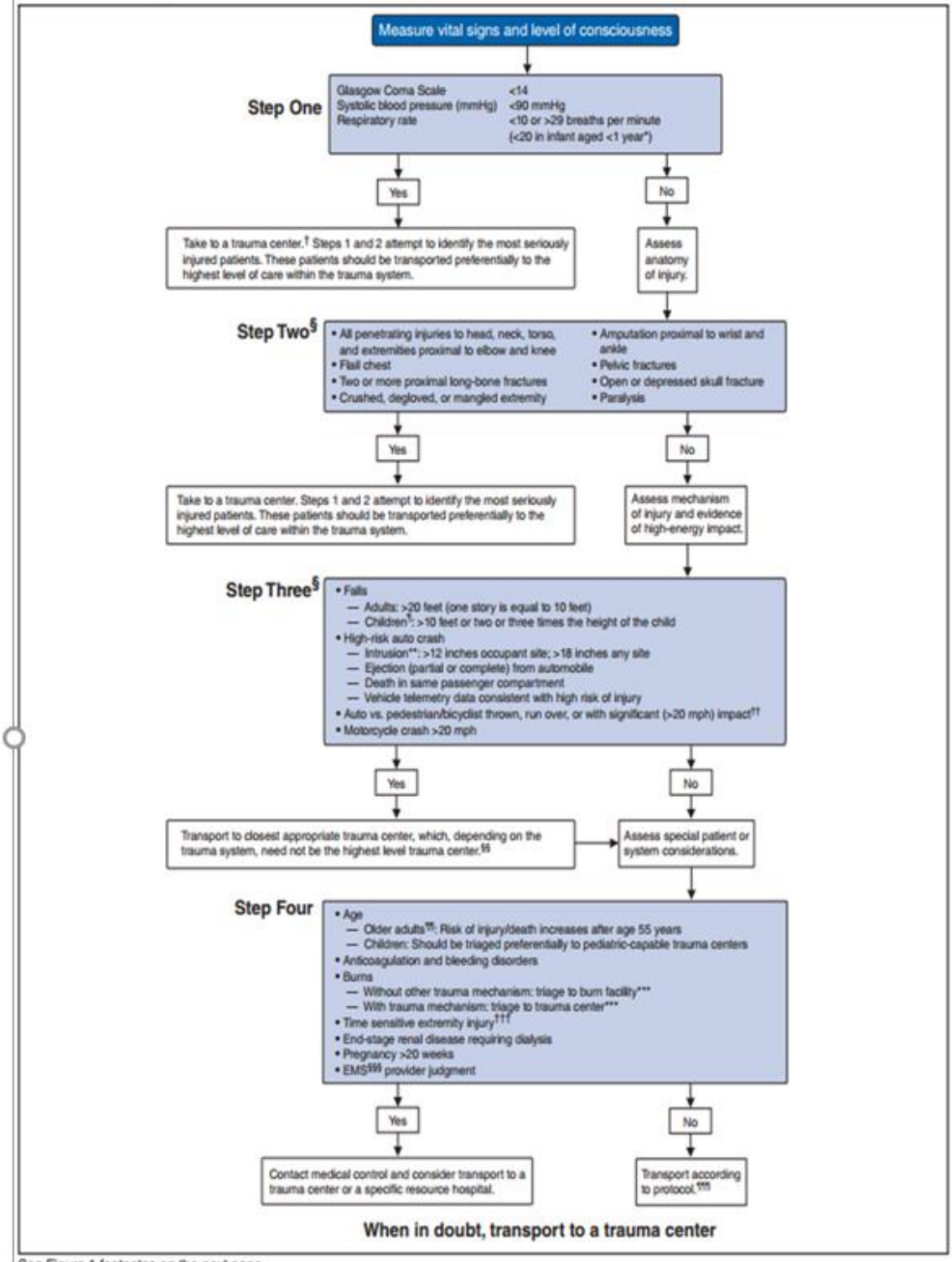
1. A supervising physician should consider discontinuing CPR in the prehospital setting and pronounce a patient dead at the scene, providing certain conditions are met, including, but not limited to the following:
    a. Brady-asystole unresponsive to resuscitation with complete and appropriate Pend Oreille County ALS protocol
        i. Asystole documented for 30 seconds in 2 leads with documented evidence that the monitor is functioning properly (i.e., artifact due to manual compression or precordial thump)
        ii. Blood pressure, pulse and respiration are absent
    b. Ventricular fibrillation which, after ACLS resuscitation, is now asystole or agonal rhythm.
    c. No evidence of hypothermia, drug ingestion or poisoning as cause of arrest.
    d. CPR may be discontinued in trauma patients with EMS witnessed cardiopulmonary arrest and 45 minutes of unsuccessful resuscitation and CPR.
    e. Victims of penetrating trauma found apneic and pulseless should be rapidly assessed for other signs of life such as pupillary reflexes, spontaneous movement, or organized EKG activity. If any of these signs are present, the patient should be resuscitated and transported to the nearest trauma center.

2. Notify supervising physician/medical control before discontinuing CPR. If unable to contact supervising physician because of geographic isolation, the emergency care provider will contact the physician as soon as possible and document the reason for delay in communication.
3. If, after a brief discussion with the family on the futility of resuscitative efforts, supported by consultation with medical control, the family still insists on continued resuscitation and transport, it should be done.
4. Complete a prehospital record documenting the physician consulted and discontinued resuscitation.
5. Obtain and EKG strip with documented evidence of asystole and attach to run report.
6. Notify appropriate law enforcement agency.
7. Notify appropriate support facility for family as needed.
8. Once death has been determined, the body should not be moved unless required for scene safety concerns. If, in the judgement of the EMS provider, scene safety or other concerns require the movement of the body, the county medical examiner or county coroner should be contacted with the request to move the body prior to doing so.
9. When appropriate, remain with family as long as necessary until other support arrives. If you are called for another emergency response, emergency care for the living must always assume priority.

Field triage Decision Scheme: The National Trauma Triage Protocol

See following page

FIGURE 1. Field triage decision scheme – United States, 2006



See Figure 1 footnotes on the next page.

General Guidelines for All Patients

Primary Assessment: Done initially on every patient and repeated every few minutes as indicated.

- Check responsiveness.
- Airway: Is it patent? Identify and correct any obstruction.
- Breathing: rate and quality. Identify and correct any compromising factors.
- Circulation: Pulse, rate, quality and location.
- Control external bleeding.
- Check for shock. If present, treat per protocol.

Secondary Assessment: Complete as indicated for patient condition.

- Level of consciousness (see Glasgow Coma Score, page 106).
- Reassure patient. Inform patient about exam and treatment.
- Obtain a brief history of illness or injury from patient, family, or bystanders. Check for medical identification.
- Perform a head-to-toe assessment. Record vital signs, to include pulse, blood pressure, respirations, skin color, pupils, etc.

Field Treatment

- Triage problems according to severity (see mass casualty incident protocols).
- Provide treatment using appropriate protocols.
- Transport:
    - Use of lights and sirens should be limited to emergent transport of critical patients.
    - Destination determined by:
        - Patients meeting major trauma triage criteria, as defined by State of Washington Prehospital Trauma Triage Destination Procedures will be transported to the highest-level trauma facility available
        - Physician to physician arrangement*
        - Patient request*
        - On-scene medical authority
- If the intended receiving hospital ED is on divert (red), the patient destination should rely upon the same factors as they relate to the available receiving facilities.

Communications:

- H.E.A.R. Radio during transport: All users of the H.E.A.R. system are urged to transmit essential communications and keep air times as short as possible. The following format for communications should be used. If medical control feels additional communications are necessary, they may contact the transporting unit via the H.E.A.R system.
- Emergency Prehospital H.E.A.R. Report Format:
    - Unit identification
    - Category of emergency
        - Code red- critical
        - Code yellow- urgent
        - Code green- stable
        - Code 99- EMS personnel endangerment
        - Hazmat code
            - Code red

    - Code yellow
    - Code green
  - Age and sex of patient
  - Chief complaint or reason for transport
  - Very brief pertinent medical history (one sentence, if possible)
  - Vital signs and level of consciousness
  - Pertinent treatment rendered and results, if any
  - Request for additional information or treatment
  - Estimated time of arrival
  - The H.E.A.R. report should be provided as soon as practical, once transport has begun. All reports should be given in this order and should be a maximum of 30 seconds. The H.E.A.R. report is not meant to be a full patient record and should relay only pertinent patient care information. Patient identification information is inappropriate to be given on the H.E.A.R. frequency. Advise medical control or receiving emergency department of changes in patient condition en route, and request direction for further treatment.
- Verbal report to emergency department: The verbal report to the emergency department physician and/or triage nurse should contain more detail than the radio report. The emergency care provider now has the time to present thorough details of the scene, complete assessment of the patient, and complete report on patient care and result of efforts.
  - Name, age, sex and patient's physician
  - Chief complaint or injuries
  - If trauma, describe the trauma scene/mechanism of injury
  - Pertinent medical history
  - Vital signs and level of consciousness
  - Condition changes or trends in vital signs and level of consciousness during transport
  - Patient treatments and results
- Written report: Complete an EMS medical incident report (MIR) on all patient encounters. The MIR is a legal record and may be called upon as evidence in any court of law. A MIR should be filled out per department and county requirements and should be done in electronic form whenever possible. The MIR will be completed within 24 hours of patient care (WAC 246-976-330). See "Documentation", page 18.

*Patient requests and physician to physician referrals must, in general, be accepted. However, if the medical authority at the scene judges that a critical patient requires transport to an alternative hospital for stabilization, it is the medical authority's responsibility to explain this to the patient or physician. If a conscious patient who, in the judgement of the medical authority, can make a rational decision persists in requesting transport to a different facility, the patient and/or physician request should be followed (see Patient Treatment Rights). Attempt to obtain a signature on a medical release form

Hazardous Materials Response

This protocol is to be used in all incidents involving hazardous materials where there is an actual or potential exposure to any hazardous substance.

- Call for help. Contact local fire jurisdiction. Notify and/or respond Hazardous Materials Team
- Contact Washington State Poison Center's special direct line (1-800-709-0911) and/or the Agency for Toxic Substances and Disease Registry (1-888-422-8737) or for emergency (1-404-498-0210) for initial guidance in assessing the hazard and providing for EMS personnel safety and patient care.
- Establish a SAFE staging area uphill and upwind, if possible. Notify all incoming response agencies of proper route for a SAFE scene approach to the staging area. Helicopters, when indicated, should be landed far enough away from the scene to avoid spread of contamination from prop wash.
    - Refer to the DOT Emergency Response Guidebook, or HazMat Team for general precautions and isolation/evacuation guidelines. As a rule of thumb, isolate the hazard area 100 feet for a minor incident and 500 feet for a major incident. If explosives are involved, evacuate the area for a half mile. Remember, the evacuation zone downwind or downhill will be much greater.
- Protect yourself and others from significant exposure. Do not attempt rescue without proper protective gear. Minimize continued exposure of any personnel and secondary contamination of rescue personnel by ensuring the proper decontamination has been completed prior to treatment or transport to a medical facility. Prevent unnecessary contamination of transport vehicles or equipment.
- Obtain accurate information on health effects of product(s) involved. Attempt to identify product(s) involved by placard, ID#, MSDS, shipping papers, personnel on-scene, etc.
- Provide your certification level of prehospital care. In general, it is not recommended to begin any medical treatment without first referring to proper guidelines (interventions as automatic as providing oxygen may be dangerous if not compatible with the agent involved).
- H.E.A.R. radio patch to the receiving hospital should be titled HazMat Code Red, Yellow, Green to allow the hospital to initiate appropriate decontamination and treatment preparations.

Helicopter Triage Guidelines

1. PURPOSE:
Provide guidelines for those initiating the request for air ambulance services to the scene.

2. SCOPE:
Air ambulance services activation and response that provides safe and expeditious transport of critically ill or injured patients to the appropriate designated and/or categorized receiving facilities.

3. GENERAL PROCEDURES:

A. Air ambulance services should be used when it will reduce the total out-of-hospital time for a critical trauma, cardiac, or stroke patient by 15 minutes or more; or provide for the patient to arrive at a higher-level trauma, cardiac, or stroke hospital within 30 minutes or less even if a lower level hospital is closer.

B. Prehospital personnel en route to the scene make the request for early activation of the closest available air ambulance service resource to the location of the scene, or place them on standby for an on-scene response.

C. When appropriate; the call should be initiated through the emergency dispatching system. Notify dispatch of request for air ambulance services if the call has been initiated through a mobile device application.

D. The air ambulance service communications staff will give as accurate of an ETA possible from the closest fully staffed and readily available resource to the dispatch center requesting a scene response. This ETA will include the total time for air ambulance to arrive on scene. If ETA of closest fully staffed resource for that agency is extended, call should go to the next closest fully staffed resource, even if it is another service.

E. The responding air ambulance service will make radio contact with the receiving facility.

F. An air ambulance service that has been launched or placed on standby can only be cancelled by the highest level of certified prehospital personnel dispatched to the scene. Responding personnel may communicate and coordinate whether cancellation is appropriate with the highest-level personnel dispatched prior to their arrival on scene.

G. Scene flights; the air ambulance service responding to the scene will have contact with an agency on scene based on each county's established air to ground frequency.

H. Air ambulance services must be appropriately utilized during an MCI. If such request is made, the requesting prehospital agency should clearly communicate the need for either on scene or rendezvous location to respond to. Air ambulance services will determine most appropriate aircraft for transport based on patient status, weather, and location of incident.

4. TRANSPORT CONSIDERATIONS:

A. Mechanism of Injury – considerations utilizing the "Prehospital Trauma Triage Destination Procedure"

a. Death in the same vehicle

b. Ejected from vehicle

c. Anticipated prolonged extrication: greater than 20 minutes with significant injury

d. Long fall: greater than 30 feet for adults, 15 feet for children
e. Sudden or severe deceleration
f. Multiple casualty incidents

B. Patient characteristics – considerations utilizing the "Prehospital Trauma Triage Destination Procedure"

a. Glasgow Coma Scale (GCS) less than or equal to 13
b. Patient was unconscious and not yet returned to GCS of 15
c. Respiratory rate less than a 10 or greater than 29 breaths per minute
d. BP less than 90 mmHg or clinical signs of shock
e. Penetrating injury to the chest, neck, head, abdomen, groin or proximal extremity
f. Flail chest/unstable chest wall structures
g. Major amputation of extremity
h. Burns second-degree >20 percent
i. Burns third-degree >10 percent
j. Burns third-degree involving the eyes, neck, hands, feet, or groin
k. Burns, high voltage-electrical
l. Facial or airway burns with or without inhalation injury
m. Paralysis/spinal cord injury with deficits
n. Suspected pelvic fracture
o. Multi-system trauma (three or more anatomic body regions injured)

C. Acute Coronary Syndrome – considerations utilizing the "Prehospital Cardiac Triage Destination Procedure"

a. Post CPA – ROSC
b. Hypotension and/or Pulmonary edema
c. ST elevation myocardial infarction
d. High Risk Score > 4

D. Stroke – considerations utilizing the "Prehospital Stroke Triage Destination Procedure"

a. F.A.S.T. and L.A.M.S. > 4

Note: (With the extended window for thrombectomy, particularly for patients outside the window for tPA it is important that direct transport to a thrombectomy capable center be considered if the LAMS is > 4 and time of symptom onset is within 24 hours.

5. CONSIDERATIONS FOR AIR AMBULANCE TRANSPORT:

In general, prehospital providers must communicate to air ambulance any of the following circumstances that could affect ability to transport:

A. Hazardous materials exposure
B. Highly infectious disease (such as COVID or Ebola)
C. Inclement weather
D. Patient weight and size

If any of the conditions above are present:

A. Consider initiating ground transport and identifying a rendezvous location if air ambulance confirms the ability to transport.

B. Consider utilization of air ambulance personnel assistance if additional manpower is necessary

6. SAFETY OF GROUND CREWS AROUND AIRCRAFT

To promote safety of all personnel, ground crews must:

A. NOT approach the aircraft until directed to do so by the flight crews.
B. NOT approach the tail of the aircraft.
C. Use situational awareness while operating around aircraft.

7. LANDING ZONE CONSIDERATIONS:

All situations for safety and consideration of landing zones are at the pilot's discretion.

To promote safe consistent practices for EMS and air ambulance services in managing landing zones for helicopters. EMS MUST:

A. Select a location for the landing zone that is at least:
   a. Night; 100 ft. x 100 ft.
   b. Daytime: 75 ft. x 75 ft.

B. Assure the landing zone location is free of loose debris.

C. Assure the approach and departure paths are free of obstructions, and identify to the pilot hazards such as wires, poles, antennae, trees, wind speed and direction, etc.

D. Provide air ambulance services with the latitude and longitude of the landing zone. Avoid using nomenclature such as "Zone 1."

E. Mark night landing zones with lights. Cones may be used if secured or held down. Do not use flares.

F. Establish security for the landing zone for safety and privacy.

G. Avoid pointing spotlights and high beams towards the aircraft. Bright lights should be dimmed as the aircraft approaches.

H. Do not approach an aircraft unless escorted by an aircrew member.

I. Consult with aircrew members before loading and unloading. Loading and unloading procedures will be conducted under the direction of the flight crew.

8. DEFINITIONS:

• "Standby" Upon receiving the request, dispatch will notify the pilot and crew of the possible flight. The crew will respond to the aircraft and ensure they are in a flight ready status. The crew will then remain at or near the aircraft until such time as they are launched or released from standby.

• "Launch time" launch time is the time the skids lift the helipad en route to the scene location.

• "Early activation" Departing for a requested scene prior to arrival of the first responders, based on a high index of suspicion that specialty services will be necessary.

Infectious Disease Precautions

Precautions to prevent transmission of infectious diseases are especially important in the emergency care setting, where the risk of blood exposure is increased and the infection status of patients is usually unknown. Universal blood and body fluid precautions should be used for **all** patients, to prevent skin and mucus membrane exposure.

- EMS responders shall don emergency medical gloves, surgical mask or N95, and eye protection or face shield prior to initiating any emergency patient care. Change gloves after contact with each patient. Wash hands immediately after removing gloves.
- EMS responders shall don N95 mask or respirator, face shield, gown, and gloves prior to initiating any emergency patient care on a patient with respiratory symptoms or prior to initiating any aerosolizing procedures such as intubation or nebulization of medications.
- EMS responders shall don emergency medical garments prior to any patient care during which splashes of body fluids can occur (e.g. situations involving spurting blood or child birth).
- Wash hands or other skin surfaces immediately if contaminated with blood or other bodily fluids.
- Use mouthpieces, resuscitation bags, or other ventilation devices to avoid mouth to mouth contact.
- Sharp instruments, needles, and scalpels should be handled carefully during procedures, cleaning, and disposal. Needles should not be recapped, bent, broken by hand, or removed from disposable syringes. Placed used syringes, needles, scalpels and other sharp items in puncture resistant containers for disposal.

These precautions will afford protection to emergency care providers to minimize the risk of transmission of infectious disease.

Emergency care providers who have open lesions or weeping dermatitis should refrain from direct patient care and from handling patient care equipment.

Interfacility Transport

General Principles

In general, health care facilities, other than hospitals, should access 911 to ensure the most immediate EMS response. A more sophisticated medical facility that maintains a staff fully trained and equipped to provide ACLS may elect to contact an ambulance transport provider directly, if the patient is currently stable and any potentially unstable events are fully treatable by the services provided at their facility. An arrangement such as this requires that there be a letter of agreement between the jurisdictional fire agency and the facility which acknowledges this arrangement.

Interfacility transport will occur at BLS, ILS, ALS, and critical care levels within the following special categories:

- Transfer between facilities for admission for services not available at initial facility
- Transfer and return of patient to facility for diagnostic evaluations at second facility
- Transfer from hospital to extended care facility
- Transfer of patient between facilities at patient and/or physician request
- Transfer of a psychiatric patient to psychiatric facility

As a rule, it is the responsibility of the transferring facility to ensure that the medical necessities for safe patient transfer are met. Medical instructions of the attending physician and registered nurses will be followed unless specifically contrary to EMS protocols. If treatment is recommended that is contrary to protocol or beyond the scope of training of the EMS personnel, medical control at the receiving facility should be contacted for advice. If a physician attends the patient during transfer he/she will direct all care regardless of standing orders. If a registered nurse attends the patient, he/she will direct the care of the patient from the standing orders given by the physician at transfer or by contact with the receiving hospital physician. The registered nurse may choose to defer emergency care in some situations to the EMT or paramedic if it is within the EMS provider's scope of practice.

The responsibility for transfer to another facility resides with the transferring facility. Patients will not be transferred to another facility without first being stabilized. Stabilization includes adequate evaluation and initiation of treatment to ensure that transfer of a patient will not, within reasonable medical probability, result in deterioration of the condition, death, or loss and/or serious impairment of bodily functions, parts, or organs. Furthermore, the benefits of transfer to the next facility outweigh the risks of transfer to that facility. Evaluation and treatment of patients prior to transfer are to include the following:

- Establish and ensure adequate airway and ventilation
- Cardiac monitoring and emergency defibrillation, when indicated
- Establish control of hemorrhage
- Stabilize and splint the spine or fractures, when indicated
- Establish and maintain adequate access routes for fluid administration
- Administer adequate fluid and/or blood replacement
- Determine that the patient's vital signs (blood pressure, pulse, respiration, and urinary output, if indicated) are sufficient to sustain adequate perfusion. Initiate important therapeutic regimens that can be started in a timely fashion and safely continued during transport

For requests for transports not meeting above criteria, the following may apply:

- The transporting personnel may request compliance with the above criteria
- If the transporting personnel do not think the plan for transfer can be safely accomplished, contact the receiving physician for concurrence or consultation

It is also the transferring facility's responsibility to establish the need for BLS, ILS, ALS or critical care transport. If a BLS/ILS transport is requested and if it is in the judgement of the BLS/ILS crew that the patient needs to be transported by an ALS or critical care team, it is mandated that dispatch be contacted and an ALS or critical care crew dispatched.

If during a transport an emergency condition develops that was not anticipated prior to transport, prehospital patient care procedures and protocols will immediately apply. Medical control should be contacted for concurrence of any orders as appropriate. The receiving facility should be contacted ASAP to inform them of changes in the patient's condition.

Level of Certification of EMS Personnel to Attend the Patient During Transport

- In general, the highest-level certified EMS provider should attend the patient during transport.
- State law requires that at least one individual certified at the EMT level must be attending the patient in the back of an ambulance (WAC 246-976-260 & RCW 18.73.15).
- The EMS provider with the highest-level certification may allow an EMT to attend the patient during transport, if, in the highest-level provider's judgement, the patient's illness or injury is stable and that any anticipated treatment would not be better rendered by a higher level of certified individual.

Mass Casualty Treatment and Transport

The following material represents a broad guideline for the common practice of our EMS providers when dealing with a mass casualty event. A much more comprehensive overview of the important role and responsibilities of EMS responders in a mass casualty event is found within our Field Operations Guide (FOG). See additional information in Triage Sieve in Section 11: References.

Included in the county operating procedure section are the following:

- General Principles of Triage, Treatment and Transport
- References (START, JumpSTART, Triage tags)

Recommendations

- Triage
  - Initial triage should be rapid with an emphasis on identifying severe but survivable injuries.
  - A single system should be used throughout our EMS system. START and JumpSTART are simple and effective tools for initial triage.
  - A triage tag or identifier should be applied at the time of initial EMS contact
  - Secondary triage should be applied at the scene (treatment area) with a focus on identifying patients whose outcome will depend primarily on time-critical hospital-based interventions (surgery/critical care).
- Treatment
  - A few immediate lifesaving treatments should be done as soon as possible at the time of initial EMS contact
    - Open the airway
    - Stop severe external bleeding
    - Treat open (sucking) chest wounds
  - Secondary treatment
    - Spinal immobilization (prior to moving patient)
    - Definitive airway placement and oxygen administration
    - Needle decompression of tension pneumothorax
- Transport
  - All RED (critical) patients should be the priority for earliest transport to receiving hospitals with an emphasis on those that need immediate surgical interventions.
  - EMS staffed transport vehicles should be loaded to full capacity with all RED patients and provided ALS level during transport, if possible.
  - When ambulance capacity is exceeded, alternative transport vehicles (buses, etc.) should be considered to move the less severely injured. EMS personnel should be assigned to the vehicles. *

*The number and level of certification of EMS providers assigned to transport vehicles will depend upon the need for immediate triage and treatment of victims who initially remain at the scene

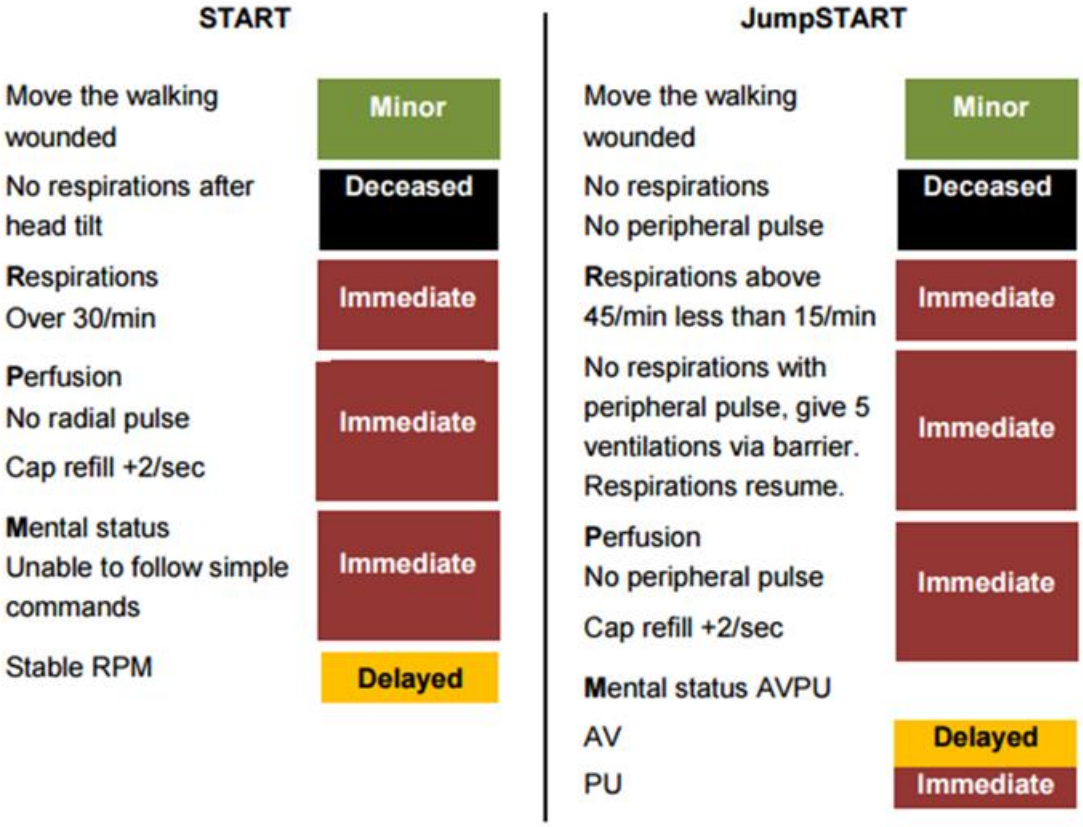
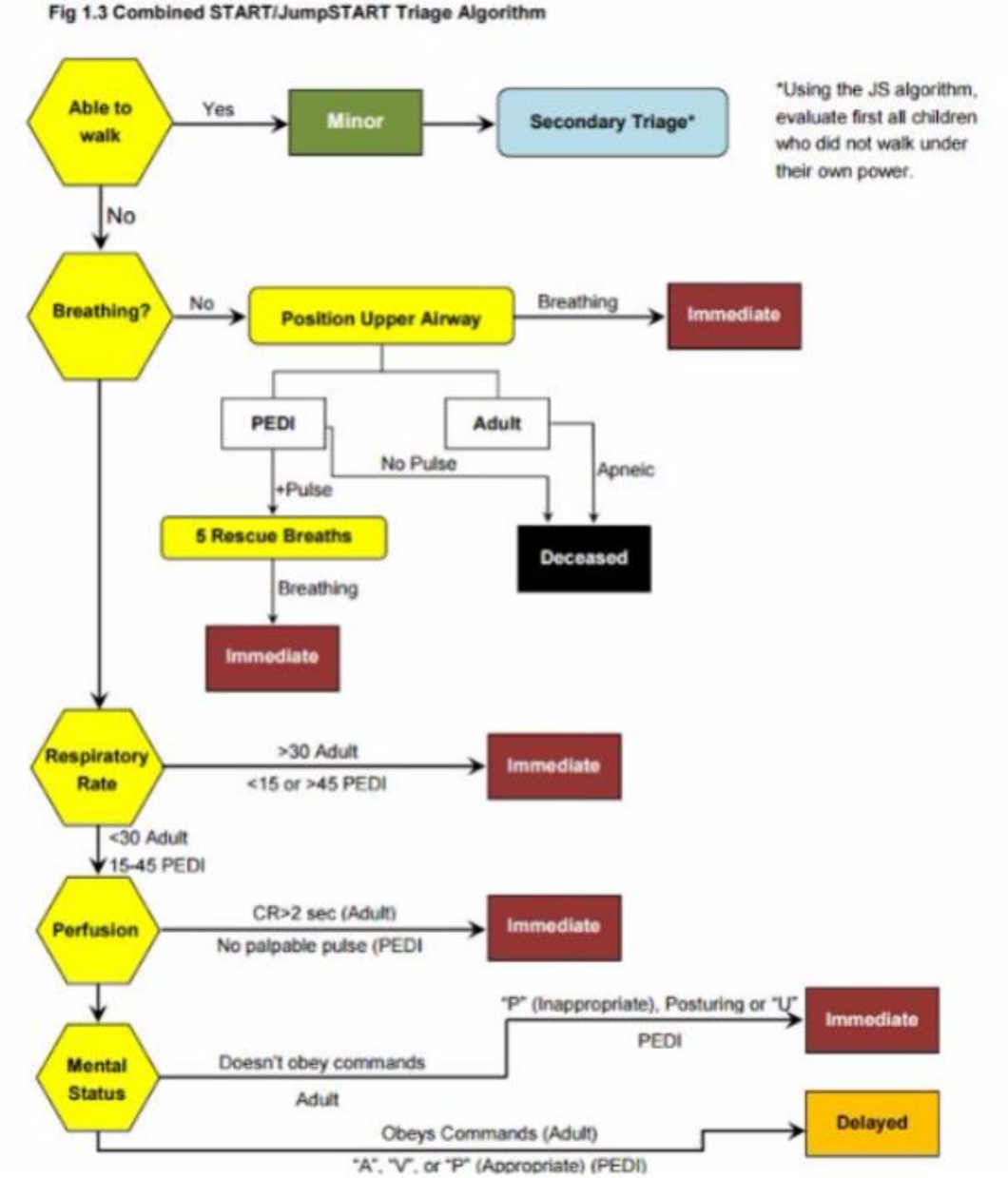
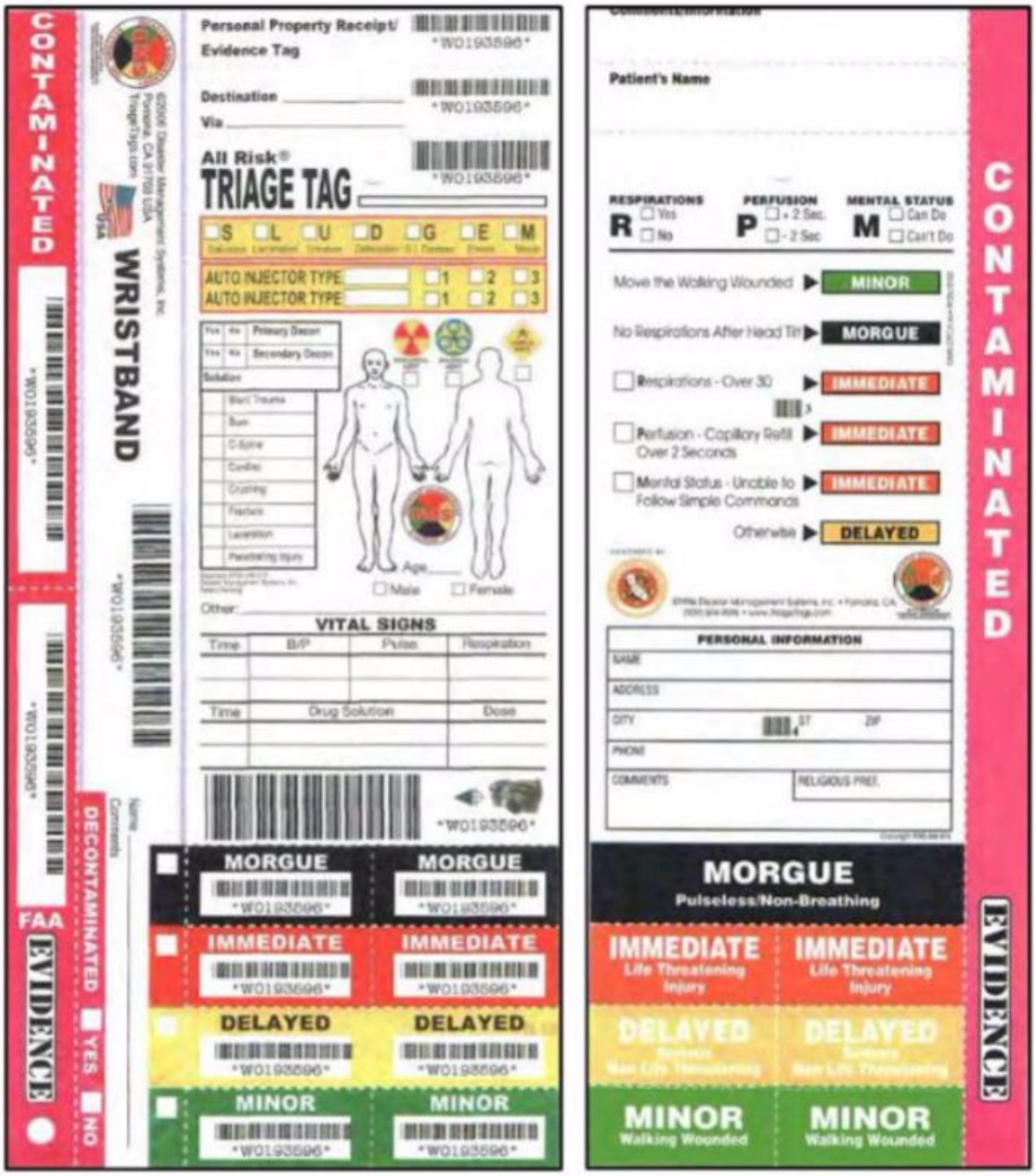

START
Move the walking wounded
Minor
No respirations after head tilt
Deceased
Respirations
Over 30/min
Immediate
Perfusion
No radial pulse
Cap refill +2/sec
Immediate
Mental status
Unable to follow simple commands
Immediate
Stable RPM
Delayed
JumpSTART
Move the walking wounded
Minor
No respirations
No peripheral pulse
Deceased
Respirations above 45/min less than 15/min
Immediate
No respirations with peripheral pulse, give 5 ventilations via barrier. Respirations resume.
Immediate
Perfusion
No peripheral pulse
Cap refill +2/sec
Immediate
Mental status AVPU
AV
Delayed
PU
Immediate

Fig 1.3 Combined START/JumpSTART Triage Algorithm




CONTAMINATED
WRISTBAND
FAA
EVIDENCE
DECONTAMINATED
YES
NO
Personal Property Receipt/
Evidence Tag
Destination
Via
All Risk®
TRIAGE TAG
AUTO INJECTOR TYPE
AUTO INJECTOR TYPE
Primary Decon
Secondary Decon
Solution
Blunt Trauma
Burn
C-Spine
Cardiac
Crushing
Fracture
Laceration
Penetrating Injury
Age
Male
Female
Other
VITAL SIGNS
Time
B/P
Pulse
Respiration
Time
Drug Solution
Dose
MORGUE
IMMEDIATE
DELAYED
MINOR
Patient's Name
RESPIRATIONS
PERFUSION
MENTAL STATUS
Move the Walking Wounded
MINOR
No Respirations After Head Tilt
MORGUE
Respirations - Over 30
IMMEDIATE
Perfusion - Capillary Refill Over 2 Seconds
IMMEDIATE
Mental Status - Unable to Follow Simple Commands
IMMEDIATE
Otherwise
DELAYED
PERSONAL INFORMATION
NAME
ADDRESS
CITY
ST
ZIP
PHONE
COMMENTS
RELIGIOUS PREF.
MORGUE
Pulseless/Non-Breathing
IMMEDIATE
Life Threatening Injury
DELAYED
MINOR
Walking Wounded
CONTAMINATED
EVIDENCE

Medical Control

Prehospital medical control is provided in Pend Oreille County via the Hospital Emergency Administrative Radio (H.E.A.R.) system and telephone communication systems. All practicing emergency physicians in Pend Oreille County are designated supervising physicians.

Radio Contact will be made between the EMS unit and the receiving hospital prior to arrival of the EMS unit at the hospital using the standard reporting format outlined under General Guidelines for All Patients.

Consultation with the receiving physician is available through the H.E.A.R system or direct telephone line. Direct contact with the receiving physician should be used when the need for medical advice arises.

On occasions when communications are not technically available or a supervising physician is not available, EMS personnel must rely on these policies, protocols, and their own judgement until communication can be established.

Medical Professionals at the Scene

Medical professionals at the scene of an emergency may provide assistance to paramedics and should be treated with professional courtesy. Medical professionals who offer their assistance should identify themselves. Physicians should provide proof of their identity if they wish to assume or retain the responsibility for the care given to the patient after the arrival of the EMS unit (see Relationship Between Advanced Life Support Team and Private Physician).

In addition to physicians, EMS personnel may encounter other health care professionals at the scene, such as physician's assistants, nurse practitioners, and nurses. In general, the following statements should guide the EMS personnel's interaction with other health care providers at the scene of an emergency:

- EMS personnel who arrive first on the scene and initiate care must continue treatment of the patient until the patient can be placed under the supervision of personnel with equal or greater competence.
- EMS personnel should not perform any procedure for which they do not possess training, certification, and fall within the guidelines of MPD protocols, even if they are requested to do so by another provider
- When there is lack of clarity as to whether a procedure is appropriate, EMS personnel should always contact medical control.
- When EMS personnel encounter physicians or other health care providers who insist on taking charge of patient care, they should contact medical control for instructions before releasing the patient.
- Well trained health care providers should be encouraged to assist when and where appropriate.

Medications and Allergies

All medications in these protocols are to be administered only after ascertaining that the patient is **NOT** allergic to them. In critical situations when the patient has an altered level of consciousness, emergency care providers should question family, friends, and look for medical alert identification and/or “Vial of Life” canisters.

Non-Transport of Patients

The decision to seek emergency medical services usually resides with the patient, family, or legal custodians. Similarly, the decision to transport or not to transport should reside with the patient, family, or legal custodian. Major trauma patients are an exception and shall be transferred per trauma triage procedures. In general, the only reasons for non-transport are:

- Signed refusal for transport completed by competent patient, family, or custodian.
- No patient.
- The emergency care provider may be of the judgement that the patient need not be transported by ambulance, but unless the patient and/or custodian agree with this judgement, transport will be done.
- If the patient has a well-established history of frequent EMS requests unsubstantiated by medical need and the on-scene medical evaluation does not identify a significant acute medical problem, the EMS provider may contact medical control to consider denying ambulance transport to the patient.

See next page for example form

CALL IDENTIFICATION

Patient Name_____Age_____

Call location _____Date _____ Time_____Unit#_____Agency Run # _____

PATIENT ASSESSMENT Chief Complaint____

VITAL SIGNS BP _____ Pulse_____ Resp _____

Oriented to: _____Person _____Place _____Time _____Situation

GENERAL ASSESSMENT

_____

_____

DISPOSITION

___ Patient transported by private vehicle.
___ Released in care or custody of self.
____Released in care or custody of relative or friend. _____
Name
___ Released in care or custody of other agency. _____
_____
Agency Name Name of Responsible Individual

PATIENT INSTRUCTIONS

___ Patient instructed to call 9-1-1 or follow up with his/her physician if condition persists or worsens.

Patient signature	Print patient name	Date	Time
Surrogate signature	Print surrogate name	Date	Time
Witness signature	Print witness signature	Date	Time
EMS personnel signature	Print EMS Personnel Name	Date	Time

On-Scene Medical Authority

Patient care at an incident is the subject to the following ascending order of authority:

- First responder (first arriving, on duty)
- Emergency Medical Technician (first arriving, on duty)
- Paramedic or flight nurse (first arriving, on duty)
- Physician on-scene with acceptance of “Thank You for Your Offer of Assistance” card, page 368.
- EMS supervising physician

Patient Treatment Rights

Pend Oreille County EMS guidelines and protocols are intended for use with a conscious and consenting patient, or an unconscious patient (implied consent). Patients refusing EMS care or transport represent a significant medical legal risk for EMS agencies and their personnel. Adherence to medical release principles will minimize liability and maximize patient care.

Medical release principles: The founding principle for medical release is informed consent by the patient. The patient cannot be held to have refused treatment or care unless and until:

1. The patient has been fully informed of their condition.
2. The patient fully understands the information provided on their condition and the potential consequences of refusing treatment or care.
3. A medical release form has been read to, understood, and signed by the patient.

Minimum medical incident report documentation:

- Patient history*
- Vital signs*
- Physical examination appropriate for the complaint*
- Mental status documented as “alert and oriented” and no significant impairment of mental status by drugs, alcohol, or other organic causes, or mental illness
- Informed consent: Risk of refusing care or transport explained to and understood by the patient
- Pend Oreille County Emergency Medical and Trauma Care Cancel/Refusal form signed by the patient and attached to the medical incident report (see next page for sample)

If a conscious patient who is irrational (or impaired by alcohol or drugs) or may harm themselves, refuses treatment, the emergency care provider should contact law enforcement.

*If these criteria cannot be met, document refusal by patient

CALL IDENTIFICATION

Patient Name_____Age_____

Call location _____Date _____ Time_____Unit#_____Agency Run # _____

PATIENT ASSESSMENT Chief Complaint____

VITAL SIGNS BP _____ Pulse_____ Resp _____

Oriented to: _____Person _____Place _____Time _____Situation

GENERAL ASSESSMENT

_____

_____

PATIENT INFORMED

____Medical Treatment/ambulance transport needed
____Further harm could result without medical evaluation/treatment
____Transport by other than ambulance could be hazardous in light of patient's illness/injury

SPECIFIC EMS SERVICE REFUSED

____Patient refused treatment
____Patient refused ambulance transport
____Patient refused ambulance transport to appropriate facility

PATIENT DISPOSITION

__ _Transported by private vehicle.
___ Released in care or custody of self.
____Released in care or custody of relative or friend. _____
Name
___ Released in care or custody of other agency. _____

_____
Agency Name Name of Responsible Individual

PATIENT INSTRUCTIONS

___ Patient instructed to call 9-1-1 or follow up with his/her physician if condition persists or worsens.

The following statement should be read to the patient:

The evaluation and / or treatment provided to you by the EMS providers is not a substitute for medical evaluation and treatment by a doctor. By signing this, you indicate that you understand the nature of the proposed care and transportation and that you fully comprehend the potential consequences of this refusal. And that you further attest that you are capable and authorized to make said refusal, that you do forever release and give up any claim, demand, or action against all Emergency Medical Services personnel and their agents and do hereby covenant and agree to hold such persons harmless from any claim, demand, loss, or action for any alleged act or omission in the care or transport in compliance with this refusal. This release is binding on your heirs, executors, and assigns.

Patient signature	Print patient name	Date	Time
Surrogate signature	Print surrogate name	Date	Time
Witness signature	Print witness signature	Date	Time
EMS personnel signature	Print EMS Personnel Name	Date	Time

Relationship Between EMS Team and Private Physician

When the patient's private physician is in attendance and has identified himself upon the arrival of the EMS team, the EMS team will comply with the private physician's instructions for the patient. The receiving hospital will be contacted for reporting an estimated time of arrival. If orders are given which are inconsistent with established protocols, clearance must be obtained through the supervising physician.

The physician at the scene may:

- Request to speak directly with the supervising physician to offer advice and assistance
- Offer assistance to the EMS team with another pair of eyes, hands or suggestions, leaving the EMS team under medical control
- Take total responsibility for the patient with the concurrence of the supervising physician

If, during transport, the patient's condition should warrant treatment other than that requested by the private physician, the supervising physician will be contacted using the H.E.A.R. system for information and concurrence with any treatment, except in cases of cardiopulmonary arrest.

The above "physician at the scene" will also apply to cases where a physician may happen upon the scene of a medical emergency and interacts with the EMS team. Show physician at the scene the "Thank You for Your Offer of Assistance" card, page 368.

Restraints for Aggressive or Violent Patients

The use of physical restraints for patients who pose a threat to themselves or others is indicated as a last resort. Physical restraint should be preceded by attempts at verbal control and only the least restrictive means of control necessary should be employed. If restraints are used, care must be taken to protect the patient from possible injury. When patient care and the provider's safety require the use of restraints, special precautions must be taken to reduce the risk of respiratory compromise. In addition, the combative behaviors requiring restraints may be associated with a syndrome of excited delirium posing an additional risk to the patient's health.

1. Request assistance from law enforcement and obtain necessary resources to manage scene and patient.
2. EMS personnel are not to knowingly place themselves at risk during the process of restraining a patient.
    a. Complete a visual check for potential weapons.
    b. If there is suspicion of weapon involvement, involve law enforcement prior to engaging in patient interaction.
    c. Providers should remove any potential weapons from their person (pens, flashlights, trauma shears, etc.) prior to engaging patient.
3. Assess patient for any condition that may contribute to violent behavior.
    a. Treatment for identified conditions is to be initiated per protocol immediately after controlling the situation and patient behavior.
4. Verbal de-escalation techniques are to be implemented and documented.
    a. If verbal de-escalation fails, providers may need to implement physical and/or chemical restraint measures.
5. Assign a contact for the out of control person.
    a. Minimize the number of people speaking to the person.
    b. Continue use of verbal de-escalation.
6. Designate who will direct and cue team members in application of restraints.
    a. Assign specific team members to head and each limb.
    b. Give the signal to go hands-on (this may be a non-verbal signal).
    c. Supervise the application of restraints.
    d. Give the verbal signal for hands-off (RELEASE).
    e. No team member is to release their designated limb until directed.
7. Conduct a preliminary debriefing.
    a. Assess team members and patient for any injuries.
    b. Reassess restraints for appropriate application.
8. Restraint equipment applied by EMS personnel must be padded leather or soft restraints (i.e. Posey, Velcro, or seat belt-type).
    a. Both methods must allow for quick release.
9. The application of any of the following forms of restraint **WILL NOT** be used by EMS personnel:
    a. Hard plastic ties or any restraint device requiring a key to remove;
    b. "Sandwiching" patients between backboards, scoop stretchers, or flat, as a restraint;
    c. Restraining a patient's hands and feet behind the patient (i.e. leg restraints);
    d. Other methods or materials applied in a manner that could cause respiratory, vascular, or neurological compromise.

10. Restraint equipment applied by law enforcement (i.e. handcuffs, plastic ties, or leg restraints) must provide sufficient slack in the restraint device to allow the patient to straighten the abdomen and chest and to take full tidal volume breaths.
    a. Restraint devices applied by law enforcement require the officer's continued presence to ensure patient and scene safety.
    b. The officer should, if possible, accompany the patient in the ambulance, or follow by driving in tandem with the ambulance on a predetermined route.
    c. A method to alert the officer of any problems that may occur during transport should be discussed prior to leaving the scene.
11. Patients should not be transported in the prone position (on their stomach) unless necessary to provide emergency medical stabilization.
    a. EMS personnel must ensure that the patient position does not compromise the patient's respiratory/circulatory systems or does not preclude any necessary medical intervention to protect the patient's airway should vomiting occur.
12. If providers are at risk of contamination by salivary and respiratory secretions from a combative patient, a protective device may be applied to the patient to help reduce the chance of disease transmission in this manner.
13. Perform blood glucose test. If blood glucose is <60, obtain blood sample and administer 50ml of 50% dextrose IV or glucagon 1mg IM.
14. Chemical restraints may be used to help control combativeness.
    a. Continued forceful struggling against the restraints can lead to hyperkalemia, rhabdomyolysis, or cardiac arrest.
    b. Administer 2.5mg of midazolam (Versed) q 3-5 minutes IV/IM, up to a maximum of 10mg.
15. RSI and chemical paralysis should be used as a last resort to allow for patient/provider safety and emergency patient care based on severity of illness and/or injury.
16. Restrained extremities should be evaluated for pulse quality, capillary refill, color, nerve and motor function every 15 minutes. It is recognized that the evaluation of nerve and motor status requires patient cooperation, and thus may be difficult or impossible to monitor.
17. The medical incident report shall document the following:
    a. The reason restraints were needed;
    b. The agency that applied restraints;
    c. The periodic extremity evaluation;
    d. The periodic evaluation of the patient's respiratory status.

Schedule II Medications

Each agency ordering their own controlled medications must be registered with the DEA. Registration is through the Medical Program Director (MPD).

Schedule II medications, such as fentanyl or morphine must be ordered using a DEA form 222. All schedule II medications may be logged on one sheet but must be separate from the schedule III and IV medications log sheet

Schedule III and IV medications (diazepam, lorazepam and midazolam) do not require the use for DEA form 222. These may not be ordered using a prescription form. Once credentials have been established (DEA registration number, name, address) agencies can work with the agency's pharmaceutical supplier using an invoice method to order schedule III or IV medications.

Disposal of waste and outdated controlled substances:

- Vials, ampules, and injections intended for single patient use that have been opened or partially used may be wasted. Use and wasting controlled medications must be documented on the patient care report and the controlled substances log and witnessed by two people.
- Outdated or unusable schedule II-IV medications must be disposed of by transferring them to a registrant who is authorized by the DEA to receive such materials. These registrants are referred to as Reverse Distributors. Schedule II controlled substances should be transferred via DEA form 222. Schedule III and IV compounds may be transferred via invoice. The MPD and Chief/Supervisor should maintain copies of the records documenting the transfer and disposal of controlled substances for two years. This requirement does not include the medications that were wasted after a single patient use. Agent or agency records must be kept for two years. Patient care records and agency-controlled medication logs document proof of disposal.
- DEA registered Reverse Distributors are listed in the MPD Controlled Substance guidelines, found in the reference documents section.

See page 338 for Controlled Substances Management Guidelines

Washington State Prehospital Trauma Triage Destination Procedure

See next page

Washington State Trauma Triage Destination Procedures

STEP 1

Measure Vital Signs & Level Of Consciousness

Glasgow Coma Scale	< 13 or
Systolic Blood Pressure	< 90 mmHg
Respiratory Rate	<10 or >29 per minute or need for Ventilator support (<20/min in infant aged < 1 year)

YES → Take patient to the system's* highest appropriate level Trauma Center within 30 minutes transport time (Air or Ground)

No

Assess Anatomy of Injury

STEP 2

- All penetrating injuries to head, neck, torso, and extremities proximal to elbow or knee
- Chest wall instability or deformity (e.g., flail chest)
- Two or more proximal long bone fractures
- Crushed, degloved, mangled, or pulseless extremity
- Amputation proximal to wrist or ankle
- Pelvic fractures
- Open or depressed skull fracture
- Paralysis

*"System" is defined as the Regional or Local EMS and Trauma System.

No

Assess Mechanism of Injury & Evidence of High-Energy Impact

STEP 3

- **Falls**
  - -Adults: > 20 ft. (1 story = 10 ft.)
  - -Children: ≥10 ft. or 2-3 times height of child
- **High-Risk auto crash**
  - -Intrusion, including roof >12 inches occupant site; >18 inches any site
  - -Ejection (partial or complete) from automobile
  - -Death in same passenger compartment
  - -Vehicle telemetry data consistent with a high risk injury
- **Auto vs. pedestrian/bicyclist thrown, run over, or with significant (>20 mph) impact**
- **Motorcycle crash > 20 mph**

YES → Transport to closest appropriate trauma center within 30 minutes transport time (Air or Ground), which, depending upon the defined trauma system, need not be the highest level trauma center

No

Assess Special Patient or System Considerations

STEP 4

- **Older Adults**
  - -Risk of injury or death after age 55 years
  - -**Systolic BP < 110** may represent shock after age 65
  - -Low impact mechanisms (e.g. ground level) fall may result in severe injury
- **Children**
  - -Should be triaged preferentially to pediatric capable trauma center
- **Anticoagulants and bleeding disorders**
  - -Patients with head injury are at high risk for rapid deterioration
- **Burns**
  - -Without other trauma mechanism, triage to burn facility
- **Pregnancy > 20 weeks**
- **EMS provider judgment**

YES → Contact medical control and consider transport to a trauma center or a specific resource hospital

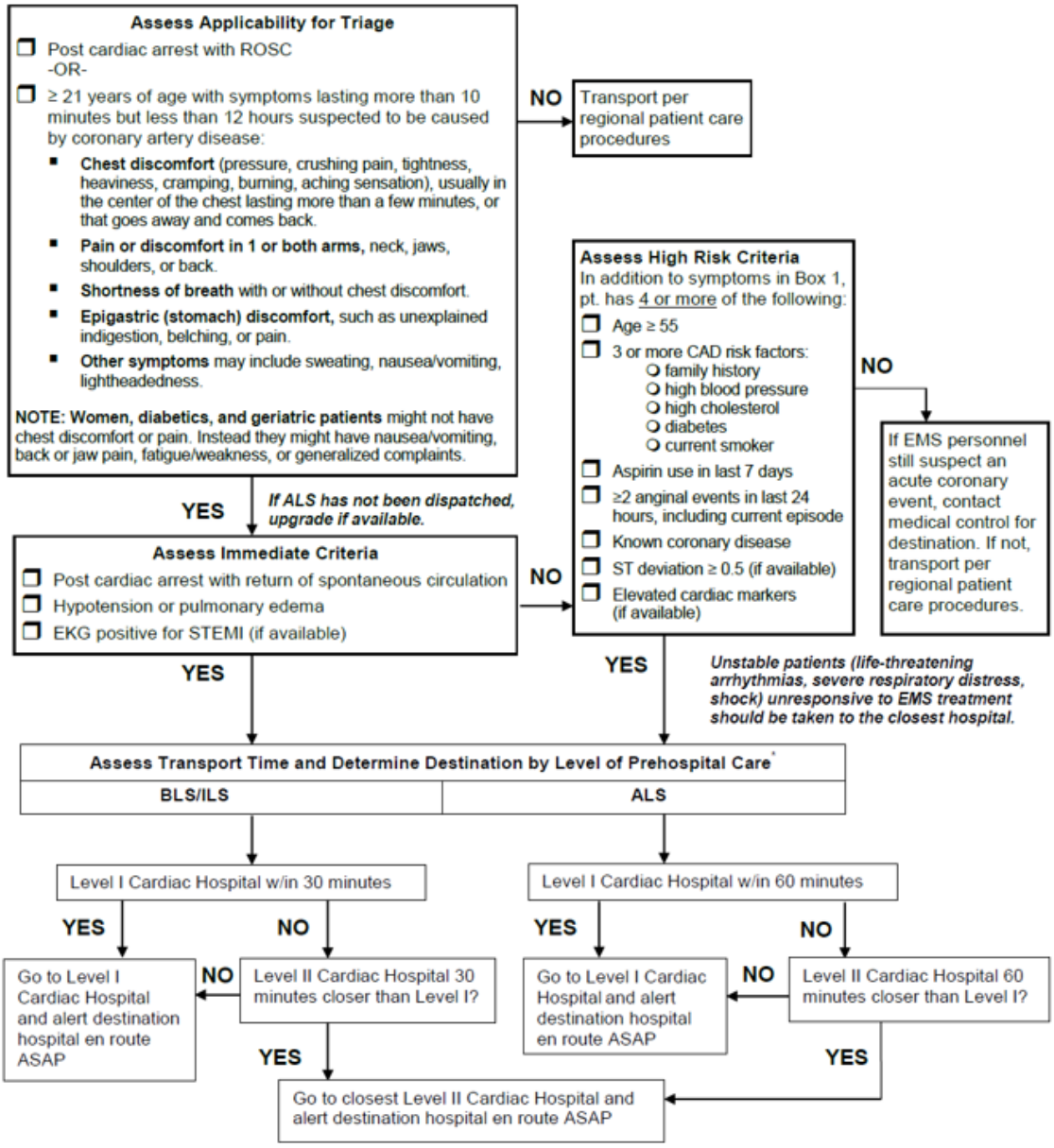
NO → Transport according to local protocol & Regional PCP

When in Doubt, Transport to a Trauma Center!

Washington State Prehospital Cardiac Triage Destination Procedure

See next page

State of Washington
Prehospital Cardiac Triage Destination Procedure



* **Slight modifications to the transport times may be made in county operating procedures. See page 2.**
Consider ALS and air transport for all transports greater than 30 minutes.
If there are two or more Level I facilities to choose from within the transport timeframe, patient preference, insurance coverage, physician practice patterns, and local rotation agreements may be considered in determining destination.
This also applies if there are two or more Level II facilities to choose from.

State of Washington
Prehospital Cardiac Triage Destination Procedure

Why triage cardiac patients?

The faster a patient having a heart attack or who's been resuscitated gets treatment, the less likely he or she will die or be permanently disabled. Patients with unstable angina and non-ST elevation acute coronary syndromes (UA/NSTE) are included in the triage procedure because they often need immediate specialized cardiac care. This triage procedure is intended to be part of a coordinated regional system of care that includes dispatch, EMS, and both Level I and Level II Cardiac Hospitals.

How do I use the Cardiac Triage Destination Procedure?

A. Assess applicability for triage – If a patient is post cardiac arrest with ROSC, or is over 21 and has any of the symptoms listed, the triage tool is applicable to the patient. Go to the "Assess Immediate Criteria" box. **NOTE:** Women, diabetics, and geriatric patients often have symptoms other than chest pain/discomfort so review all symptoms with the patient.

B. Assess immediate criteria – If the patient meets any one of these criteria, he or she is very likely experiencing a heart attack or other heart emergency needing immediate specialized cardiac care. Go to "Assess Transport Time and Determine Destination" box. If the patient does not meet immediate criteria, or you can't do an ECG, go to the "Assess High Risk Criteria" box.

C. Assess high risk criteria – If, in addition to meeting criteria in box 1, the patient meets four or more of these high risk criteria, he or she is considered high risk for a heart attack or other heart emergency needing immediate specialized cardiac care. These criteria are based on the TIMI risk assessment for unstable angina/non-STEMI. If the patient does not meet the high risk criteria in this box, but you believe the patient is having an acute coronary event based on presentation and history, consult with medical control to determine appropriate destination. High risk criteria definitions:

- ❒ 3 or more CAD (coronary artery disease) risk factors:
  - Age ≥ 55: epidemiological data for WA show that incidence of heart attack increases at this age
  - Family history: father or brother with heart disease before 55, or mother or sister before 65
  - High blood pressure: ≥140/90, or patient/family report, or patient on blood pressure medication
  - High cholesterol: patient/family report or patient on cholesterol medication
  - Diabetes: patient/family report
  - Current smoker: patient/family report.
- ❒ Aspirin use in last 7 days: any aspirin use in last 7 days.
- ❒ ≥2 anginal events in last 24 hours: 2 or more episodes of symptoms described in box 1 of the triage tool, including the current event.
- ❒ Known coronary disease: history of angina, heart attack, cardiac arrest, congestive heart failure, balloon angioplasty, stent, or bypass surgery.
- ❒ ST deviation ≥ 0.5 mm (if available): ST depression ≥ 0.5 mm is significant; transient ST elevation ≥ 0.5 mm for < 20 minutes is treated as ST-segment depression and is high risk; ST elevation >1 mm for more than 20 minutes places these patients in the STEMI treatment category.
- ❒ Elevated cardiac markers (if available): CK-MB or Troponin I in the "high probability" range of the device used. Only definitely positive results should be used in triage decisions.

D. Determine destination – The general guideline is to take a patient meeting the triage criteria directly to a Level I Cardiac Hospital within reasonable transport times. For BLS, this is generally within 30 minutes transport time, and for ALS, generally 60 minutes transport time. See below for further guidance. Regional patient care procedures and county operating procedures may provide additional guidance.

E. Inform the hospital en route so staff can activate the cath lab and call in staff if necessary.

What if a Level I Cardiac Hospital is just a little farther down the road than a Level II?

You can make slight changes to the 30/60 minute timeframe. The benefits of opening an artery faster at a Level I can outweigh the extra transport time. To determine whether to transport beyond the 30 or 60 minutes, figure the difference in transport time between the Level I Cardiac Hospital and the Level II Cardiac Hospital. For BLS, if the difference is more than 30 minutes, go to the Level II Cardiac Hospital. For ALS, if the difference is more than 60 minutes, go to the level II Cardiac Hospital.

BLS examples: A) minutes to Level I minus minutes to Level II = 29: go to Level I
B) Minutes to Level I minus minutes to Level II = 35: go to Level II

ALS examples: A) minutes to Level I minus minutes to Level II = 45: go to Level I
B) Minutes to Level I minus minutes to Level II = 68: go to Level II

NOTE: We recommend ALS use a fibrinolytic checklist to determine if a patient is ineligible for fibrinolysis. If ineligible, transport to closest Level I hospital even if it's greater than 60 minutes or rendezvous with air transport.

What if there are two or more Level I or II facilities to choose from?

If there are two or more of the same level facilities to choose from within the transport times, patient preference, insurance coverage, physician practice patterns, and local rotation agreements may be considered in destination decision.

Washington State Prehospital Stroke Destination Procedure

See next page

State of Washington
Prehospital Stroke Triage Destination Procedure

STEP 1: Assess Likelihood of Stroke

- Numbness or weakness of the face, arm, or leg, especially on one side of the body
- Confusion, trouble speaking, or understanding
- Trouble seeing in one or both eyes
- Trouble walking, dizziness, loss of balance, or coordination
- Severe headache with no known cause

If any of above, proceed to STEP 2, if none, transport per regional PCP/county operating procedures

STEP 2: Perform F.A.S.T. Assessment *(positive if any of Face/Arms/Speech abnormal)*

- **Face**: Unilateral facial droop
- **Arms**: Unilateral arm drift or weakness
- **Speech**: Abnormal or slurred
- **Time**: Best estimate of Time Last Known Well =_____

If FAST negative, transport per regional/county operating procedures

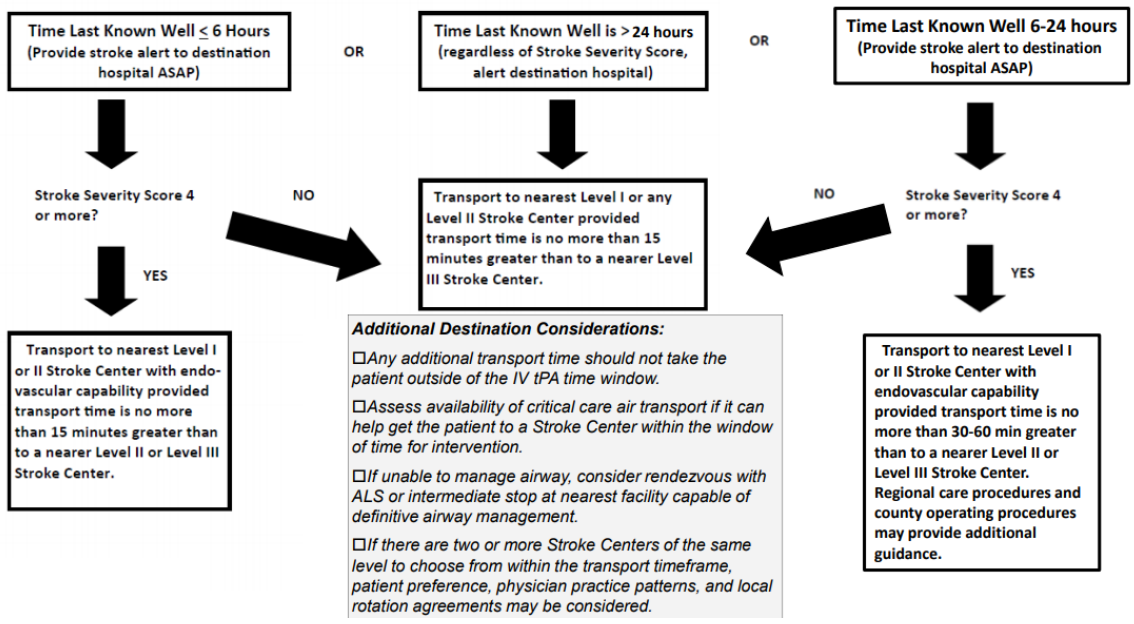
STEP 3: If F.A.S.T. Positive - Calculate Stroke Severity Score (LAMS)

Facial Droop:	Absent	0	Present	1		
Arm Drift:	Absent	0	Drifts	1	Falls Rapidly	2
Grip Strength:	Normal	0	Weak	1	No Grip	2
Total Stroke Severity Score =					**(max. 5 points)**	

STEP 4: Determine Destination: Time Last Known Well + Stroke Severity Score - ***See Back Page***

DOH 530-182 February 2019

STEP 4: Determine Destination: Time Last Known Well + Stroke Severity Score



The purpose of the Prehospital Stroke Triage and Destination Procedure is to identify stroke patients in the field and take them to the most appropriate hospital, which might not be the nearest hospital. Stroke treatment is time-critical – the sooner patients are treated, the better their chances of survival and recovering function.

For strokes caused by a blocked blood vessel in the brain (ischemic, the majority of strokes), clot-busting medication (tPA) must be administered within 4.5 hours from the time the patient was last known well, a treatment that can be given at WA DOH Level 1, 2 or 3 stroke centers

If a patient presents to EMS with a severe stroke, they are more likely to have blockage of a large vessel and can benefit from mechanical clot retrieval (thrombectomy). Thrombectomy must begin by 24 hours since last known well, and is a more complex intervention, only available in Level I and a small number of Level II stroke centers.
There are 3 key elements to determine the appropriate destination hospital:

- FAST stroke screen to identify a patient with a high probability of stroke.
- Stroke Severity Score to determine if a patient meets criteria for "severe" stroke.
- Time since Last Known Well (LKW) which helps determine eligibility for tPA and thrombectomy.

STEPS to determine destination:

- Do a FAST Stroke Screen Assessment: (Facial droop, Arm drift, Speech changes, Time since LKW) is a simple way to tell if someone might be having a stroke. If FAST is negative, stroke is less likely, and standard destination procedures apply. If FAST is positive (face or arms or speech is abnormal), it's likely the patient is having a stroke and the EMS provider moves on to assessing stroke severity.
- Assess severity: The stroke severity assessment scores the FAST stroke screen. Patients get points for deficits:
- Facial droop gets 1 point if present, 0 points if absent;
- Arm drift (have patient hold arms up in air) gets 2 points if an arm falls rapidly, 1 point if slowly drifts down and 0 points if the arms stay steady;
- Grip strength gets 2 points if no real effort can be made, 1 point if grip is clearly there but weak, and 0 points if grips seem of full strength.

Add up the points: A score > 4 is interpreted as "severe."
Determine time since LKW: It is important to use the LKW time as opposed to when symptoms were first noticed. If a patient woke up in the morning with symptoms and was well when they went to bed, time LKW is the time they went to bed. If stroke symptoms occur when the patient is awake, LKW could be the same time the symptoms started if the patient or a bystander noticed the onset. LKW time could also be prior to symptoms starting if a patient delays reporting symptoms or, for example, someone discovers a patient with symptoms but saw them well 2 hours prior.
Determine Destination:

- Time since LKW < 6 hours and "Severe" (score > 4): This group benefits from preferential transport to a thrombectomy stroke center. The patient should be taken directly to the nearest thrombectomy stroke center provided it is no more than 15 extra minutes travel compared to the nearest stroke center.
- Time since LKW is > 24 hours (regardless of severity score): These patients should be taken to nearest Level I or II stroke center provided it is no more than 15 minutes greater than to a nearer Level III stroke center.
- Time since LKW 6-24 hours but NOT "Severe": These patients should be taken directly to the nearest Level I or Level II stroke center provided it is no more than 15 extra minutes travel compared to a nearer Level 3 stroke center
- Time since LKW 6-24 hours AND "Severe": Transport to nearest Level I or II Stroke Center with endovascular capability provided transport time is no more than 30-60 min greater than to a

nearer Level II or Level III Stroke Center. Regional care procedures and county operating procedures may provide additional guidance.

Notification: Immediately notify the destination hospital of incoming stroke. If the patient is within 6 hours LKW, call a stroke alert according to county operating procedures or locally determined protocol. Document: key medical history, medication list and next of kin phone contacts; time on scene; FAST assessment and results (or reason why not); blood glucose level; LKW time (including unknown); and whether the hospital was notified from the field and if it was a stroke alert

Section 2: Procedure Protocols

AED/SAED Defibrillation Protocol

EMS providers in Pend Oreille County are authorized to deliver an unlimited number of counter shocks, for as long as the rhythm warrants shock and the unit continues to charge.

Everyone using an AED should strive to meet the following goals:

- CPR is interrupted for the minimum amount of time.
- V-fib is shocked repeatedly and as fast as possible.
- Overall patient care and safety are never neglected.

General Orders:

- Immediately verify cardiopulmonary arrest by the absence of consciousness, respirations, and pulse.
- If effective bystander CPR is not in progress, CPR should be performed until the AED is available and ready for use. As soon as the unit is retrieved, powered on and shock is advised, the shock should be delivered. Do not delay defibrillation to complete cycles of CPR.
- Initiate protocol

Operational Procedure:

1. Turn unit power on.
2. Attach defibrillator pads. Use pediatric pads (if available) for patients < 8 years of age.
3. Clear patient, press analyze button.
4. If there is a shockable rhythm present, the defibrillator will charge.
5. Ensure nobody is in physical contact with the patient and deliver the first shock.
6. Resume CPR immediately and continue for 2 minutes (or when instructed by AED to pause for rhythm check).
7. Clear the patient, press analyze button.
8. If shockable rhythm is present, the defibrillator will charge.
9. Ensure there is no physical contact with the patient and deliver the second shock.
10. Resume CPR immediately and continue for 2 minutes (or when instructed by AED to pause for rhythm check).
11. Clear the patient, press the analyze button.
12. If shockable rhythm is present, the defibrillator will charge.
13. Ensure there is no physical contact with the patient and deliver the third shock.
14. Resume CPR immediately and resume for 2 minutes.
15. Check for pulse. If none present, repeat steps 4-15 at 360 J (for biphasic unit, follow manufacturer's recommendations).
16. Continue until defibrillator no longer charges or ALS arrives.

Airway: Bag Valve Mask (BVM): Face and Thigh Squeeze Technique

1. Choose the correct size of mask and bag for the patient.
2. Select appropriate size of oropharyngeal airway and insert.
3. To hold mask firmly in position:
    a. Place heel of hand on top of mask or valve.
    b. Extend fingers and thumb straight forward. Use thumb and index finger in “C” position to hold mask in place.
    c. Lower hand to grasp jaw with middle two or 3 fingers.
4. Using head-tilt/chin-lift technique (if no possibility of cervical spine injury), open airway by sitting back on heels and tilting the head while lifting chin with the hand on the mask.
5. Squeeze knees together to keep patient’s head hyperextended. This helps stabilize the head and takes pressure off the hand holding the mask in place so that hand can maintain the seal. Be certain to apply pressure at the same angle of the mask to the face to get even distribution of pressure and a proper seal.
6. With your free hand, squeeze the bag against your thigh to cause the patient’s chest to rise, once every 6-8 seconds.
7. Release pressure on the bag and let the patient passively exhale and the bag refill from the atmosphere or oxygen source.

Airway: Capnography

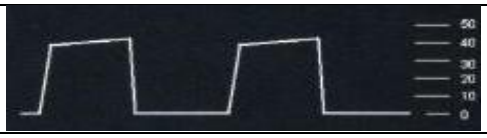
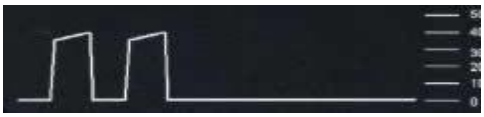
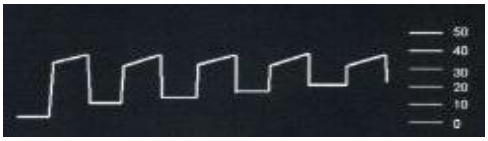
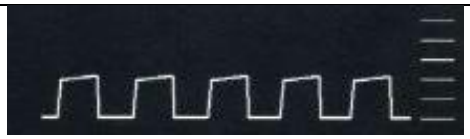
Clinical indications:

- ALL patients with endotracheal or supraglottic airways
- Non-intubated patients with severe respiratory distress/respiratory insufficiency
- Hypotensive patients
- Significant altered mental status (GCS < 10)
- Severe head injury
- As an adjunct to substantiate the futility of prolonged resuscitative efforts in cardiopulmonary arrest, a PCO_2 < 10 after 20 minutes of resuscitative efforts predicts non-survivability

Procedure:

1. For non-intubated patients with severe respiratory distress/respiratory insufficiency, place cannula-type sensor in patient's nares.
2. Attach capnography sensor to supraglottic airway or endotracheal tube.
3. Note CO_2 level and waveform changes. These will be documented on each respiratory failure or cardiac arrest patient.
4. The capnometer will remain in place with the airway and be monitored throughout prehospital care and transport
5. Any loss of CO_2 detection or waveform indicative of an airway problem should be documented.
6. The capnogram should be monitored as procedures are performed to verify or correct the airway problem.
7. Document the procedure and results in the patient care report.

See table next page

NORMAL: "Square box" waveform; baseline CO2 = 0; ETCO2 = 35-45 mm Hg Management: Monitor	
DISLODGED ETT / ESOPHOGEAL INTUBATION: Loss of waveform, Loss of ETCO2 reading Management: Replace ETT	
"SHARKFIN" with/without prolonged expiration = Bronchospasm (asthma, COPD, allergic rxn): Management: Bronchodilators (Albuterol, Atrovent, or epinephrine)	
RISING BASELINE = Patient is rebreathing CO2: Management: Check equipment for adequate oxygen inflow Allow intubated patient more time to exhale	
HYPERVENTILATION: Rapid RR; shortened waveform; baseline ETCO2 = 0; ETCO2 < 35 mm Hg Management: Biofeedback if conscious, decrease assisted ventilation rate if unconscious/intubated	
PATIENT BREATHING AROUND ET TUBE: angled, sloping downstroke on waveform Broken cuff or tube is too small Management: Assess patient, oxygenation, ventilation; may need to reintubate	

******Important: Severe metabolic acidosis (DKA, sepsis, salicylate poisoning, acute renal failure, methanol ingestion, tricyclic overdose) will cause tachypnea, but ETCO2 will be HIGH.******

Airway: Combitube

Clinical indications:

- Apneic patient when endotracheal intubation is not possible or readily available
- Patient must be > 5 feet and > 16 years of age
- Patient must be unconscious without a gag reflex
- No history of esophageal disease or caustic ingestion
- Failed airway protocol

Contraindications:

- Known esophageal disease
- Ingestion of a caustic substance

Procedure:

1. Do not delay patient care, primary BLS procedure, or transport to place device.
2. Pre-oxygenate and hyperventilate the patient.
3. Inflate both balloons prior to insertion to test integrity of balloons. If either fails, discard the tube.
4. Lubricate the tube.
5. Maintain the head in a neutral, inline position. Grasp the patient's tongue and jaw with your gloved hand and pull forward.
6. Gently insert the tube so the tube curves in the same natural curve of the larynx. If resistance is met, withdraw the tube and attempt to reinsert.
7. Advance the tube until the patient's teeth are between the printed rings.
8. Inflate line 1 (blue pilot balloon) leading to the pharyngeal cuff with 100cc of air (85cc for 37 Fr).
9. Inflate line 2 (white pilot balloon) with 15cc air (12cc for 37 Fr).
10. Begin ventilation through the longer blue tube labelled with a 1.
    a. Auscultate for breath sounds and over the epigastrium and look for chest rise.
    b. If breath sounds are positive and epigastric sounds are negative, continue ventilation through the blue tube. The tube is in the esophagus.
    c. In the esophageal position, stomach contents can be aspirated through the white tube, labelled 2, relieving gastric distension.
11. If breath sounds are negative and epigastric sounds are positive, attempt ventilation through the shorter, white tube labelled 2.
    a. Auscultate for breath sounds and over the epigastrium and look for chest rise.
    b. If breath sounds are positive and epigastric sounds are negative, continue ventilation through tube 2 (white, shorter). The tube is in the trachea.
12. If no breath sounds or chest rise noted with ventilation through either tube, turn on suction, turn patient on side deflate both balloons and carefully remove the Combitube. Return patient to supine position and hyperventilate the patient for at least 1 minute. Reinsert the Combitube starting with step 5.
13. The device is secured by the large pharyngeal balloon.
14. Confirm tube placement using end-tidal CO_2 detector.
15. Re-verify placement after every patient move and upon arrival to the emergency department.
16. The double lumen airway is a short-term device. It may be left in place for a maximum of 2 hours, unless otherwise instructed by the receiving physician.

Airway: Cricothyrotomy, Needle

Clinical indications:

- Failed airway protocol
- Management of an airway when standard airway procedures cannot be accomplished or have failed in a patient > 2 years of age

Procedure:

1. Have suction supplies ready, available and hooked up to suction machine.
2. Collect supplies, including the endotracheal adapter to a 3.0mm ED tube.
3. Locate the cricothyroid membrane utilizing anatomical landmarks.
4. Use the nondominant hand to secure the membrane.
5. Prep the area with antiseptic swab.
6. Using the syringe and the finder needle supplied in a commercial needle cricothyrotomy kit (or a 5cc syringe attached to a 10-14 G catheter-over-needle device, if needed), insert the needle through the cricothyroid membrane at a 45-60-degree caudal angle.
7. Aspirate for air with the syringe throughout the procedure.
8. Once air returns easily, stop advancing the device. If using a catheter-over-needle device, thread the catheter off the needle gently at a 60-degree caudal angle.
9. Attach the previously sized ET adapter to the end of the catheter and begin ventilation with BVM connected to high-flow oxygen source.
10. Auscultate for breath sounds. Make sure ample time is used not only for inspiration but for exhalation as well. A 1:6 ratio is not unreasonable.
11. Secure catheter by best method available, recognizing that this may be direct hands-on control of the device throughout the entire transport.
12. If unable to obtain adequate airway, resume basic airway management and transport the patient as soon as possible.
13. Regardless of success or failure of needle cricothyrotomy, notify the receiving hospital as early as possible of a surgical airway emergency.

Complications:

- Asphyxia
- Aspiration
- Cellulitis
- Esophageal perforation
- Hematoma
- Posterior tracheal wall perforation
- Subcutaneous and/or mediastinal emphysema
- Thyroid perforation
- Inadequate ventilations leading to hypoxia and death

Airway: Cricothyrotomy, Surgical

Clinical Indications:

- Failed airway protocol
- Management of an airway when standard airway procedures cannot be performed or have failed in a patient > 12 years old

Clinical contraindications:

- Significant trauma to the trachea or larynx suspicious of a tear or fracture
- Massive neck edema obstructing landmark identification
- Children less than 12 years of age
- Inability to effectively ventilate/oxygenate or suction after placement due to inadequate or inoperable equipment.

Procedure

1. Prepare and attach suction catheter. Have supplies ready and available.
2. Place patient supine with the neck in neutral position.
3. Locate the cricothyroid membrane using anatomical landmarks.
4. Prep the area with antiseptic swabs.
5. Stabilize the thyroid cartilage with the nondominant hand.
6. Identify the cricothyroid membrane and make a transverse incision in the skin with the scalpel.
7. Visualize the cricothyroid membrane and puncture with the introducer or scalpel.
8. Dilate the cricothyroid membrane using any of the following techniques: kit dilator, curved hemostats, or gloved finger. You may insert a skin hook and advance a Bougie through the incision with a curved tip directed towards the feet.
9. Insert a 5.5-6.5 endotracheal tube just until the cuff passes into the trachea. Be sure the cuff has cleared the cricothyroid space. If you've inserted a Bougie, pass the ETT over the top of the Bougie stylet.
10. Inflate the cuff with 5-10cc of air and ventilate the patient while manually stabilizing the tube.
11. Attach a bag valve mask to the tube and auscultate for breath sounds, observe for chest rise and fall, and attach and end tidal CO_2 detector.
12. Secure the tube.
13. Re-verify placement after any patient movement and upon arrival in the emergency department.

Airway: Difficult Airway Assessment

LEMON		
Physical signs	**Less difficult airway**	**More difficult airway**
L ook externally	• Normal face and neck • No face or neck pathology	• Abnormal face shape • Sunken cheeks • Edentulous • "Buck teeth" • Narrow mouth • Obesity • Face or neck pathology
E valuate the 3-3-2 rule	• Mouth opening >3F • Hyoid-chin distance >3F • Thyroid cartilage-mouth floor distance >2F	• Mouth opening <3F • Hyoid-chin distance <3F • Thyroid cartilage-mouth floor distance <2F
M allampati	• Class I and II (can see the soft palate, uvula, fauces +/- faucial pillars)	• Class III and IV (can only see the hard palate +/- soft palate +/- base of uvula)
O bstruction	• None	• Pathology within or surrounding the upper airway (e.g. peri-tonsillar abscess, epiglottis, retro-pharyngeal abscess)
N eck Mobility	• Can flex and extend the neck normally	• Limited ROM of the neck

Airway: I-gel Supraglottic Airway

Clinical indications:

- Apneic patient when endotracheal intubation is not possible or not available.
- Patient must be unconscious without gag reflex.
- No history of esophageal disease or acute caustic ingestion.
- Failed airway

Procedure:

1. Select the appropriate size i-gel.

I-gel size	Patient size	Patient weight
1	Neonate	4-11Lbs (2-5 kg)
1.5	Infant	11-26 Lbs (5-12 kg)
2	Small Pediatric	22-55 Lbs (10-25kg)
2.5	Large Pediatric	55-77Lbs (25-35kg)
3	Small Adult	66-132Lbs (30-60kg)
4	Medium Adult	110-198Lbs (50-90kg)
5	Large Adult +	198+Lbs (90+kg)

2. Lubricate with water-soluble jelly on the middle of the smooth surface and return to the cradle.
3. Pre-oxygenate the patient.
4. Grasp the lubricated i-gel firmly along the integral bite block. Position the device so that the i-gel cuff outlet is facing towards the chin of the patient.
5. The patient should be in the "sniffing" position with head extended and neck flexed.
    a. **If cervical injury is suspected, use modified "jaw thrust".** The chin should be gently pressed down before proceeding to insert the i-gel.
6. Introduce the leading soft tip into the mouth of the patient in a direction towards the hard palate.
7. Glide the device downwards along the hard palate with a continuous but gentle push until a definitive resistance is felt.

WARNING: *Do not apply excessive force on the device during insertion. It is not necessary to insert fingers or thumbs into the patient's mouth during the process of inserting the device. If there is early resistance during insertion, a "jaw thrust", insertion with deep rotation is recommended.*

8. At this point the tip of the airway should be located into the upper esophageal opening and the cuff should be located against the laryngeal framework. The incisors should be resting on the integral bite-block.

Post Placement:

1. Connect the i-gel to bag.
2. Auscultate breath sounds check for chest rise and confirm placement with end tidal CO2.
    a. Capnometer digital (preferred)
        i. Attach capnometer
        ii. Readings
            1. Head injuries (herniation) at 30-35 mm/Hg
            2. Severe asthma; intubated >50mm/Hg initially; maintain at 40 mm/Hg
            3. All other patients maintain at 35-40 mm/Hg
    b. Check for good waveform readings.

3. Secure the tube.
4. Monitor end-tidal carbon dioxide level and oxygen saturations.
5. Re-verify i-gel placement after every move and upon arrival in the emergency department.

Procedure – removal: Once it is in the correct position, the i-gel airway is well tolerated until the return of protective reflexes.

1. Ensure suctioning equipment is ready. Roll patient onto left side.
2. Remove the i-gel airway carefully, suctioning as needed.
3. Insert an oropharyngeal or nasopharyngeal airway as needed.
4. Continue ventilations with BVM and oxygen at 10-15 LPM as needed.
5. Document time of removal and ongoing reassessment values in the patient care report.

Airway: Intubation: Gum Elastic Bougie, Eschmann Catheter or Tracheal Tube Introducer

Technique:

1. Thoroughly pre-oxygenate the patient and use passive oxygenation during procedure.
2. Insert Bougie with bent end anterior under direct visualization or semi-blind using epiglottis as a guide.
3. With the tip directed anteriorly, guide the Bougie toward epiglottis.
4. Advance the Bougie posterior to the epiglottis and into the glottic opening.
5. Cricoid pressure may facilitate correct placement. When the tip of the introducer passes the cricoid cartilage, and enters the trachea, it may be palpable to the person applying pressure.
6. The operator may be able to feel the Bougie “click” or “bump” over the anterior tracheal rings (“wash boarding” or “railroading”).
7. Use the laryngoscope to elevate the pharyngeal soft tissue.
8. Subtle maneuvering may be required to pass through the vocal cords.
9. Advance to the carina (resistance to passage) to verify placement (approximately 45 cm). Once advanced to the carina, further insertion causes Bougie to rotate on entrance into a bronchus as an additional criterion to confirm correct placement. Failure to meet resistance after inserting nearly full length of the Bougie indicates esophageal placement. Withdraw and align the black lip-line marker with the lips (1cm band located 40cm from proximal end).
10. Pass endotracheal tube (larger than 6.0mm) over the Bougie.
11. If the ETT catches on arytenoid or aryepiglottic folds, withdraw the tube slightly, rotate it 90 degrees counterclockwise, and advance it forward (allows beveled end to pass).
12. For optimal passage of the tube over Bougie into trachea, the laryngoscope may be left in place as the ETT is advanced with the bevel facing posteriorly.
13. Secure the tube, remove the Bougie, and attach bag valve mask.
14. Auscultate for breath sounds and absence of epigastric sounds and apply end tidal CO_2 monitor.
15. Re-verify tube position after every patient movement and upon arrival to the emergency department.

Airway: Intubation, Nasotracheal

Clinical indications:

- A spontaneously breathing patient in need of intubation (inadequate respiratory effort, evidence of hypoxia or carbon dioxide retention, or need for airway protection)
- Patient older than 12 years of age

Procedure:

1. Premedicate the patient with oxymetazoline nasal spray (Afrin).
2. Select the largest and least obstructed nare and insert a lubricated nasal airway to help dilate the nasal passage.
3. Pre-oxygenate the patient.
4. Lubricate the tube with water soluble lubricant.
5. Remove the nasal airway and gently insert the tube with the bevel towards the septum.
6. Insert the tube along the floor of the nasopharynx, angling toward the posterior hypopharynx.
7. Continue to pass the tube while listening for air movement and looking for vapor condensation in the tube. As the tube approaches the larynx, air movement gets louder.
8. Open the patient's mouth to assure the tube is centered behind the uvula.
9. Gently and evenly advance the tube through the glottis opening on inspiration. The facilitates passage of the tube and reduces trauma to the vocal cords.
10. Upon entering the trachea, the tube may cause the patient to buck, gag, cough, or strain. **Do not remove the tube!** This is normal but be prepared to protect the cervical spine and the patient, and be alert for vomiting.
11. Inflate the cuff with 5-10cc of air and attach a bag.
12. Auscultate for breath sounds and absence of epigastric sounds. Observe for chest rise. Attach end tidal CO_2 monitor. The 15mm adapter usually rests close to the nare with proper positioning.
13. Secure the tube with tape or device.
14. Medicate the patient per physician order.

Airway: Intubation, Orotracheal

Clinical indications:

- Unconscious patient without a gag reflex who is apneic or demonstrating inadequate respiratory effort
- Any patient medicated for rapid sequence intubation

Estimating tracheal tube size and depth of insertion:

- Cuffed endotracheal tubes are recommended for patients of all ages provided attention is paid to endotracheal tube size, position, and cuff inflation pressure. **Keep cuff inflation pressure <20 cm H_2O or use minimally occlusive volume (MOV).**
- Color coded resuscitation tapes or pediatric references are recommended to be used routinely.
- Size (mm internal diameter) for children > 1 year of age= (age in years/4) + 3.
- Depth of insertion (cm) for children > 2 years of age= (age in years/2) + 12 -OR- tube internal diameter x 3.

Procedure:

1. Prepare all equipment and have suction hooked up and turned on. Inflate cuff to assess integrity of the tube. Lubricate tube with water-based lubricant.
2. Pre-oxygenate the patient.
3. Medicate per appropriate Rapid Sequence Intubation procedure.
4. Open the patient's mouth. Hold the laryngoscope in the left hand and insert the blade into the right side of the patient's mouth, sweeping the tongue to the left.
5. If using video assisted laryngoscopy, use as manufacturer has suggested and as instructed during training.
6. Use the blade to lift the tongue and epiglottis, either directly with the straight blade or indirectly with the curved blade. Lift in and "up and out" manner. **DO NOT** rock the blade on the patient's teeth.
7. Once the glottis opening is visualized, grasp the tube in your right hand and slip tube through vocal cords and continue to visualize until the tube is past the cords.
8. Number of attempts at ventilation shall not further compromise oxygenation. Oxygenate between each attempt and record SpO_2. If unable to intubate after two attempts, proceed to failed airway protocol.
9. Remove laryngoscope and stabilize tube manually while removing stylet. Inflate the cuff with 5-10cc of air (until no cuff leak) and attach bag valve mask.
10. Auscultate for bilateral breath sounds and absence of epigastric sounds. Attach end tidal CO_2 monitor. Secure the tube.
11. Document ETT size and placement location at the teeth (or gums if patient is edentulous).
12. Re-verify placement after every patient movement and upon arrival to the emergency department.
13. The number of attempts should not exceed 2 for a single provider or 3 attempts total if more than one provider is present. If unsuccessful after max number of attempts, focus on placement of rescue airway device or quality bag valve mask technique to provide oxygenation and ventilation.

Airway: King LTS-D

Clinical indications:

- Apneic patient when endotracheal intubation is not possible or readily available
- Respiratory arrest with absent gag reflex when endotracheal intubation is not possible or available
- Failed airway protocol
- No history of esophageal disease or caustic ingestion

Procedure:

1. Select appropriate tube size:
    a. 35-45 inches- #2 green
    b. 41-51 inches- #2.5 orange
    c. 4-5 feet- #3 yellow
    d. 5-6 feet- #4 red
    e. > 6 feet- #5 purple
2. Pre-oxygenate and hyperventilate patient with BVM.
3. Lubricate distal portion of the tube with water-based lube.
4. Draw up 60cc air in syringe and connect to pilot balloon. Inflate balloon to assess integrity, then deflate.
5. Maintain head in neutral, inline position.
6. Grasp patient's tongue and jaw with your gloved hand and pull up and forward.
7. Insert the tube into the corner of the mouth with the blue orientation line facing laterally until the teeth are between the 14-16cm lines.
8. Inflate the cuff with 60cc air and remove syringe from pilot balloon.
9. Connect BVM to tube and ventilate.
10. Auscultate for bilateral lung sounds and absence of epigastric sounds.
11. Check for chest rise and fall.
12. If above are present, secure tube with tape or commercial device.
13. Attach end-tidal CO_2 monitor.
14. Re-verify placement with every patient move and upon arrival to the emergency department.

Airway: Laryngeal Mask Airway (LMA)

Clinical indications:

- Apneic patient when endotracheal intubation is not possible or readily available
- Appropriate intubation is not possible due to patient access or difficult airway anatomy

This device does not prevent aspiration of stomach contents

Clinical contraindications:

- Pulmonary fibrosis
- Morbid obesity

Procedure:

1. Select appropriate size tube:
    a. Neonates/infants up to 5kg- 1 (max cuff inflation volume 4ml)
    b. Infants 5-10kg- 1.5 (max cuff inflation volume 7ml)
    c. Infants/children 10-20kg- 2 (max cuff inflation volume 10ml)
    d. Children 20-30kg- 2.5 (max cuff inflation volume 14ml)
    e. Children 30-50kg- 3 (max cuff inflation volume 20ml)
    f. Adults 50-70kg- 4 (max cuff inflation volume 30ml)
    g. Adults 70-100kg- 5 (max cuff inflation volume 40ml)
    h. Adults over 100kg- 6 (max cuff inflation volume 50ml)
2. Attach syringe with appropriate volume of air (see above list) and check integrity of balloon. Deflate the balloon against a flat surface to make sure the leading edge is smooth and wrinkle-free.
3. Lubricate posterior surface with water-soluble jelly.
4. Pre-oxygenate and hyperventilate patient.
5. With the mouth open as wide as you can get it, insert the LMA while pressing backwards and downwards until it seats in the hypopharynx and resistance is met.
6. Inflate the cuff until a seat is obtained. Do not exceed the maximum volume listed above.
7. Connect to BVM and ventilate the patient.
8. Auscultate for breath sounds and absence of epigastric sounds, and watch for chest rise. Attach end tidal CO_2 monitor.
9. Re-verify placement after every patient movement and arrival to the emergency department.

Airway: Nebulizer Inhalation Therapy

Clinical indications:

- Patient experiencing bronchospasm

Procedure:

1. Gather necessary equipment and medication.
2. Assemble the nebulizer kit.
3. Instill appropriate medication into the reservoir well of the nebulizer.
4. Connect the nebulizer device to oxygen at 6 liters per minute or adequate flow to produce a steady, visible mist.
5. Instruct the patient to inhale normally through the mouthpiece of the nebulizer. The patient needs to have good lip seal around the mouthpiece.
6. If the patient is unable to maintain good lip seal around the mouth piece, nebulizer may be connected to a face mask.
7. In the intubated patient, patient on non-invasive positive pressure ventilation, or bag valve mask, nebulizer should be placed in-line for effective medication delivery.
8. The treatment should last until the medication is depleted. Tapping the reservoir well near the end of treatment will assist in utilizing all the solution.
9. Monitor the patient for medication effects. This should include the patient's assessment of his/her response to treatment and reassessment of vital signs and breath sounds.

Airway: Non-invasive Positive Pressure Ventilation (NIPPV/CPAP)

Clinical considerations:

- Consider in respiratory distress in the conscious patient suffering from:
  - Presumed pulmonary edema
  - Severe reactive airway disease
  - Conditions reactive under medical management (e.g. hypoxemic respiratory failure)
  - Patients with respiratory compromise who are DNR/DNI
- Continue medical management of cardiogenic pulmonary edema while preparing and during use of NIPPV
- EMT and AEMT may perform with Washington DOH-approved training

Contraindications:

- Cardiac and/or respiratory arrest
- Hemodynamic instability/hypotension
- Facial trauma/surgery/deformity
- Known or suspected pneumothorax
- Chest trauma
- Upper airway obstruction
- Vomiting
- Pulmonary fibrosis
- Impaired consciousness and inability to protect airway

Procedure:

1. Assemble equipment and assure proper function.
2. Ensure adequate oxygen supply to ventilation device.
3. Assess and document initial SpO_2, work of breathing, and end tidal CO_2.
4. Explain the procedure to the patient.
5. Calmly and continuously reassure patient.
6. Consider placement of nasopharyngeal airway.
7. Place delivery mask over mouth and nose.
8. Secure mask with provided straps.
9. Begin with low pressure (5cm H_2O) and increase every 15 minutes as patient tolerates and/or the clinical situation dictates by 2.5 cm H_2O to a maximum to 10cm H_2O.
10. Frequently reassess patient's respiratory status and vital signs. If rapid improvement NOT noted, discontinue NIPPV/CPAP and manage airway by other means.
11. Notify receiving facility of NIPPV/CPAP use.
12. SVN can be used in-line in the NIPPV/CPAP circuit.
13. Discontinue and consider BVM ventilation or intubation if mental status declines significantly, blood pressure drips to < 90 systolic or hypoxia and/or respiratory fatigue worsen.

Airway: Passive Pre-Oxygenation Procedure

Clinical indications:

- To support and maintain oxygen saturation throughout airway procedure
- All rapid sequence intubations
- All conscious sedations

Procedure:

- Place a nasal cannula on all patients while preparing for RSI, with end tidal CO_2 monitoring, if available.
- For awake patients, set flow rate at 4-6 L/min.

1. **Low risk patients (SpO_2 96-100%)**
    a. Pre-oxygenation: non-rebreather mask (NRB) with normal flow.
    b. Induction: NRB and nasal cannula (NC) both set to 15 L/min.
    c. Intubation: NC kept at 15 L/min.
2. **High risk patients (SpO_2 91-95%)**
    a. Pre-oxygenation: NRB, CPAP, or BVM with PEEP valve.
    b. Induction: continue above plus nasal cannula at 15 L/min.
    c. Intubation: NC kept at 15 l/min.
3. **Hypoxemic (SpO_2 <90%)**
    a. Pre-oxygenation: CPAP or BVM with PEEP valve.
    b. Induction: continue above plus NC at 15L/min.
    c. Intubation: NC at 15 L/min.
4. Once tracheal intubation has been confirmed the nasal cannula may be removed.
5. Document what modalities were used for pre-oxygenation, induction and intubation.

Airway: Rapid Sequence Intubation

	Suspected Brain Injury	Without Suspected Brain Injury
INDICATIONS	• Need for airway control persistent GCS ≤ 8	
RELATIVE CONTRAINDICATIONS	• Patients with adequate Oxygenation • Patients with adequate ventilation • Patients who would be difficult to intubate • Patients with distorted facial or laryngeal anatomy • Known neuromuscular disease **Caution with Succinylcholine:** • Chronic renal failure and on dialysis • Patient or family history of malignant hyperthermia • Significant burns between 24 hours and 2 weeks old • Massive crush injury / suspected rhabdomyolysis	
PROCEDURE	• Pre-oxygenate with 100% O_2 via NRB or BVM. • Monitor oxygen saturation with pulse oximetry and cardiac rhythm with ECG. • Ensure functioning vascular access. • Evaluate for difficult airway (LEMON). • Prepare equipment (intubation kit, BVM, suction, RSI medications, alternate Airway devices/ adjuncts: Eschmann, cric kit, supraglottic airway.	
PREMEDICATE ADULT	Consider **Lidocaine** 1.5 mg/kg	None
PREMEDICATE PEDIATRIC	**Lidocaine** 1.5 mg/kg **Atropine** 0.02 mg/kg min dose 0.1mg	**Atropine** 0.02 kg/kg IV/IO min dose 0.1mg
SEDATE ADULT/PEDIATRIC	**Etomidate** 0.3 mg/kg IV/IO over 15 sec **OR** **Ketamine** 1-2 mg/kg IVP/IO **OR** **Midazolam 0.**1 mg/kg IV/IO, max 10 mg	
NEUROMUSCULAR BLOCKADE	**Rocuronium** 1 mg/kg IV/IO **OR** **Vecuronium** 0.01 mg/kg IV/IO **AND** **Succinylcholine** 1.5 mg/kg IV/IO/IM	**Succinylcholine** 1.5mg/kg IV/IO/IM **OR** **Rocuronium** 1 mg/kg IV/IO
CONTINUED MAINTENANCE/ SEDATION/	**Midazolam** 2.5 – 10 mg IV/IO, max 10 mg q 5-10 min PRN **OR** **Lorazepam** 1 – 2 mg IV/IO, max 2 mg q 5 min PRN **OR** **Diazepam** 2 – 5 mg IV/IO, max 5 mg q 5 min	

CONTINUED PARALYSIS IF INDICATED	**Rocuronium** 1 mg/kg IV/IO **OR** **Vecuronium** 0.1 mg/kg IV/IO

Airway: Suctioning, Basic

Clinical indications:

- Obstruction of the airway secondary to secretions, blood, vomitus, or any other substance in a patient who cannot maintain or keep their airway clear

Procedure:

Oropharyngeal

1. Ensure suction device is in proper working order with rigid suction tip in place.
2. Pre-oxygenate patient as much as possible.
3. Explain procedure to patient if they are coherent.
4. Examine the oropharynx and remove any potential foreign bodies or material that could occlude the airway if dislodged by the suction device.
5. Use suction device to remove any secretions, blood or other substances.
6. Be aware that a patient with altered mentation may bite on the catheter resulting in a foreign body obstruction.
7. The alert patient may assist with the procedure.
8. Reattach ventilation device (e.g. bag valve mask) and ventilate.

Nasopharyngeal

1. Ensure the suction device is in proper working order with flexible suction tip in place.
2. Lubricate end of suction catheter with water-based lubricant.
3. Pre-oxygenate the patient as much as possible.
4. Explain procedure to patient if they are coherent.
5. Examine the oropharynx and remove any potential foreign bodies or material that may occlude the airway if dislodged by suction device.
6. Insert the flexible catheter through the largest nare following the floor of the nasal passage, angling toward the posterior pharynx.
7. Use suction device to remove any blood, secretions, or other substance.
8. Reattach ventilation device (e.g. bag valve mask) and ventilate the patient.

Airway: Suctioning, Advanced

Clinical indications:

Obstruction of the airway secondary to secretions, blood, or other substance in a patient currently being assisted by an airway adjunct such as:

- Nasotracheal tube
- Endotracheal tube
- Supraglottic airway
- Tracheostomy tube
- Cricothyrotomy tube

May be performed by EMT or AEMT with Washington DOH-approved training.

Procedure:

1. Ensure suction device is in proper working order.
2. Collect supplies, including flexible suction catheter, sterile saline in container, clean gloves.
3. Pre-oxygenate the patient as much as possible. Do not over inflate the lungs.
4. Attach suction catheter to device, keeping end of catheter aseptic.
5. Measure length of catheter for proper depth of insertion based on type of device in place.
6. With the thumb port of the catheter uncovered, insert the catheter through the airway device.
7. Once the desired depth has been reached (measured in step 5, above), occlude the thumb port and remove the suction catheter slowly.
8. Interrupt ventilations for no more than 30 seconds.
9. Reattach bag or ventilator and ventilate patient.
10. Clear the suction catheter of thick secretions by aspirating sterile saline.
11. If thick secretions prevent effective suctioning, instill 3-5 cc of sterile saline in the tub and ventilate patient 3-4 breaths then repeat suctioning as described.
12. Document SpO_2 readings before and after suctioning in report.

Airway: Tracheostomy Tube Change

Clinical indications:

- Presence of tracheostomy site
- Urgent or emergent indications to change the tube, such as:
    - Obstruction that will not clear with suction
    - Dislodgement
    - Inability to oxygenate/ventilate the patient without other obvious explanation

Procedure:

1. Have all airway equipment prepared for standard airway management, including equipment for orotracheal intubation and failed airway.
2. Have airway device (endotracheal tube or tracheostomy tube of the same size as the current tracheostomy tube as well as 0.5 size smaller available (e.g. if the patient has a #6.0 Shiley, then have a 6.0 and a 5.5 tube ready).
3. Lubricate replacement tube and check the cuff.
4. Remove tracheostomy tube from mechanical ventilation devices and use a bag-valve apparatus to pre-oxygenate the patient as much as possible.
5. Once all equipment is in place, remove devices securing tracheostomy tube including sutures and/or supporting bandages.
6. If applicable, deflate the cuff on the tube.
7. Remove the tracheostomy tube.
8. Insert the replacement tube. Confirm placement via standard measures except for esophageal detection (which is ineffective for surgical airways).
9. If there is any difficulty replacing the tube, re-attempt with the smaller tube.
10. If difficulty is still encountered, use standard airway procedures such as oral bag valve mask or orotracheal intubation per protocol. **More difficulty with tube change can be anticipated in tracheostomy sites that are immature (i.e., less than 2 weeks old).**

Great caution should be exercised in attempts to change immature tracheostomy sites!

Airway: Ventilator Operation

Clinical indication:

- Transport of an intubated patient

Procedure:

1. Confirm placement of airway per airway protocol.
2. Ensure adequate oxygen delivery to the ventilation device.
3. Pre-oxygenate the patient as much as possible with BVM.
4. Per instructions on device, set initial values. For example, set inspiratory/expiratory ratio of 1:4 with a rate of 12-20, tidal volume 6-8 ml/kg.
5. Remove BVM and attach tube to ventilator device.
6. Assess breath sounds. Allow for adequate expiratory time. Adjust ventilator settings as clinically indicated.
7. Any worsening of patient condition, decrease in oxygen saturation, or any questions regarding the function of the ventilator, remove the ventilator and resume bag valve mask ventilations.

Airway: Video Assisted Laryngoscopy

Clinical indications

- Difficult airways
- Routine airways
- First-use intubations, replacing direct laryngoscopy
- Normal or restricted oropharyngeal views/ visualization and assessment of the oropharynx
- Trauma airways
- Airway management in morbidly obese patients
- Preterm and neonatal intubations
- Patients requiring cervical spine immobilization
- Supervision and documentation of the laryngoscopy
- Nasotracheal intubation
- Video-guided foreign body removal
- Awake intubation for difficult airway management
- Insertion of double lumen tubes

Procedure:

1. Prepare all equipment, activate video assisted laryngoscope, and prepare suction.
2. Pre-oxygenate the patient.
3. Medicate per appropriate RSI protocol.
4. Record and save intubation whenever possible.
5. Instrument oropharynx as manufacturer has suggested and has instructed during training. An endotracheal tube stylet specific for that laryngoscope may be needed.
6. Using the video laryngoscope, visualize the tube passing through vocal cords.
7. While stabilizing tube, remove the stylet and inflate the cuff (5-10cc until no cuff leak).
8. Auscultate for bilateral breath sounds and absence of epigastric sounds.
9. Attach end tidal CO_2.
10. Secure the tube using tape or commercially available device.
11. Repeat auscultation frequently, after any patient movement or manipulation of the tube.

Blood Product Administration

POLICY: **For inter-facility transfer only.** Only paramedics who have successfully completed MPD-approved training will be able to monitor the administration of blood products

Clinical indications:

- To replace blood loss while maintaining adequate circulating volume and oxygenation during transport
- To replace clotting factors or other life-saving blood products

Complications:

- Transfusion reactions may manifest as anaphylaxis with shortness of breath, hypotension with SBP < 90, tachycardia, angioedema, altered mental status, rash or fever. Severe reactions are usually manifested during the initial 50cc or less of infusion.
- Infusing too rapidly, producing a volume overloaded state

Equipment use:

- Infusion pumps may be helpful but are not required unless delivery is through a central venous catheter or pediatrics. **Blood administration sets will be provided by the hospital.**

Procedure:

1. Initial blood administrations will be started at the transferring hospital. All additional units must have the hospital nursing staff cross check for correct blood before accepting. The paramedic can begin administering a new bag that has been cross checked and verified by the transferring nursing staff.
2. Verify the physician order for blood product, blood type, rate of infusion and use of micro-aggregate or leukocyte removal filter.
3. Check for history of previous reaction to blood products and for pre-infusion symptoms that could be mistaken for transfusion reaction (i.e., fever, hypotension, tachycardia, shortness of breath, altered mental status or rash).
4. Assess baseline temperature and blood pressure prior to starting transfusion and at least every 15 minutes while blood is infusing and again when transfusion is completed (except albumin and plasma protein fraction). Vital signs must be documented.
5. Assess temperature and blood pressure every 15 minutes x 4 during intravenous gamma globulin administration.
6. Replace blood tubing after every 2 units or after 4 hours of use. Discard tubing immediately following completion of transfusion.
7. Monitor peripheral site and infusion system at least every 15 minutes during blood product administration.
8. For any suspected reaction:
    a. Stop transfusion, do not clear tubing.
    b. Recheck labels.
    c. Notify medical control.
    d. Remove bag and tubing; start isotonic saline.
    e. Monitor and treat symptoms of anaphylaxis.
    f. Collect urine specimen for receiving hospital. Keep containers available.
    g. Save blood bag and deliver to receiving hospital with urine specimen for further testing.

Blood Tube Information

Filling blood tubes in their correct order is essential. If you do not follow the proper sequence, the various anticoagulants may cause cross contamination resulting in erroneous test results. It is also essential to ensure the blood tubes have not expired prior to use.

- Blood should be injected into tubes within 1 minute and mixed gently (do not shake).
- Blood tubes should be fully filled in the following order:

Color of top	Additives
1. **Red**	None
2. **Blue**	Citrate
3. **Green**	Heparin
4. **Yellow/marble**	Clot activator
5. **Purple**	EDTA

- Use the following method of transporting field blood samples:
  - Label the blood tubes with patient's name, date, time of draw, and the initials and agency of the drawer.
  - Place the blood tubes in sealable plastic bag bearing biohazard logo and tape to patient's IV bag.

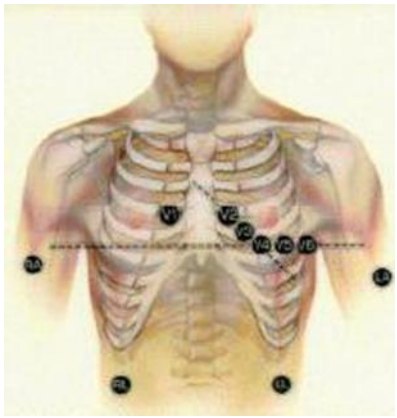
Cardiac: 12 Lead ECG

Clinical indications:

- Chest pain/upper abdominal pain in patients older than 35
- Suspected overdose
- Electrical injuries
- Syncope
- Suspected arrhythmias
- Suspected electrolyte imbalance

Procedure:

1. Assess patient and monitor cardiac status.
2. Administer oxygen as patient condition warrants.
3. Prepare ECG monitor and connect patient cable with electrodes.
4. Enter the required patient information (patient name, age, etc.) into the ECG device.
5. Expose chest and prep or shave as necessary. Modesty of the patient should be respected.
6. Apply leads using the following landmarks:
    a. RA- right arm
    b. LA- left arm
    c. RL- right leg
    d. LL- left leg
    e. V1- 4th intercostal space at right sternal border
    f. V2- 4th intercostal space at left sternal border
    g. V3- directly between V2 and V4
    h. V4- 5th intercostal space at left midclavicular line
    i. V5- level with V4 at left anterior axillary line
    j. V6- level with V5 at left midaxillary line



7. Instruct patient to remain still.
8. Press the appropriate button to record the 12 lead ECG.
9. If the monitor detects signal noise (such as patient movement or a disconnected electrode) the 12 lead will be interrupted until the noise is removed.
10. Contact receiving hospital to notify them that a 12 lead has been done.
11. Monitor the patient while continuing treatment protocol.
12. Download data and attach a copy to patient report.

I Lateral	aVR	V1 Septal	V4 Anterior
II Inferior	aVL Lateral	V2 Septal	V5 Lateral
III Inferior	aVF Inferior	V3 Anterior	V6 Lateral

Cardiac: Automatic Implantable Cardio Defibrillator (AICD) Deactivation

Clinical indications:

- Verified frequent and recurrent inappropriate AICD discharges
- End of life care
- During resuscitation
- External transcutaneous pacing
- Central line placement

Procedure:

1. Monitor rhythm (ECG) and verify triggering rhythm and inappropriate defibrillator discharge.
2. Record ECG rhythm before and after magnet application.
3. Identify location of AICD in chest wall.
4. Place magnet directly over AICD and secure in place.
5. Treat underlying rhythm.

Identification of AICD type and date of implantation should be found on wallet card with patient.

Note:

MAGNET INHIBITION:

In most devices, placing a magnet over a permanent pacemaker temporarily “reprograms” the pacer into asynchronous mode. It does not turn off the pacemaker. Each pacemaker type has a unique asynchronous rate for beginning-of-life (BOL), elective replacement indicator (EFI), and end-of-life (EOL). Therefore, if the device company parameters are known, application of a magnet can determine if the pacer’s battery needs to be replaced. Further interrogation or manipulating of the device should be performed by an individual skilled in the technique. If patient’s condition deteriorates with magnet in place, then remove magnet and reassess patient.

Although many different branded pacemaker/ICD magnets are available, in general any pacemaker/ICD magnet can be used to inhibit the device. When a magnet is applied to an ICD, it can temporarily turn off defibrillation therapy without affecting its pacemaker ability. Some devices can be programmed not to respond to a magnet.

Cardiac: Cardioversion, Synchronized

Clinical indications:

- **Unstable** patient with tachydysrhythmia (acute onset atrial fibrillation with rapid ventricular response, supraventricular tachycardia, ventricular tachycardia)
- Patient has a pulse (the pulseless patient requires unsynchronized cardioversion, i.e. defibrillation)

Procedure:

1. Ensure the patient is attached properly to a monitor/defibrillator capable of synchronized cardioversion.
2. Have all equipment prepared for unsynchronized cardioversion/defibrillation if the patient fails to respond to synchronized cardioversion and the condition worsens.
3. Consider the use of pain medication or sedation.
4. Set energy selection to appropriate level per AHA guidelines:
    a. For pediatrics, start with 0.5-1 J/kg, if unsuccessful increase to 2 J/kg.
    b. For adults with narrow complex regular rate, 50-100 J.
    c. For adults with narrow irregular rate, 120-200 J biphasic or 200 J monophasic.
    d. For adults with wide complex regular rate, 100 J.
5. Set monitor/defibrillator to synchronized cardioversion mode and charge.
6. Make certain all personnel are clear of patient.
7. Press and hold “shock” button to cardiovert. Stay clear of the patient until you are certain the energy has been delivered. NOTE: It may take the monitor/defibrillator several cardiac cycles to synchronize so there may be a delay between activating the cardioversion and the actual delivery of energy.
8. Note patient response and perform immediate defibrillation if the patient’s rhythm deteriorated into pulseless ventricular tachycardia or ventricular fibrillation. Follow procedure for defibrillation.
9. If the patient’s condition is unchanged, repeat steps 2-8 above, using appropriate energy level per AHA guidelines.
10. If the patient has not improved after two attempts of unsynchronized cardioversion/defibrillation, contact medical control.

Cardiac: Defibrillation, Manual

Clinical indications:

- Non-traumatic cardiac arrest with ventricular fibrillation or pulseless ventricular tachycardia

Procedure:

1. Clinically confirm the patient has no pulse and confirm on the monitor that the patient has ventricular fibrillation or ventricular tachycardia.
2. Apply defibrillation pads to the patient's chest in the proper position, assuring good skin contact.
3. Set the appropriate energy level according to AHA guidelines:
    a. Biphasic device: initial dose 120-200 J per manufacturer recommendations. If unknown, use maximum available. Second and subsequent doses should be equivalent, and higher doses may be considered.
    b. Monophasic device: 360 J.
    c. Pediatric patients: first shock 2 J/kg, second shock 4 J/kg, subsequent shocks $\geq$ 4 J/kg, maximum 10 J/kg or adult dose.
4. Charge defibrillator to selected energy level.
5. Assertively state "CLEAR" and visualize that no one, including yourself, is in contact with the patient.
6. Deliver the countershock by depressing the shock button.
7. Immediately resume CPR for 2 minutes.
8. Perform pulse and rhythm check and repeat the procedure as indicated by patient response and rhythm.
9. Document rhythm and response to defibrillation with rhythm strips in the patient record.

Cardiac: Transcutaneous Pacing

Clinical indications:

- Patients with bradycardia who are symptomatic or hemodynamically unstable

Procedure:

1. Oxygen, monitor and IV/IO should be in place prior to pacing.
2. Confirm the presence of bradycardia and evaluate patient's hemodynamic status.
3. Apply pacing pads to the patient's chest in either the anterior-posterior position (preferred) or the anterior-anterolateral position.
4. Attach the pacing pads to the therapy cable from the machine.
5. Consider the use of sedation and/or analgesia if the patient is uncomfortable.
6. Turn the pacer on.
7. Observe monitor screen for "sense" marker on each QRS complex. If a "sense" marker is not present, readjust QRS amplitude or select another lead.
8. Set desired pacing rate (60-80 bpm).
9. Start at the lowest setting and increase the current slowly while observing the monitor for evidence of electrical pacing capture.
10. Assess the patient's response to pacing therapy.
11. Document bradycardia and patient response to pacing with rhythm strips in the patient record.

Central Venous Device Access

Clinical indications:

- Need for vascular access using a patient's currently available accessible central venous device (multi-lumen lines, PICC lines, Hickman's and Groshong catheters, subcutaneous implanted port)

Accessing multi-lumen catheters:

1. Gather all equipment required: antiseptic, 10ml syringe normal saline (NS), IV solution and tubing, extra syringes.
2. Apply gloves.
3. If thumb or slide clamps are present, assure they are in the locked position before beginning. Clamps need to be closed before removing syringe or adapter from the hub. Always clean the hub with antiseptic while changing syringes or adapters.
4. Clean hub with alcohol swab and attach syringe of NS.
5. Flush with 5ml NS, aspirate for blood return, and flush with the remaining 5ml of NS.
6. Regardless of the type of PICC line access, if resistance is met, assume the lumen is obstructed and repeat procedure on second lumen if available. Also, repeat on the second lumen if aspirating for blood is unsuccessful.
7. If a clamp is present, close it, remove the syringe, clean the hub, attach a new syringe, open the clamp and aspirate 5 ml of blood to discard, close the clamp and remove the syringe.
8. Clean the hub, attach a new syringe, open the clamp and draw blood for labs. Close the clamp and remove the syringe.
9. Clean the hub, attach IV tubing, open the clamp and establish IV fluids at minimum TKO rate or desired infusion rate and secure the line.
10. Discontinue if complication occurs.

Accessing a subcutaneous implanted port:

1. Apply mask and regular gloves.
2. Palpate port to locate septum.
3. Cleanse area around port with three separate antiseptic swabs/pads.
4. Change to sterile gloves.
5. Palpate device to locate septum and stabilize device with thumb and index finger of non-dominant hand.
6. While stabilizing port, insert Huber needle at a 90-degree angle through skin into the septum. Apply pressure until needle meets metal backing of device.
7. Aspirate for blood to confirm placement. If no blood return, attempt to flush with saline and aspirate blood again.
8. Add new syringe of saline and flush with saline.
9. Assess for swelling around the device. If swelling occurs, STOP injection
10. Tape down Huber needle "wings".
11. Apply transparent dressing.

Chest, Needle Decompression

Clinical indications:

- Tension pneumothorax with hypoxia and/or hypotension and tachycardia. Some of the following findings may be present: tachypnea, cyanosis, hyper-expansion, jugular venous distension, tracheal deviation, subcutaneous emphysema, diminished breath sounds (usually unilateral).
- Suspect this condition in patients with chest trauma.
- Tension pneumothorax may develop sometime after the initiation of positive pressure ventilation. Close observation and reassessment of the patient during transport is critical.

Procedure:

1. Confirm presence of tension pneumothorax or identify strong clinical evidence in a rapidly deteriorating patient in the setting of major trauma. Consider in the setting of refractory PEA.
2. Locate the insertion site at the second intercostal space in the midclavicular line on the affected side of the chest. May consider fifth intercostal space in the midaxillary line.
3. Prep the insertion site with antiseptic swabs/pads.
4. Insert a 3.25-3.75 inch 10, 12, 14 or 16 gauge angiocath (or 1 ¼ inch 18 gauge angiocath in patients less than 8 years of age) with a 10cc syringe attached, by directing the needle just over the top of the third rib (second intercostal space) anteriorly or the fifth intercostal space in the midaxillary line. It is important to go just over the top of the rib to avoid the intercostal nerves and vessels which are located on the inferior rib borders.
5. Advance the catheter 1-2 inches (3/4 – 1 inch in patients less than 8 years of age) through the chest wall. Pull back on the plunger of the syringe as the needle is advanced. Tensions should be felt until the needle enters the pleural space. A “pop” or “give” may also be felt. DO NOT advance the needle any further.
6. Withdraw the needle and advance the catheter until flush with the skin. Listen for a gush or “hiss” of air, which confirms placement and diagnosis. Caution: this may not be heard due to ambient noise.
7. Dispose of the needle properly and **NEVER reinsert into the catheter**.
8. Secure the catheter and rapidly transport the patient providing appropriate airway assistance.

Childbirth and Fundal Massage

Clinical indications:

- Imminent delivery/ crowning

Procedure for childbirth:

1. Delivery should be controlled as to allow a slow controlled delivery of the infant. This will prevent injury to the mother and infant.
2. Support the infant's head and apply gentle counter pressure.
3. When head is delivered, have the mother stop pushing and check for the umbilical cord around the neck. If present, slip the umbilical cord over the infant's head. If unable to free the cord from the neck, double clamp the cord and cut between the clamps.
4. Suction the airway with bulb syringe, mouth then nose.
5. Grasping the head with hands over the ears, gently aim the head down to allow delivery of the anterior shoulder.
6. Once the anterior shoulder is delivered, gently aim the baby up to allow delivery of the posterior shoulder.
7. Slowly deliver the rest of the infant and place on mother's chest, skin to skin. Dry baby with towel or sheet, discard wet linens and cover baby with dry blanket or towel.
8. Clamp the umbilical cord 2-3 inches from the abdomen. Place a second clamp 3-4 inches from the abdomen and cut the cord between the clamps.
9. Record Apgar scores at 1 and 5 minutes.
10. Follow the newborn resuscitation/post-delivery care protocol.
11. The placenta will deliver spontaneously, usually within 5 minutes of the infant but may take up to 20 minutes. Do not force the placenta to deliver.
12. Place delivered placenta in plastic bag for transport.
13. Examine perineum for tears. Apply direct pressure with gauze to any bleeding tears. Do not pack vagina.
14. Estimate blood loss. Treat for hypovolemia, if needed.
15. Continue rapid transport to the hospital.

Procedure for fundal massage:

1. Only perform AFTER complete delivery of placenta.
2. Place absorbent material under pelvic of patient to facilitate estimation of blood loss.
3. Place the ulnar aspect of your nondominant hand perpendicular to the abdomen, parallel and superior to the symphysis pubis.
4. Exert moderate pressure up and in toward the spine.
5. Find the uterine fundus with your dominant hand (usually at or just below the umbilicus) and begin a "kneading" motion using moderate pressure.
6. This procedure will be uncomfortable to the patient but should not be painful.
7. Uterine massage should result in uterine contracture and the feeling of firm mass about the size of a grapefruit.
8. Continue until bleeding subsides.
9. Check frequently for bleeding and resume massage if bleeding reoccurs.

CPR

Table 2 Summary of High-Quality CPR Components for BLS Providers

Component	Adults and Adolescents	Children (Age 1 Year to Puberty)	Infants (Age Less Than 1 Year, Excluding Newborns)
Scene safety	Make sure the environment is safe for rescuers and victim		
Recognition of cardiac arrest	Check for responsiveness No breathing or only gasping (ie, no normal breathing) No definite pulse felt within 10 seconds (Breathing and pulse check can be performed simultaneously in less than 10 seconds)		
Activation of emergency response system	If you are alone with no mobile phone, leave the victim to activate the emergency response system and get the AED before beginning CPR Otherwise, send someone and begin CPR immediately; use the AED as soon as it is available	***Witnessed collapse*** Follow steps for adults and adolescents on the left ***Unwitnessed collapse*** Give 2 minutes of CPR Leave the victim to activate the emergency response system and get the AED Return to the child or infant and resume CPR; use the AED as soon as it is available	
Compression-ventilation ratio *without advanced airway*	***1 or 2 rescuers*** 30:2	***1 rescuer*** 30:2 ***2 or more rescuers*** 15:2	
Compression-ventilation ratio *with advanced airway*	Continuous compressions at a rate of 100-120/min Give 1 breath every 6 seconds (10 breaths/min)		
Compression rate	100-120/min		
Compression depth	At least 2 inches (5 cm)*	At least one third AP diameter of chest About 2 inches (5 cm)	At least one third AP diameter of chest About 1½ inches (4 cm)
Hand placement	2 hands on the lower half of the breastbone (sternum)	2 hands or 1 hand (optional for very small child) on the lower half of the breastbone (sternum)	***1 rescuer*** 2 fingers in the center of the chest, just below the nipple line ***2 or more rescuers*** 2 thumb–encircling hands in the center of the chest, just below the nipple line
Chest recoil	Allow full recoil of chest after each compression; do not lean on the chest after each compression		
Minimizing interruptions	Limit interruptions in chest compressions to less than 10 seconds		

*Compression depth should be no more than 2.4 inches (6 cm).

Abbreviations: AED, automated external defibrillator; AP, anteroposterior; CPR, cardiopulmonary resuscitation.

Discontinuation of CPR, Do Not Attempt Resuscitation, Determination of Field Death

DO NOT ATTEMPT RESUSCITATION: Obvious death

- Decomposition of body tissue
- Total decapitation
- Total incineration
- Total separation or destruction of the heart or brain
- Fetus with length of 33mm or less
- Traumatic arrest (pulseless, not breathing)
- Rigor mortis

POLST form or DNR papers are dated and signed by the patient with appropriate witnesses' signatures and there is no question they belong to the patient. The patient may be of any age.

DISCONTINUATION WITHOUT MEDICAL CONTROL: (must meet 3 requirements)

- Pulseless
- Not breathing
- Asystole in two leads **OR** "no shock advised" on AED
- Lividity

Exception: suspected hypothermia requires full resuscitation

DISCONTINUATION OF EFFORTS:

- Endotracheal intubation and drug therapy appropriate to the presenting rhythm, according to AHA guidelines, have been initiated and the patient remains apneic, pulseless, and in asystole or PEA.
- Failure to achieve end-tidal CO_2 of greater than 10 mmHg after 20 minutes of good quality CPR in an intubated patient.
- Compelling reasons to withhold CPR/resuscitation efforts. Such as, but not limited to:
    - End stage of terminal condition
    - Living will
    - Verbal request by family
- DNR or POLST form has been presented after CPR was initiated

NOTE: Prehospital providers desiring support in the field may contact Medical Control at any time for determination of death.

Once death has been determined and resuscitation efforts discontinued, all ALS therapeutic modalities initiated during the resuscitation must be left in place until it has been determined that the patient will not be a coroner's case. This includes such equipment as endotracheal tubes, IV catheters, monitor electrodes and personal items such as clothing, jewelry, etc. If the coroner releases the body while prehospital care providers are still on scene remove all medical equipment used during the resuscitation.

Record time of death in the patient record.

Endotracheal Drug Administration

If endotracheal tube has been placed and venous access is delayed, the following drugs may be administered via the endotracheal tube:

- N Narcan (naloxone)
- A atropine
- V Versed (midazolam)
- E epinephrine
- L lidocaine

Adult:

- Medications should be administered at twice (2X) the recommended IV dose.
- Medications should be diluted to a total of 10ml with normal saline or distilled water.
- Pass a catheter beyond the tip of the endotracheal tube, at which point chest compressions should be stopped.
- The drug solution should be sprayed quickly down the endotracheal tube and several quick insufflations should be administered with bag valve mask to aerosolize the medication and hasten absorption.
- Chest compressions should be withheld during insufflations and restarted immediately afterwards.

Pediatrics:

- The same medications can be administered via the endotracheal tube. However, the pediatric dose of epinephrine is tenfold greater, or 0.1 mg/kg.
- To avoid high volumes, the 1:1000 solution should be used and diluted to a total of 3ml with normal saline.

Failed Resuscitation: Considerations for Family Support

- If the resuscitation is underway and the outlook is poor, prepare the family by telling them so.
- At the moment of calling the code, let the family know with no uncertainty that death has occurred. Use the words “death” or “dead”. Do not use euphemisms, such as “passed on”, “passed away”, or “gone”.
- If you can do so with honesty, tell the family the following:
    - You did all you could and were successful in doing the procedures that could have helped but the efforts were to no avail.
    - This death was not preventable and that in this case, even were the patient to be in the intensive care unit when it happened the result would have been the same.
    - The patient did not suffer- death was quick and painless.
- To the best of your ability, offer words of condolence.
- Make physical contact with the family members, if you are comfortable doing so
- Offer to contact family, friends or clergy to provide immediate support.
- Answer any questions the family may have.
- Allow family members to view the body if they desire but discourage their observation of the resuscitation process.
- Remain with the family to show your respect and concern, as long as other emergency responsibilities do not call you away.

FAST Assessment for Stroke

Clinical indications:

- Suspected stroke patient

Procedure:

1. Assess and treat suspected stroke patients per protocol.
2. Use FAST assessment to evaluate three major physical findings to identify a stroke patient who requires rapid transport to the hospital.
3. If possible, prehospital care providers should establish the time of onset of stroke signs and symptoms, or the last time the patient was seen “normal”.

Stroke test:

1. **Facial droop**- Have the patient show their teeth or smile.
    a. Normal- both sides of the face move equally.
    b. Abnormal- One side of the face does not move as well as the other.
2. **Arm drift**- Have the patient close their eyes and hold both arms straight out with palms upward.
    a. Normal- both arms move the same direction and remain in position.
    b. Abnormal- one arm does not move or one arm drifts down compared to the other.
3. **Speech**- Have the patient say “You can’t teach an old dog new tricks”.
    a. Normal- patient uses correct words without slurring.
    b. Abnormal- patient slurs their words, uses inappropriate words, or is unable to speak.
4. **Time**- Identify the time of onset or time last seen normal.

Any positive findings in steps 1-3 may indicate stroke and you should consider activating code stroke per county operating procedure.

Report specific findings to receiving hospital, for example, left side facial droop or slurred speech.

Glucometry

Clinical indications:

- Patients with known or suspected hypoglycemia (diabetic emergencies, diaphoresis, bizarre behavior, etc.)
- Patients with altered mental status

Procedure:

1. Gather and prepare equipment.
2. Blood samples for performing glucose analysis should be obtained per device manufacturer's recommendations.
3. Place correct amount of blood on reagent strip or site on glucometer per manufacturer's instructions.
4. Time the analysis as instructed by manufacturer.
5. Document reading and treat as indicated.
6. Repeat glucose analysis as indicated for reassessment after treatment and document patient response to treatment.
7. Follow manufacturer instructions for device calibration.

Glasgow Coma Score/Scale

Glasgow Coma Score		
Infants		**Children/Adults**
Eye Opening		
Spontaneous	4	Spontaneous
To speech/sound	3	To speech
To pain	2	To pain
No response	1	No response
Verbal Response		
Coos or babbles	5	Oriented
Irritable crying	4	Confused
Cries to pain	3	Inappropriate words
Moans to pain	2	Incomprehensible
None	1	None
Motor Response		
Spontaneous	6	Obeys commands
Withdraws touch	5	Localizes pain
Withdraws pain	4	Withdraws pain
Abnormal flexion	3	Abnormal flexion
Abnormal extension	2	Abnormal extension
No response	1	No response

Helmet Removal from Injured Patients

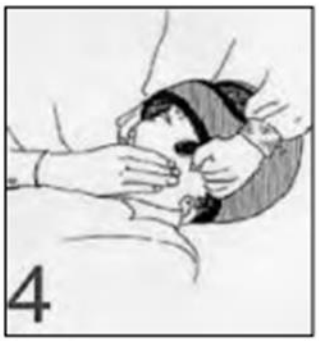
The varying sizes, shapes, and configurations of motorcycle and sports helmets necessitate some understanding of their proper removal. The rescuer who removes a helmet improperly may unintentionally aggravate cervical spine injuries.

The Committee on Trauma has concluded that physicians who treat the injured should be aware of helmet removal techniques. A gradual increase in the use of helmets is anticipated because many organizations are urging voluntary wearing of helmets and some states are instating laws requiring the wearing of helmets.

One rescuer maintains inline immobilization by placing their hands on each side of the helmet with the fingers on the victim's mandible. This position prevents slippage if the strap is loose.

A second rescuer cuts or loosens the strap at the D-rings.

The second rescuer places one hand on the mandible at an angle, the thumb on one side, the long and index fingers on the other. With their other hand, they apply pressure from the occipital region. This maneuver transfers the inline immobilization responsibility to the second



The rescuer at the top removes the helmet. Three Factors should be kept in mind:

- ✓ If the helmet is egg shaped, it must be expanded laterally to clear the ears
- ✓ If the helmet provides full facial coverage, glasses must be removed first
- ✓ If the helmet provides full facial coverage, the nose may impede removal. To clear nose, the helmet must be tilted backward and raised over it.

Throughout the removal process, the second rescuer maintains inline immobilization from below to prevent unnecessary neck motion.

After the helmet has been removed, the rescuer at the top places their hands on either side of the victim's head with their palms over the patient's ears.

Maintain inline immobilization from above until a backboard is in place and a cervical immobilization device (collar) is applied.

Summary:

- The helmet must be maneuvered over the nose and ears while head and neck are held rigid.
    - Inline immobilization is first applied from above.
    - Inline immobilization is applied from below by a second rescuer with pressure on the jaw and occiput.
    - The helmet is removed
    - Inline immobilization is reestablished from above.

Special considerations regarding football helmets:

- When to remove the helmet:
    - The Inter-Association Task Force (IATF) recommends that neither the football helmet nor the shoulder pads be removed before transportation.
    - The IATF recommends that only the facemask be removed, unless the rescuer is unable to access the airway by any other means or if the helmet does not adequately secure the head.
    - By removing only the facemask and not the entire helmet, the spine will remain in a neutral position.

- Guidelines for removal: The helmet should be removed on the field only under any of the following circumstances.
    - If, after a reasonable period, the facemask cannot be removed to gain access to the airway.
    - If the design of the helmet and chin strap is such that even after removal of the facemask the airway cannot be controlled or ventilation provided.
    - If the helmet and chin straps do not hold the head securely such that immobilization of the helmet does not also immobilize the head.
    - If the helmet prevents immobilization for transport in an appropriate position.

- How to remove the helmet:
    - The IATF recommends that the helmet be removed in a controlled environment after radiographs have been obtained and only by qualified medical personnel with training in equipment removal.
    - Helmet removal should never be attempted without thorough communication among all involved parties.

- One person should stabilize the head, neck and helmet while another person cuts the chinstrap.
- Accessible internal padding (cheek pads) should be removed and air padding should be deflated before removal of the helmet while a second assistant manually stabilizes the chin and occiput in a cephalad direction while making sure to maintain the athlete's position.
- The pads are removed through the insertion of a tongue depressor or a similar stiff flat-bladed object between the snaps and the helmet shell to pry the cheek pads away from their snap attachment.
- The helmet should slide off the occiput with slight forward motion of the helmet.
- If the helmet does not move, slight traction can be applied to the helmet which can then be gently maneuvered anteriorly and posteriorly, although the head/neck unit must not be allowed to be moved.
- The helmet should not be spread apart by the ear holes, as this maneuver only serves to tighten the helmet on the forehead and occiput region.

- When to remove the shoulder pads: Possible situations in which removal of shoulder pads would be necessary before transport to an emergency facility may include, but are not limited to, the following:
  - The helmet is removed.
  - Multiple injuries require full access to the shoulder area.
  - Ill-fitting shoulder pads cause the inability to maintain spinal immobilization.
  - Studies have shown excess movement in the cervical spine when helmet or shoulder pads are removed alone, thus helmet and shoulder pads must be removed simultaneously to avoid cervical hyperextension and maintain in-line neutral stabilization.
  - Concerns regarding the removal of equipment include:
    - The ability to maintain neutral spinal alignment.
    - The ability to secure rigid fixation of the athlete to the board.
    - A guarantee of access to the airway and to the chest for resuscitation efforts.

The IATF recommends that neither the football helmet nor the shoulder pads be removed before transportation. Furthermore, the simultaneous removal of the helmet and shoulder pads is best done in a controlled environment.

- How to remove the shoulder pads:
  - Cut the jersey and all other shirts from the neck to the waist and from midline to the end of each sleeve.
  - Cut all the straps used to secure the shoulder pads to the torso.
  - Cut all straps used to secure the pads to the arms.
  - Cut all the laces and straps over the sternum. A consistent manufactured characteristic of shoulder pads is the mechanism to attach the two halves of the shoulder pad unit on the anterior aspect. This lace or strap system allows for quick and efficient access to the anterior portion of the chest.
  - Cut and/or remove all accessories, e.g., neck rolls or collars, so they can be removed simultaneously with the shoulder pads. Release the shoulder pads allowing for full access to chest, face, neck, and arms. The posterior portion of the shoulder pads helps to maintain spinal alignment when the helmet and shoulder pads are in place.

- A primary responder maintains cervical stabilization in a cephalad direction by placing his or her forearms on the athlete's chest while holding the maxilla and occiput.
- With responders at each side of the athlete their hands are placed directly against the skin in the thoracic region of the back.
- Place additional support at strategic locations down the body as deemed appropriate taking into consideration the size of the patient.
- While the patient is lifted, the individual who oversaw the head/shoulder stabilization should remove the helmet and immediately remove the shoulder pads by spreading apart the front panels and pulling them around the head.
- Remove all shorts, jerseys, neck rolls, extenders, etc.
- Lower the patient.

It is highly recommended that these procedures be practiced with all necessary rescue and medical personnel using the equipment commonly worn by athletes.

Poorly maintained or modified equipment may hamper the safe removal process, which may lead to an increase in the severity of the initial injury so be sure all equipment is properly maintained.

Intramuscular Injections

Clinical indications:

- When medication administration is necessary and the medication must be given via the SQ or IM route or as an alternative route in selected medications.

Procedure:

1. Receive and confirm medication order or perform per protocols and standing orders.
2. Prepare equipment and medication, expelling air from the syringe.
3. Needle size intramuscular injection:
    a. 20-25g 1-2” depending on patient size.
    b. Possible injection sites for IM injection include the arm (deltoid), buttock (superolateral aspect of gluteal muscle), and thigh (vastus lateralis).
    c. Injection volume should not exceed 1cc in the arm and not more than 2.5cc in the thigh or buttock.
4. The thigh (vastus lateralis) should be used in pediatric patients and injection volume should not exceed 1cc.
5. Explain the procedure to the patient and reconfirm patient medication allergies.
6. Expose the injection site and cleanse the site with alcohol.
7. Insert the needle into the skin with smooth, steady motion at a 90-degree angle.
8. Aspirate for blood. If blood is aspirated do not inject medication. Withdraw needle and locate new site.
9. Inject the medication.
10. Withdraw the needle quickly and dispose of properly without recapping.
11. Apply pressure to the site with 2x2 or cotton ball and apply bandage.
12. Monitor the patient for the desired therapeutic effects as well as any possible side effects.
13. Document medication, dose, route, site and patient response in report.

Intranasal Medication Delivery

Clinical indications:

- When medication administration is necessary and alternate route is not available or is impractical.

Procedure:

1. Gather appropriate equipment and medications, including needle and syringe to draw up medication and nasal atomizer.
2. Aspirate proper volume of medication required to treat patient. An extra 0.1ml of medication should be drawn up to account for the dead space within the atomizer at the end of the procedure.
3. Remove the syringe from the needle and dispose of needle appropriately without recapping.
4. Attach the atomizer tip via Luer lock mechanism and twist into place.
5. Using your nondominant hand to hold the crown of the head, place the tip of the atomizer snugly into the nostril aiming slightly upward and outward (toward the ear on the same side).
6. Briskly compress the syringe plunger to deliver half the medication into the nostril.
7. Move the device to the opposite nostril and administer the remaining medication as in step 6.

Medications which are appropriate for intranasal use include:

- diazepam (5 mg/ml) 2-5 mg
- fentanyl (50 mcg/ml) 25-50 mcg
- Glucagon (solubilize 2 mg vials in 1 ml sterile water) 1-2 mg
- ketamine (100 mg/ml) 50-100 mg
- lorazepam (2 mg/ml) 0.5-4 mg
- midazolam (5 mg/ml) 1-10 mg
- naloxone (1 mg/ml) 0.4-2 mg

Intraosseous Infusion (Adult)

Clinical indications:

- Establish intraosseous access for critical unstable patient when peripheral or necessary IV access cannot be established after two attempts or 90 seconds. *
- **DO NOT** delay transport of critical patients due to prolonged attempts of this technique.
- All medications and IV solutions that are usually administered intravenously may be administered through the intraosseous route.

Contraindications:

- Fracture of the tibia or femur (may use unaffected side)
- Some types of previous extensive orthopedic procedures (e.g. knee replacement)
- Any infection over the insertion site
- Inability to locate anatomic landmarks
- Excessive tissue over insertion site
- Third degree burns (avoid second degree burns, if possible)

Precautions:

- The safety of emergency intraosseous infusions in patients with osteoporosis, disease, or other proximal tibia bone pathologies that may blur or obscure landmarks have not been proven.
- Hypoglycemia- IO access should only be used under the following circumstances:
    - Severe hypoglycemia (<35 mg/dl).
    - Moderate hypoglycemia (<60 mg/dl) unresponsive 10 minutes after administration of glucagon.
    - All hypoglycemic patients who have IO established must be transported to the hospital.
- When using IO devices, the possibility of air, fat or bone embolization may exist. Other possible complications include osteomyelitis, subcutaneous infection, sepsis, and incorrect placement with subcutaneous infiltration.
- In general, IO devices are not recommended for use for more than 24 hours.
- Needle insertion must be directed away from the joint space and epiphyseal plate.

Procedure:

1. Position patient in supine position and restrain limb, if necessary.
2. Locate site:
    a. Proximal humerus (preferred site for adults for highest flow rate and least painful insertion): Place patient arm adducted and pronated (hand over umbilicus). Run your thumb up the anterior humerus until you palpate the greater tubercle at the humeral neck. Insertion site is 1cm proximal to the tubercle. Use 45mm needle in adults $\geq$40 kg.
    b. Proximal tibia: 1-2 cm medial and 1 cm distal to tibial tuberosity OR palpate the inferior edge of the patella and move 2cm inferior and medially to the flat aspect of the tibia.
    c. Distal tibia: 2cm proximal to the most prominent aspect of the medial malleolus.
3. Cleanse skin with povidone-iodine solution.
4. Follow the device manufacturer's instruction of placement of the device, using sterile technique.
5. Aspirate to confirm placement and obtain blood samples.
6. Connect primed extension tubing.

7. If the patient is responsive to painful stimuli, slowly administer 20-40mg (1-2 ml) of 2% lidocaine (preservative-free) into the port.
8. Perform a pressure flush by administering 10-20 ml of normal saline via syringe.
9. To maintain optimal flow, apply pressure (up to 300 mm Hg) to the infusion bag.
10. Secure tubing and catheter.

Troubleshooting in the event of obstruction or failure:

1. Reassess insertion site landmarks.
2. Flush needle cannula.
3. If unsuccessful, consider alternative insertion site, i.e. the contralateral proximal tibia.

*Critically unstable patient types would include cardiopulmonary arrest, severe hypotension (shock), respiratory failure, and coma.

Intraosseous Infusion (Pediatric)

Clinical indications:

- Establish intraosseous access for the critically unstable* infant or child < 3 years old when peripheral or necessary IV access cannot be established within 90 seconds.
- **DO NOT** delay transport of critical patients due to prolonged attempts of this technique.
- All medications and IV solutions that are usually administered intravenously may be administered through the intraosseous route.

Contraindications:

- Some devices are not approved for pediatric use
- Fracture of tibia or femur (may use unaffected side)
- Any infection over the insertion site
- Inability to locate anatomic landmarks
- Excessive tissue over insertion site
- Third degree burns (avoid second degree burns, if possible)

Precautions:

- The safety of emergency intraosseous infusions in patients with osteoporosis, disease, or other proximal tibia bone pathologies that may blur or obscure landmarks have not been proven.
- Hypoglycemia- IO access should only be used under the following circumstances:
    - Severe hypoglycemia (<35 mg/dl).
    - Moderate hypoglycemia (<60 mg/dl) unresponsive 10 minutes after administration of glucagon.
    - All hypoglycemic patients who have IO established must be transported to the hospital.
- When using IO devices, the possibility of air, fat or bone embolization may exist. Other possible complications include osteomyelitis, subcutaneous infection, sepsis, and incorrect placement with subcutaneous infiltration.
- In general, IO devices are not recommended for use for more than 24 hours.
- Needle insertion must be directed away from the joint space and epiphyseal plate.

Procedure:

1. Gather necessary equipment and supplies, including 15g 1” bone marrow needle, povidone-iodine solution, gauze 2x2s, tape, T-piece adapter, 3-way stopcock, 10cc syringe and IV fluid.
2. Position the child in supine position and restrain limb, if necessary.
3. Locate site approximately 1.5-3 cm below and slightly medial to tibial tuberosity over flat edge of bone.[!]
4. Cleanse site with povidone-iodine solution.
5. Using sterile technique, direct needle perpendicular or slightly inferior into bone marrow, avoiding epiphyseal plate.
6. Needle is in correct position when all the following conditions are present:
    a. Decrease in resistance after passing through the bone cortex;
    b. Needle is firmly in position and stands upright without support;
    c. Syringe aspiration yields bone marrow;
    d. Free flow of fluids with no significant SQ infiltration.
7. Connect T-piece adapter and stopcock to needle.
8. Attach stopcock to appropriate IV infusion.

9. Stabilize needle on both sides with gauze 2x2 and secure with tape, minimizing direct tension on needle, or use commercially-available needle stabilizer.

*Critically unstable patient types would include cardiopulmonary arrest, severe hypotension (shock), respiratory failure, and coma.

[!]If the proximal tibia is inaccessible or contraindicated, the distal tibia or proximal humerus may be used as an alternative.

IV Fluids

- Expansion of circulating blood volume is critical in patients with acute blood loss (e.g. ruptured abdominal aortic aneurysm, gastrointestinal hemorrhage, or hemorrhagic shock due to trauma).
- Volume expansion can be achieved with whole blood, crystalloid solutions (e.g. Ringer's Lactate or normal saline), or colloid solutions (e.g. human serum albumin).
- IV fluids are also used to keep IV lines open for drug administration; 5% dextrose in water (D5W) or normal saline are used most often.
- Since hyperglycemia in cardiac arrest patients who survive is associated with worse neurological outcomes because sodium overload is rarely encountered with normal saline use, normal saline or lactated Ringer's are preferred infusions during cardiac arrest.
- Patients with hypovolemia and hypotension and those with acute MI, especially right ventricular infarct, can benefit from volume expansion.

Nasogastric Tube Insertion

Clinical indications:

- Gastric intubation in intubated patients
- Administration of activated charcoal in patients with altered mental status and a secured airway

Procedure:

1. Assemble all equipment and supplies. Ensure functioning suction unit.
2. Estimate insertion length by superimposing the tube over the body from the nose, to the ear, to the stomach.
3. Mark the proper insertion distance with tape.
4. Flex the neck **if not contraindicated** to facilitate esophageal passage.
5. Liberally lubricate the distal end of the tube and pass through the patient's nare along the floor of the nasal passage. Do not orient the tip upward into the turbinates. This increases the difficulty of insertion and may cause bleeding.
6. In the setting of an unconscious, intubated patient or a patient with facial trauma, oral insertion of the tube may be considered or preferred.
7. Continue to pass the tube gently until appropriate distance is reached.
8. Confirm placement by injecting 20cc of air and auscultate for the swish or bubbling of the air over the stomach. Additionally, aspiration of gastric contents confirms proper placement.
9. Secure the tube.
10. Decompress the stomach of air and food either by connecting the tube to suction or manually aspirating with large catheter tip syringe.
11. Mechanical suction should not reach high setting.
12. Document procedure, time, patient response and result on the care report.

Orthostatic Blood Pressure Measurement

Clinical indications:

- Patients with suspected blood/fluid loss or dehydration
- Patients larger than the length based tape

Procedure:

1. Assess the need for orthostatic vital sign measurement.
2. Obtain patient's blood pressure and pulse after lying supine for minimum of 5 minutes.
3. Have patient sit with feet dangling and obtain patient's pulse and blood pressure.
4. If pulse has increased by 30 beats per minute **or** systolic blood pressure decreased by 30 mm Hg, the orthostatic are considered positive. If positive orthostatic changes occur while sitting, **DO NOT** continue to standing position.
5. Have patient stand and obtain pulse and blood pressure.
6. Patients on prolonger beta-blocker therapy will not demonstrate pulse elevation. Provider must complete assessment and utilize clinical judgement.
7. Document the time and what position the patient was in when the vital signs were taken on patient care report.

Pain Assessment and Documentation

Clinical indications:

- Any patient with pain

Procedure:

1. Initial and ongoing assessment of pain intensity and character is accomplished through the patient's self-report.
2. Pain should be assessed and documented during initial assessment, before starting pain control treatment, and with each set of vitals.
3. Avoid coaching the patient; simply ask them to rate their pain on a scale to 0-10, where 0 is no pain at all and 10 is the worst pain imaginable.

Visual Analog Scale

0 1 2 3 4 5 6 7 8 9 10

No pain Worst pain

4. The Wong-Baker "faces" scale may be used with pediatric patients or any patient with a language barrier. This can be documented with the numeric value or the textual pain description.

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.

Pelvic Fracture Stabilization

Clinical indications:

- Physical exam and mechanism of injury suggests a pelvic fracture

Procedure:

1. Physical exam shows instability of pelvis with compression.
2. Assess the abdomen and the neurovascular status of the lower extremities.
3. Assess for blood at the perineum.
4. Fold a sheet lengthwise into a swath approximately 12-18 inches wide.
5. Pass the swath under the patient's buttocks and tie circumferentially around the pelvis, covering buttocks posteriorly. The swath should rest just below the iliac crests anteriorly.

   OR

   Utilize a commercial pelvic stabilization device following the manufacturer's specifications.
6. Reassess the abdomen and the neurovascular status of the lower extremities.

Special Considerations in the Treatment of Patient Recently Immunized Against Smallpox

Smallpox immunization is accomplished by inoculating the skin with a live strain of a similar virus called vaccinia. In general, it is a safe and effective means of preventing smallpox. However, this technique and the use of a live vaccine produces an active wound which can transmit vaccinia if contacted. For most people, exposure to vaccinia would only be a potential minor problem. However, in patients who are immunosuppressed, have chronic skin conditions, or are pregnant, exposure to vaccinia can result in serious consequences. Therefore, simple precautions should be taken when treating patients who have recently been immunized against smallpox and still have the small healing wound associated with that process.

1. Follow universal precautions.
2. Leave already present bandages in place.
3. Avoid direct contact with the wound.
4. If rebandaging of an immunization site is required, tape two layers of dry gauze over the wound.
5. Should contact with an open immunization site occur, immediately cleanse the area with warm water and soap, or with an alcohol-based hand sanitizer.
6. Keep clothing that comes in contact with a vaccination site separate from other items and launder in hot water with detergent and/or bleach.
7. Direct exposure to a wound should be reported in accordance with existing guidelines regarding exposure to infectious diseases.

Spinal Motion Restriction

Clinical indications:

- Presence of any **ONE** of the following:
    - Midline bony spinal tenderness or palpable deformity on exam.
    - Any neurological complaint (i.e., numbness, weakness).
    - High energy mechanism of injury plus any one of the following:
        - Altered mental status, drug/alcohol intoxication, inability to communicate (includes language barrier), presence of a painful distracting injury, age < 3 years of age

Procedure:

1. Place the patient in an appropriately sized cervical collar.
2. If the patient is ambulatory at the scene, or if the patient can safely self-extricate:
    a. Assist the patient to the EMS stretcher.
    b. Transport the patient in a supine position or in position of comfort if supine position is not tolerated.
3. If the patient is **not ambulatory** OR if extrication is involved:
    a. Use a rigid extraction device (e.g. backboard) as needed to move patient to the EMS stretcher.
    b. Remove the rigid extrication device once patient is on the EMS stretcher, if possible.
4. The head may be supported with head blocks, rolled towels or similar device to prevent rotation.
5. Secure the patient with seatbelts to the EMS stretcher in the supine position or in position of comfort if supine position is not tolerated.
6. If the patient has a negative spinal assessment:
    a. Transport in position of comfort.
    b. Place in appropriately sized cervical collar if age > 65.

Patients who do not require spinal motion restriction must have ALL of the following:

- GCS 15;
- No spinal tenderness or anatomic abnormality;
- No neurologic impairment;
- No distracting injury;
- No evidence of intoxication.

NOTE:
NO adult patient shall be transported on a rigid extrication device **unless** removing patient from the device interferes with critical treatments or interventions. Patients who are victims of penetrating trauma **without focal neurological deficits do NOT** require spinal immobilization. Patients may be transported on vacuum boards or scoop stretchers, if available. Upon arrival at the receiving hospital, the patient will be transferred to the gurney via a sliding board. Cervical collars may be removed if they interfere with airway management, or if causing extreme distress. Examples of painful distracting injury include obvious/suspected long bone fractures, large burns or any injury producing acute functional impairment.

Spinal Precautions in Children

Clinical indications:

- Any pediatric patient that presents with a high-energy mechanism of injury or any clinical signs suggestive of spinal cord injury should be placed in cervical collar and spinal immobilization for transport.
- High energy mechanism guidelines:
    - High speed motor vehicle collision
    - Ejection from motor vehicle
    - Pedestrian/bicyclist struck by motor vehicle
    - Crash involving motorized recreation vehicle
    - Diving injury
    - Fall from height > 5 feet or more than 5 stairs
    - Any other high-energy mechanism with rapid acceleration and/or deceleration
- Recommended clinical guidelines associated with even minor mechanism of injury:
    - Altered level of consciousness or are too young to describe their symptoms
    - Cervical pain, tenderness, or deformity
    - Neurological deficit
    - Any other painful or distracting injury
    - Numbness or weakness in any extremity
      any other clinical suspicion on cervical spine injury

Precaution: A normal child “up and running around” at the scene who was subjected to a mechanism with a potential of causing spinal injury should be immobilized provided that the immobilization technique does not result in marked combativeness.

PEDIATRIC PATIENTS less than 12 years old should have padding under shoulders and can be placed on a papoose or stabilized in a child car seat.

SUMMARY: The indications for spinal immobilization rely on a heightened level of suspicion of injury. Cervical spine clearance requires careful clinical and radiological evaluation because missed injuries can lead to catastrophic neurological consequences. The burden of clearance is up to the physicians at the receiving hospital.

Splinting

Clinical indications:

- Immobilization of an extremity for transport, either due to suspected fracture, sprain or injury.
- Immobilization of an extremity for transport to secure medically necessary devices, such as intravenous catheters.

Procedure:

1. Assess and document pulses, sensation, and motor function prior to placement of the splint. If no pulses are present and a fracture is suspected, consider reduction of the fracture prior to placement of the splint.
2. Remove all clothing, jewelry, or restricting items from the extremity.
3. Select a site to secure the splint both proximal and distal to the area of suspected injury, or the area where the medical device will be placed.
4. Do not secure the splint directly over the injury or device.
5. Place the splint and secure with Velcro, straps, or bandage material (e.g. Kling, Kerlex, cloth bandage, etc.) depending on splint manufacturer recommendation and design.
6. Document pulses, sensation, and motor function after placement of the splint. If there has been a deterioration in any of these, remove the splint and reassess.
7. If a femur fracture is suspected and there is no evidence of pelvic and/or knee fracture or instability, placement of a femoral traction splint may be indicated.
    a. Assess neurovascular function as in #1 above.
    b. Place ankle strap over the ankle.
    c. Place the proximal end of the traction splint on the posterior side of the extremity, being careful to avoid placing too much pressure on genitalia or open wounds. Make certain splint extends proximal to the suspected fracture, ideally up against the ischial tuberosity.
    d. Extend this distal end at least 6 inches beyond the foot.
    e. Attach ankle device to the traction crank.
    f. Twist the crank until moderate resistance is met. Reassure the patient that the noise of the splint crank is normal.
    g. Reassess alignment, pulses, sensation, and motor function. If there has been deterioration in any of these, release traction and reassess.
8. Document time, type of splint, and pre-and post-neurovascular exam in the patient report.

Taser Dart Removal

Clinical indications:

- Unlike other forms of penetrating foreign bodies, Taser barbed darts, because of their short length (1/4”) may be safely removed by EMS personnel when requested by law enforcement.
- The darts should only be removed in the field if they do not involve the eye, face, neck, breast or groin. Patients with retained darts in these areas should be transported to the hospital and have the darts removed by a physician.

Procedure:

1. The patient must be in police custody and EMS personnel must be convinced the patient is adequately restrained.
2. Personal protective equipment must be used.
3. Ensure that wires are disconnected from the gun or the wires have been cut.
4. Push on the body part where the barbed dart (straight #8 fish hook) is imbedded and simultaneously pull the dart straight out.
5. Apply alcohol, iodine or Shur-Clens to puncture area and dress as needed.
6. Treat the dart as a “contaminated sharp”. These darts should be placed in biohazard sharps container and turned over to law enforcement.
7. All patients must be thoroughly assessed to determine if other medical problems or injuries are present.
8. If the individual does not have any other presenting injuries/illness, they may be left in the custody/care of law enforcement.
9. If transported to the hospital, follow general guidelines regarding restraints for aggressive or violent patients.
10. Detailed documentation is very important as it is likely to become evidence.

Tourniquet

Clinical Indications

- Life threatening extremity hemorrhage that cannot be controlled by other means.
- Serious or life threatening hemorrhage and tactical considerations prevent the use of standard hemorrhage control techniques

Contraindications

- Non-extremity hemorrhage and proximal extremity location where tourniquet application is not practical.

Precautions

- A tourniquet applied incorrectly can increase blood loss.
- Applying a tourniquet can cause nerve and tissue damage whether applied correctly or not. Proper patient selection is of utmost importance.
- Injury due to tourniquet is unlikely if the tourniquet is removed within 1 hour. In cases of life threatening bleeding benefit outweighs theoretical risk.
- A commercially made tourniquet is the preferred tourniquet. If none is available, a blood pressure cuff inflated to a pressure sufficient to stop bleeding is an acceptable alternative.
- **Other improvised tourniquets are not allowed.**

Procedure:

1. First attempt to control hemorrhage by using direct pressure over bleeding area.
2. If a discrete bleeding vessel can be identified, point pressure over bleeding vessel is more effective than a large bandage and diffuse pressure.
3. Cut away any clothing so that the tourniquet will be clearly visible. **NEVER** obscure a tourniquet with clothing or bandages.
4. Place tourniquet proximal to wound and not across any joints. Placement on the proximal aspect of the extremity is preferred because double bone structure of the lower leg and forearm effectively splint arteries and prevent tourniquets from working properly.
5. Tighten per manufacturer instructions until hemorrhage stops and/or distal pulses in affected extremity disappear. Applying tourniquet too loosely will only increase blood loss by inhibiting venous return.
6. Secure tourniquet per manufacturer instructions (see steps below).
7. If hemorrhage continues after application of the tourniquet, ensure the tourniquet is applied as tightly as possible. Attempt to tighten further, if needed. If hemorrhage continues, consider placement of a second tourniquet proximal to the first. Applying two tourniquets greatly reduces the incidence of hemorrhage, especially in lower extremity injuries.
8. Contact ALS for rendezvous. Do not delay transport to nearest facility if ALS is delayed.
9. Note time of tourniquet application on patient's skin next to the tourniquet and communicate this to receiving care providers.
10. Dress wounds per standard wound care protocol.
11. Keep tourniquet on throughout hospital transport – a correctly applied tourniquet should only be removed by the receiving hospital.
12. If delayed or prolonged transport and tourniquet application time is > 1 hour, contact medical control and consider reattempting standard hemorrhage control techniques and removing tourniquet, if directed by medical control.

The Combat Application Tourniquet™ (CAT™) is a small and lightweight one-handed tourniquet that completely occludes arterial blood flow in an extremity. The CAT™ uses a Self-Adhering Band and a Friction Adapter Buckle to fit a wide range of extremities combined with a one-handed windlass system.

The windlass system uses a free moving internal band to provide true circumferential pressure to an extremity. The windlass is then locked in place; this requires only one hand, with the Windlass Clip™. The CAT™ also has a Hook-and- Loop Windlass Strap™ for further securing of the windlass during patient transport.

- Procedure

1. Remove the CAT from the trauma bag and carrying pouch.
2. Open the CAT completely and apply to injured extremity.
3. Route the self-adhering band around the injured extremity and pass the free- running end of the band through the inside slit of the friction adaptor buckle.
4. Pass the band through the outside slit of the buckle utilizing the friction adaptor buckle, which will lock the band in place.
5. Position the CAT above the wound; leave at least 2 inches of uninjured skin between the CAT and the wound.
6. Pull the free running end of the Self-Adhering Band tight and securely fasten it back on itself (if applying to an arm wound). Do not adhere the band past the Windlass Clip. – If applying to a leg wound, the Self-Adhering Band must be routed through both sides of the friction adapter buckle and fastened back on itself. This will prevent it from loosening when twisting the Windlass Clip.
7. Twist the Rod until bright red bleeding has stopped. When the situation permits, ensure the distal pulse is no longer palpable.
8. Lock the rod in place with the Windlass Clip™
9. Secure the rod with the strap. Grasp the Windlass Strap™, pull it tight, and adhere it to the opposite hook on the Windlass Clip™
10. Must note the time applied and communicate it with the receiving facility upon arrival.
11. Dress wounds as per standard wound care protocol.

12. If for uncontrollable reason the tourniquet will be applied for more than 2 hours, attempts should be made to remove the tourniquet after attempts at more aggressive hemorrhage control by loosening tourniquet ½ a turn every 2 minutes.

- Reference

PHTLS (Military Edition) 6th; Mosby –JEMS
Tourniquet use in combat trauma; J R Army Med Corps 2007
United States Army Institute of Surgical Research TCCC 2008 symposium

Thoratec Ventricular Assist Devices (VADs)

1. **Contact 24-hour mechanical heart specialist: 509-481-7996 or 509-474-7326.** If no answer, contact Sacred Heart Medical Center Operator (509-474-3131), who will locate the call person

2. Emergency Scenarios

Scenario Response

VAD Failure (VAD has stopped pumping): Hand pumping should be started if the Thoracic Driver fails and backup Thoracic driver is unavailable. If patient is on Bi-VADs, hand pump both VADs. Hand pump at rate of 60-90 strokes per minute or compress hand pump as soon as bladder within Thoracic VAD refills completely (VADs are external, can be seen on abdomen). VAD blood flow is approximately 60ml x hand pump rate. Fully monitor patient during transport.

VAD Working, Blood flow's low, ECG abnormal (only applies if patient has single VAD, not BiVADs: A patient with a single VAD is dependent on ventricular function of the side not mechanically assisted. With arrhythmia, decreased function of opposite ventricle will affect VAD flows. The VAD may be able to maintain flow high enough to keep patient from going into shock. Blood flow is read on Thoracic Driver Display. **If patient is symptomatic, initiate appropriate therapy to correct arrhythmia and optimize heart function.**

- LVAD Patient: If blood flow falls below 2 liters per minute, increase flow by giving large amounts of IV volume and correct arrhythmia.
- RVAD Patient: Do not administer large amounts of IV volume; correct arrhythmia.

LVAD Working- "Reduced Flow Rate" Alarm- ECG normal: Suspected internal bleeding (hypovolemia). **If patient is symptomatic, initiate appropriate therapy to stabilize patient, including volume replacement.**

3. If patient has LVAD (single or in Bi-VADs) and LVAD is working properly, it is providing patient's cardiac output and is not in time with patient's real heart (**Patient EKG rate will not equal pulse rate. Instead, pulse should be at rate of the Thoratec LVAD or Hand Pump**).

4. Large bore peripheral venous access should be established.

5. Perform routine cardiac arrest procedure, if indicated, including cardiac compressions.

6. Transport patient with companion and bring equipment:
   a. Hand pump
   b. Extra batteries
   c. Primary and backup Thoratec Drivers

7. Patient or companion to hand pump VAD(s), if driver fails to function.

8. Patient should be transported to Sacred Heart Medical Center, if possible.
9. Hand pumping:
   a. Hand pumping is only to be performed if both primary and backup Thoratec Drivers fail to operate or are unavailable.

b. Disconnect driveline from Diver and press that end of driveline into hand pump bulb.
c. If Bi-VADs and only one VAD fails to pump, disconnect both driveline and hand pump both VADs. This ensures roughly same flow to avoid pulmonary edema.
d. Compress bulbs at approximately same rate that the patient was running. If in doubt, use 60-90 compressions/minute.
e. Check radial pulse. It should correspond to rate of bulb compressions.

The Thoratec driver supplies air pressure and vacuum to pump the VAD(s). It can be powered by 2 batteries located within case. A separate battery charger is kept at patient's residence. The Thoratec Driver can also be powered by an AC adapter. Ensure two batteries are installed and unplug AC adapter cable from Thoratec Driver prior to transport. Display shows L (LVAD), Rate (bpm), and Flow (L/min) and R (RVAD), Rate (bpm), and Flow (L/min).

Ventricular Assist Device(s)

Patient has continuous flow Ventricular Assist Device(s): Single LVAD. The manufacturers of these devices include the Thoratec HeartMate II VAS and HeartWare HVAD.

1. **Contact the 24-hour mechanical heart specialist: 509-481-7996 or 509-474-7326.** If no answer, contact sacred Heart Medical Center Operator, 509-474-3131, who will locate the call person.

2. Emergency Scenarios

Scenario Response

VAD Failure: **VAD has stopped pumping**: Indicated by a high-pitched tone with a red alarm- either a red heart or triangle on the controller attached to percutaneous line from the abdomen (the driveline). Also, auscultation of the device with stethoscope a "hum" or the VAD is not heard indicated the device has stopped.

VAD Working- Blood Flows Low- ECG Abnormal: A patient with a single VAD is dependent on ventricular function of the side not mechanically assisted. With arrhythmia, decreased function of opposite ventricle will affect VAD flows. The may be able to maintain flow high enough to keep patient from going into shock. **If patient is symptomatic, initiate appropriate therapy to correct arrhythmia and optimize heart function.**

VAD(s) Working- Blood Flows Low- ECG Normal: Suspected internal bleeding (hypovolemia). If patient is symptomatic, initiate appropriate therapy to stabilize patient including volume replacement.

3. Heart monitor: If patient has an LVAD that is working properly, it is providing patient's cardiac output.

4. Vital signs: Due to the continuous flow on the LVAD devices, blood pressure with a stethoscope or automated cuff may not be accurate. Blood pressure is best measured by Doppler. Clinical signs and symptoms of hypotension should be considered. A normal blood pressure for a LVAD patient is 70-100 mmHg by Doppler. A traditional blood pressure measurement by automated cuff may give a value similar to a normal blood pressure for a LVAD patient.

5. Large bore peripheral venous access should be started on patient.

6. Perform routine cardiac arrest procedure, if indicated. Do not initiate cardiac compressions if the device is still running. Consult the mechanical heart specialist on-call prior to initiating chest compressions.

7. Transport companion with patient and bring equipment (i.e. emergency bag, extra batteries, and backup controller).

8. Patient should be transported to Sacred Heart Medical Center, if possible.

Section 3: Cardiac Protocols

Acute Coronary Syndrome/Chest Pain

History:

- Ask about medication for pulmonary arterial hypertension or erectile dysfunction/sexual performance enhancing drugs, i.e. sildenafil (Viagra, Revatio), vardenafil (Levitra), tadalafil (Cialis or Adcirca), avanafil (Stendra) taken in the last 24 hours (male or female).
- Previous heart attack or known heart disease
- Associated diseases (diabetes, high cholesterol, hypertension)
- Tobacco use/smoking
- Hypotension
- Family history

Signs/symptoms: chest pain, pressure, aching or tightness; pain radiating to arm, jaw, back, hand, neck; sweaty, short of breath, nausea/vomiting, dizziness, palpitations, abnormal vital signs.

R

- Verify scene safety.
- Perform patient assessment.
- Maintain patent airway.
- Assist breathing as necessary.
- Administer nasal cannula oxygen to maintain oxygen saturation >90%.
- Monitor blood pressure, pulse and respirations.
- Call for ALS rendezvous.

E

- Place cardiac monitor and monitor oximetry.
- Administer oxygen only if SaO_2 < 90% on RA. Start 4L per nasal cannula and titrate to achieve SaO_2 > 90, using simple facemask if >6 LPM flow rate necessary to achieve desired SaO2. If SaO_2 is >95%, decrease oxygen flow rate.
- Obtain 12-lead ECG, if available.
- If computer interpretation positive for STEMI or acute coronary syndrome is suspected:
    - Administer aspirin 324mg (4 chewable baby aspirin), if specialized training completed.
    - Administer nitroglycerin 0.4mg SL if systolic blood pressure > 100 and specialized training completed.
        - Repeat every 5 minutes x 2 if blood pressure > 100 and pain persists.
        - Monitor for hypotension after giving nitroglycerin.
        - Do not administer nitroglycerin to anyone (male or female) who has taken medication for erectile dysfunction or pulmonary hypertension (listed above).

A

- Establish IV/IO.
- If EKG positive for STEMI, establish second IV en route to the hospital.
- Draw blood as IV established.

P

- Interpret 12 lead ECG if computer interpretation is unclear.
- If pain is persistent after administration of nitroglycerin, consider administration of
    - morphine 2mg IV/IO every 3-5 minutes to max of 20mg
      OR
    - fentanyl 25 mcg IV/IO every 3-5 minutes to max of 200 mcg
      OR
    - hydromorphone 0.5mg IV/IO every 3-5 minutes to max of 4mg
- If systolic blood pressure <90, assess volume status:
    - If lungs are clear and/or 12 lead EKG indicates inferior wall MI, consider trial infusion of 250 cc normal saline.
    - If rales are present and/or 12 lead EKG indicates anterior wall MI, consider dopamine infusion IV/IO 5-10 mcg/kg/min.
- If patient has STEMI on prehospital 12 lead ECG, report to the receiving hospital with the following information as soon as possible (use land line if more readily available than HEAR system). Do not wait until routine patch.
    - State that you have a cardiac level 1 transport.
    - Patient name, if contact is through a secure cell or ground line
    - Age and gender
    - Findings on prehospital 12 lead EKG. Clearly communicate if EKG, by your interpretation or computer program, shows STEMI. Report the presence of any of the following potential mimickers:
        - Left ventricular hypertrophy
        - Bundle branch block
        - Pacemaker
        - Pericarditis
        - Early repolarization
    - Name of cardiologist and/or primary care physician
    - Clinical presentation, brief and to the point
    - Vital signs
    - Prehospital treatment
- Update the hospital and alert them, pending arrival, using the HEAR system. The following terminology should be used to describe the category of the ACS patient:
    - Cardiac-STEMI
    - Cardiac- high risk
    - Cardiac- post arrest

Acute Stroke

History:

- Previous CVA/TIA
- Previous cardiac/vascular surgery
- Associated diseases (diabetes, hypertension, heart disease)
- Atrial fibrillation
- Medications (especially blood thinners)
- Trauma

Signs/symptoms: altered mental status, weakness/paralysis, blindness or other sensory loss, slurred speech or inability to speak, syncope, vertigo/dizziness, vomiting, headache, seizure

R

- Initiate patient assessment.
- Determine "Time last seen normal". Get history from all available bystanders. Time last seen normal starts with onset of symptoms, or if symptoms went away or improved, the time symptoms worsened or returned. If patient awoke with symptoms, when they went to bed. Record contact info (cell phone, etc.) of the individual able to identify exact time the patient was last asymptomatic.
- Manage airway as appropriate.
- Administer oxygen by nasal cannula or simple facemask to maintain oxygen saturation >90%.
- Perform finger stick blood glucose, if training completed.
    - If blood glucose is less than 70 mg/dl, administer glucose tabs if patient is alert and able to swallow without difficulty. Do not give oral glucose if patient is drooling or has severe facial droop or face/tongue numbness.
- Request ALS rendezvous, if possible.
- Encourage a family member to accompany the patient to the hospital, if possible.
- Limit scene time to < 15 minutes.

E

- Place patient on cardiac monitor.
- Perform FAST exam (page 105):
    - If any steps are positive, contact ALS unit. Do not delay transport if ALS is not available.
- As early as possible, alert receiving hospital of a "Code Stroke", and give patient age, gender, findings of FAST exam, time last seen normal, mental status, vitals, and ETA.

A

- Establish IV.
- Draw blood as IV established.
- If IV unavailable, do not place IO.
- If blood glucose less than 60 and patient is unable to swallow, administer 25g dextrose IV (50ml of D50 or 250ml of D10).
- If glucose is less than 60 and IV is unavailable, give glucagon 1mg IM.
- Recheck blood glucose in 5 minutes.

P

- Follow prehospital stroke triage procedure to determine destination (consider air transport if ground transport time exceeds 30 minutes).
- Fibrinolysis checklist:
  - History of intracranial hemorrhage
  - Known arteriovenous malformation, neoplasm, or aneurysm
  - Witnessed seizure at stroke onset
  - Active internal bleeding or acute trauma (fracture)
  - Intracranial or intraspinal surgery, serious head trauma or previous stroke in the past 3 months
  - Current use of warfarin (Coumadin) or received heparin in the past 48 hours
  - Arterial puncture at noncompressible site

** Call Medical Control ASAP to inform them of Code Stroke and give patient gender, age, neuro deficits, mental status, last seen normal, vitals and ETA. Use land line if more readily available than HEAR system. Do not wait until routine patch.

Cardiac Arrest

Clinical indications:

- Unresponsive patient with no pulse or breathing (or only agonal breathing present)

R

- Verify scene safety.
- Check for responsiveness.
- Check for breathing and pulse (simultaneously) for no more than 10 seconds.
- Begin high density CPR (page 101), starting with compressions, in ratio of 30 compressions: 2 breaths.
- Attach AED as soon as it is available (page 66).
    - Shock advised- shock once and resume CPR.
    - No shock advised- resume CPR.

E

- Airway management.
- Attach cardiac monitor, and proceed based on rhythm observed.

A

- Establish IV/IO access when able to do so without interrupting CPR.
- Establish supraglottic airway when able to do so without interrupting CPR.

P

- Establish endotracheal airway, if supraglottic airway is ineffective or not obtained.
- Use waveform capnography or capnometry to confirm and monitor ET tube placement and CPR quality.
- Give medications as indicated based on rhythm observed on monitor. See following protocols for each rhythm.

For spontaneous resuscitation refer to post resuscitation management protocol (page 149).

Asystole/PEA

- Arrive here from cardiac arrest protocol (page 140).
- Continue high density CPR (page 101).

A

- Obtain IV/IO access.
- Place supraglottic airway and confirm effective oxygenation and ventilation.
- Administer epinephrine 1mg IV/IO every 3-5 minutes until return of spontaneous circulation (ROSC) or termination of resuscitation.

P

- Place endotracheal airway if supraglottic not already in place or if ineffective oxygenation and ventilation.
- Use waveform capnography or capnometry to confirm and monitor ET tube placement and CPR quality.
- If no IV/IO, may give epinephrine 2mg endotracheally
- Search for and treat possible causes (Hs and Ts):
    - **H**ypovolemia
    - **H**ypoxia
    - **H**ydrogen ion (acidosis)
    - **H**ypo- or hyperkalemia
    - **H**ypothermia
    - **T**oxins
    - **T**ension pneumothorax
    - **T**amponade, cardiac
    - **T**hrombosis, pulmonary or cardiac
    - **T**rauma (hypovolemia, increased intracranial pressure)
- If rhythm check shows shockable rhythm (ventricular fibrillation or ventricular tachycardia), go to VF/VT protocol (page 146).If return of pulse without breathing, or pulse and breathing, go to post cardiac arrest care protocol (page 149).

Bradycardia

Clinical indications:

- Patient with a pulse and rate <60 with any of the following:
  - Chest pain
  - Respiratory distress
  - Hypotension or shock
  - Altered mental status
  - Syncope
- Bradycardia may be normal in athletes and should not be treated unless the above indications are present.
- Potential causes:
  - acute myocardial infarction
  - stroke
  - sick sinus syndrome
  - heart block
  - medications (beta-blocker, calcium channel blocker, digitalis, clonidine)
  - failure of implantable pacemaker

R

- Verify scene safety.
- Perform patient assessment.
- Maintain patent airway.
- Assist breathing as necessary.
- Administer nasal cannula oxygen to maintain oxygen saturation >90%.
- Monitor blood pressure, pulse and respirations.
- Call for ALS rendezvous.

E

- Place cardiac monitor and monitor oximetry.
- Obtain 12-lead ECG, if available.
- Assess for signs of inadequate perfusion:
  - Hypotension
  - Acutely altered mental status
  - Signs of shock
  - Ischemic chest discomfort
  - Acute heart failure (CHF)
- If no signs of inadequate perfusion, monitor and transport.

A

- Obtain IV/IO access.

P

- Administer atropine 0.5mg IV/IO every 3-5 minutes to maximum of 0.04 mg/kg or 3mg.
  - Atropine may be administered via endotracheal tube if IV/IO cannot be established.

    - Dose is 1mg when given endotracheally.
- If atropine is ineffective, start transcutaneous pacing (page 97).
- If atropine is ineffective, consider dopamine infusion at 2-20 mcg/kg/minute.
    - Titrate to patient blood pressure response.
    - Taper slowly.
- May also consider epinephrine infusion at 2-10 mcg/min.
    - Titrate to patient response.
- If above are ineffective, contact medical control.

Narrow Complex Tachycardia

Clinical indications:

- Patient with a pulse with rate > 150

R

- Perform patient assessment.
- Maintain patent airway.
- Assist breathing as necessary.
- Place oxygen if saturations < 90%.
- Monitor blood pressure, pulse and respirations.
- Call for ALS rendezvous.

E

- Place cardiac monitor and monitor oximetry.
- Obtain 12-lead ECG, if available, and attempt to establish a specific diagnosis.
- Assess for signs of inadequate perfusion:
    - Hypotension
    - Acutely altered mental status
    - Signs of shock
    - Ischemic chest discomfort
    - Acute heart failure (CHF)
- If no signs of inadequate perfusion, monitor and transport.

A

- Obtain IV/IO access.
- Consider fluid bolus, unless signs/symptoms of heart failure are present.

P

- If signs of inadequate perfusion, proceed with synchronized cardioversion (page 95).
    - Consider sedation with either:
        - etomidate 0.1 mg/kg IV/IO over 15-30 seconds

          OR
        - midazolam 2.5-10mg IV/IO

          WITH OR WITHOUT
        - fentanyl 50 mcg IV q 3-5 minutes to 200 mcg max
    - If regular narrow complex, consider adenosine (see below).
    - Initial recommended doses:
        - Narrow regular: 50-100 J
        - Narrow irregular: 120-200 J biphasic or 200 J monophasic
- Supraventricular tachycardia (regular)
    - Vagal maneuver.
    - Administer adenosine IV/IO

    - First dose: 6mg rapid IV push with immediate rapid 20 ml saline flush (large bore IV in antecubital is preferred).
    - Second dose (if required): 12 mg rapid IV push with immediate rapid 20 ml saline flush.
- Atrial fibrillation (irregular) or flutter (can be regular).
    - Administer metoprolol 2.5-5mg slow IV push every 5 minutes to max 15 mg.
    - Contact medical control to consider the administration of diltiazem for rate control:
        - First dose: 15-20 mg (0.25mg/kg) slow IV push over 2 minutes.
        - Second dose in 15 minutes (if needed): 20-25mg (0.35 mg/kg) over 2 minutes.
        - Maintenance infusion should be established for transports longer than 15 minutes at 5-15mg/hr titrated to physiologically appropriate heart rate and blood pressure.

Ventricular Fibrillation/Pulseless Ventricular Tachycardia

- Arrive here from cardiac arrest protocol (page 140).
- Continue high density CPR (page 101).

E

- Shock immediately via AED.

A

- Obtain IV/IO access.
- Place supraglottic airway and confirm effective oxygenation and ventilation.
- Do not interrupt CPR to place airway if bag-valve mask ventilation is effective.
- Administer epinephrine 1 mg IV/IO every 3-5 minutes.

P

- Defibrillate immediately and resume CPR for 2 minutes:
    - Biphasic: manufacturer recommendation (e.g., initial dose of 120-200 J).
        - If unknown, use maximum dose available.
        - Second and subsequent doses should be equivalent and higher doses may be considered.
    - Monophasic: 360 J
- Resume attempts to defibrillate every two minutes with high density CPR between defibrillations.
- Place endotracheal airway if supraglottic not already in place or if ineffective oxygenation and ventilation.
- If no IV/IO available, may administer epinephrine 2mg endotracheally
- Use waveform capnography or capnometry to confirm and monitor ET tube placement and CPR quality.
- Administer amiodarone IV/IO:
    - First dose: 300mg bolus.
    - Second dose after two more rounds of CPR and shock: 150mg.

- If rhythm check shows non-shockable rhythm, go to asystole protocol (page 141).
- If return of pulse without breathing, or pulse and breathing, go to post cardiac arrest care protocol (page 149).

Wide Complex Tachycardia

Clinical indications:

- Patient with a pulse with rate > 150 and wide QRS ≥ 0.12 second

R

- Perform patient assessment.
- Maintain patent airway.
- Assist breathing as necessary.
- Place oxygen if saturations < 90%.
- Monitor blood pressure, pulse and respirations.
- Call for ALS rendezvous.

E

- Place cardiac monitor and monitor oximetry.
- Obtain 12-lead ECG, if available, and attempt to establish a specific diagnosis.
- Assess for signs of inadequate perfusion:
    - Hypotension
    - Acutely altered mental status
    - Signs of shock
    - Ischemic chest discomfort
    - Acute heart failure (CHF)
- If no signs of inadequate perfusion, monitor and transport.

A

- Obtain IV/IO access.
- Consider fluid bolus, unless signs/symptoms of heart failure are present.

P

- If signs of inadequate perfusion, proceed with synchronized cardioversion (page 95).
    - Consider sedation with administration of either:
        - etomidate 0.1 mg/kg IV/IO over 15-30 seconds
            OR
        - midazolam 2.5-10mg IV/IO
            WITH OR WITHOUT
        - fentanyl 50 mcg IV q 3-5 minutes to 200 mcg max
    - Regular, wide complex: 100 J.
    - Irregular, wide complex: defibrillation dose (NOT synchronized):
        - Biphasic: manufacturer recommendation (eg, initial dose of 120-200 J).
            - if unknown, use maximum dose available.
            - Second and subsequent doses should be equivalent and higher doses may be considered.
        - Monophasic: 360 J.
- Consider administration of adenosine ONLY if regular and monomorphic.

- First dose: 6mg rapid IV push with rapid 20ml saline flush (large bore IV in antecubital is preferred).
- Second dose (if required): 12 mg rapid IV push with rapid 20ml saline flush.

- Consider antiarrhythmic infusion with:
  - procainamide 20-50 mg/min IV/IO until one of the following:
    - arrhythmia suppressed
    - hypotension ensues
    - QRS duration increases >50%
    - Maximum dose 17 mg/kg given
    - Maintenance infusion rate: 1-4 mg/min
    - Avoid if prolonged QT interval or heart failure
  - amiodarone IV/IO
    - First dose 150mg over 10 minutes.
    - Repeat as needed if VT recurs.
    - Maintenance infusion rate 1mg/min.
- Contact Medical Control

Post-Cardiac Arrest Care/ Return of Spontaneous Circulation

Arrive here from cardiac arrest, asystole, or V-fib/V-tach protocols

R

- Optimize ventilation and oxygen:
  - Maintain target oxygen saturation at >90%.
  - DO NOT hyperventilate. Rate of 10 breaths per minute is adequate.
- Call for ALS rendezvous.

E

- Consider supraglottic airway.
- 12-lead ECG.
- Report to the receiving hospital with the following information as soon as possible (use land line if more readily available than the HEAR system). DO NOT wait until routine patch.
  - State that you have cardiac arrest with ROSC.
  - Patient name, if contact through secure cell or ground line
  - Age and gender
  - Findings on prehospital 12 lead ECG. Clearly communicate if EKG, by computer interpretation, shows AMI. Report the presence of any of the following potential mimickers:
    - Left ventricular hypertrophy (LVH)
    - Bundle branch block (BBB)
    - Pacemaker
    - Pericarditis
    - Early repolarization
  - Name of cardiologist and/or primary care physician
  - Clinical presentation, brief and to the point
  - Vital signs
  - Prehospital treatment
- Update the hospital and alert them, pending arrival, using the HEAR system. The following terminology should be used to describe the category of the patient:
  - Cardiac- post arrest
  - Cardiac-STEMI
  - Cardiac-high risk

A

- Establish IV/IO access.
- Treat hypotension (SBP < 90 mm Hg) with IV bolus of 1-2 L of normal saline or lactated Ringer's.

P

- Consider intubation and waveform capnography.

  - Titrate $PETCO_2$ to target of 35-40 mm Hg.
  - When feasible, titrate FiO_2 to minimum necessary to achieve $SpO_2 \geq 94\%$.
- For hypotension not responding to IV fluid bolus, consider:
  - Dopamine IV infusion 5-10 mcg/kg/min.
  - Epinephrine IV infusion 0.1-0.5 mcg/kg/min (in 70 kg adult: 7-35 mcg/min).
  - Norepinephrine IV infusion 0.1-0.5 mcg/kg/min (in 70kg adult: 7-35 mcg/min).
  - Consider treatable causes (Hs and Ts):
    - **H**ypovolemia
    - **H**ypoxia
    - **H**ydrogen ion (acidosis)
    - **H**ypo- or hyperkalemia
    - **H**ypothermia
    - **T**oxins
    - **T**ension pneumothorax
    - **T**amponade, cardiac
    - **T**hrombosis, pulmonary or cardiac
- Consider administering sodium bicarbonate ($NaHCO_3$) at 1 mEq/kg IV/IO for prolonged resuscitation with effective ventilation or ROSC after long arrest interval.

Pulmonary Edema

Clinical indications:

- Past history and current medications can give vital clues as to whether pulmonary edema or COPD/pneumonia/other pulmonary problem is the primary cause of the patient's symptoms.
- Furosemide (Lasix) should only be administered to patients for whom the diagnosis of pulmonary edema is extremely likely such as patients with history of CHF and/or those who are diaphoretic, tachypneic, tachycardic, and hypertensive or who possibly have pink, frothy sputum.
- Patients with a fever and history of emphysema or COPD may have pulmonary edema but if the diagnosis is in doubt, furosemide should be withheld.

R

- Perform patient assessment.
- Maintain patent airway.
- Assist breathing as necessary.
- Place oxygen if saturations < 90%.
- Monitor blood pressure, pulse and respirations.
- Call for ALS rendezvous.

E

- Place cardiac monitor and monitor oximetry.
- Obtain 12-lead ECG, if available.
- Administer high-flow oxygen.
- If respiratory distress is present and patient is alert, consider CPAP, if training completed.

A

- Establish IV/IO access.
- If systolic blood pressure is > 100, administer 0.4mg nitroglycerin sublingual. Consider repeating x2 (total 3 doses), provided SBP remains >100.

P

- If no improvement with CPAP, increased respiratory distress and/or patient's LOC decreases, consider endotracheal intubation and PEEP valve.
- If patient's condition strongly suggests this diagnosis, consider furosemide (Lasix) at 0.5-1 mg/kg IV/IO.
    - For patients already taking Lasix, initial dose may be double their daily home dose.
- If systolic blood pressure < 100 mm Hg and any signs or symptoms of shock are present, start dopamine infusion at 5-10 mcg/kg/min IV/IO.

Section 4: Medical Protocols

Abdominal Pain

History: Routine past medical history, including past surgeries, PQRST (palliation/provocation, quality, region/radiation, severity, time), fever, last meal eaten, last emesis/bowel movement, last menstrual period

Signs/symptoms: pain, nausea/vomiting, diarrhea/constipation, dysuria, vaginal bleeding, pregnancy, chest pain, shortness of breath, abnormal vital signs

R

- Perform patient assessment.
- Maintain patent airway.
- Assist breathing as necessary.
- Place oxygen if saturations < 90%.
- Monitor blood pressure, pulse and respirations.

E

- If patient has nausea and/or vomiting, consider administration of ondansetron 4 mg PO/SL

A

- Obtain IV/IO access.
- If hypotensive, start fluid bolus to maintain systolic blood pressure >90.
- Consider chest pain protocol.
- If patient has nausea and/or vomiting, consider administration of ondansetron 4 mg IV/IM/PO/SL

P

- If patient has nausea and/or vomiting, consider administration of:
  - ondansetron 4-8 mg IV/IM/SL
    AND/OR
  - diphenhydramine 25-50 mg IV/IM
    AND/OR
  - promethazine 12.5mg IM
- Consider pain management if pain is severe.

Notes:

- Document mental status and vital signs prior to administration of promethazine or pain medication.
- Abdominal pain in women 12-55 should be treated as an ectopic pregnancy until proven otherwise.
- The diagnosis of abdominal aortic aneurysm should be considered with abdominal pain in patients > 50 years of age and/or smokers.
- Appendicitis often presents with vague, peri-umbilical pain which migrates to RLQ over time.

Acute Epistaxis (Non-Trauma)

Clinical indications:

- Spontaneous nosebleed without facial or nasal trauma
- Ask specifically about use of blood thinners/anticoagulants and previous history of nosebleeds, nasal/sinus surgery, hypertension, bleeding or clotting disorders

R/E

- Perform patient assessment.
- Maintain patent airway.
- Assist breathing as necessary.
- Place oxygen if saturations < 90%.
- Monitor blood pressure, pulse and respirations.
- Apply pressure by pinching the nostrils together for 10 minutes without letting go to help control bleeding.
- Keep the head in neutral or forward position. Do not have the patient lean their head back.

A

- If significant blood loss apparent and/or signs of shock, start IV and administer normal saline at a rate to maintain adequate blood pressure.

P

- Administer nasal vasoconstrictor (oxymetazoline, Afrin).
    - Have the patient blow their nose free of clots.
    - Apply 2-3 sprays of oxymetazoline into each bleeding nostril.
- Apply pressure by pinching the nostrils together firmly for 10-15 minutes. Consider use of topical TXA (p 322) if significant epistaxis with signs of hemorrhagic shock.

Allergic Reaction

Obtain history of exposure

- Onset and location (the shorter the time from contact to onset, the more severe the reaction)
- Insect sting or bite
- Food allergy and possible exposure
- Medication allergy and possible exposure
- New clothing, soap detergent
- Past history of reactions

Not all signs and symptoms are present in every case:

- Itching, hives, redness, rash, pallor, cyanosis
- Coughing, wheezing, tachypnea, accessory muscle use, retractions
- Hoarseness, stridor, pharyngeal or oral edema
- Restlessness, decreased LOC, unresponsive
- Hypotension, tachycardia
- Nausea, vomiting, diarrhea, cramping

R

- Assure scene safety.
- Routine patient assessment.
- Maintain patent airway.
- Assist breathing as necessary.
- Place oxygen if saturations < 90%.
- Monitor blood pressure, pulse and respirations.
- If present, scrape stinger out.
- Stabilize involved extremity and apply ice.
- If there are systemic findings (hypotension, respiratory distress, decreased LOC), SEE ANAPHYLAXIS PROTOCOL (page 157) and call for ALS rendezvous.
- If moderate-severe symptom and if EpiPen is available, administer dose per package instructions on lateral aspect of thigh.
    - A single dose may not reverse the effects.
    - Repeat every 5 minutes as needed.
    - If epinephrine is given, patient must be transported to the hospital.
- If patient has symptoms of wheezing, coughing, or tachypnea and has an albuterol inhaler, assist them in using 2-4 puffs, if training completed.

E

- If moderate-severe symptoms administer epinephrine 1:1000 0.01 mg/kg IM to a max of 0.3 mg per autoinjector or from a vial into syringe if training completed.
    - Usual adult dose is 0.3 mg.
    - A single dose may not reverse the effects.
    - Repeat every 5 minutes as needed.
    - If epinephrine is given, patient must be transported to the hospital.

- If patient has symptoms of wheezing, coughing, or tachypnea, administer albuterol/ipratropium (DuoNeb) nebulized treatment.
- Place patient on cardiac monitor.
- If mild symptoms (hives, rash, no respiratory involvement), may assist patient with own antihistamine; Benadryl (diphenhydramine), Claritin (loratadine), Zyrtec (cetirizine), Allegra (fexofenadine), Xyzal (levocetirizine), Clarinex (desloratadine), Vistaril (hydroxyzine), chlorpheniramine.
- Be watchful for secondary allergic response. After apparent resolution of symptoms, the patient should be monitored by a responsible adult for 30-60 minutes.

A

- Establish IV/IO.
- Consider fluid bolus if systolic blood pressure is < 100.

P

- Administer 25-50mg of diphenhydramine (Benadryl) IV/IO.
    - May be administered IM if unable to establish IV/IO.

Anaphylaxis

Obtain history of exposure

- Onset and location (the shorter the time from contact to onset, the more severe the reaction)
- Insect sting or bite
- Food allergy and possible exposure
- Medication allergy and possible exposure
- New clothing, soap detergent
- Past history of reactions

Not all signs and symptoms are present in every case:

- Itching, hives, redness, rash, pallor, cyanosis
- Coughing, wheezing, tachypnea, accessory muscle use, retractions
- Hoarseness, stridor, pharyngeal or oral edema
- Restlessness, decreased LOC, unresponsive
- Hypotension, tachycardia
- Nausea, vomiting, diarrhea, cramping

R

- Assure scene safety.
- Routine patient assessment.
- Maintain patent airway.
- Assist breathing as necessary.
- Place oxygen if saturations < 90%.
- Monitor blood pressure, pulse and respirations.
- If present, scrape stinger out.
- Stabilize involved extremity and apply ice.
- Cardiovascular collapse may occur abruptly without prior skin or respiratory symptoms.
- Individuals at greater risk for fatal reaction include those with asthma, atopic dermatitis (eczema), prior anaphylaxis and delayed treatment.
- Call early for ALS rendezvous.
- Evaluate for respiratory distress; airway management.
- Administer oxygen 10-15L via non-rebreather or bag valve mask for respiratory distress.
- If EpiPen is available, administer dose per package instructions on lateral aspect of thigh.
    - A single dose may not reverse the effects.
    - Repeat every 5 minutes as needed.
    - If epinephrine is given, patient must be transported to the hospital.
- If patient has symptoms of wheezing, coughing, or tachypnea and has an albuterol inhaler, assist them in using 2-4 puffs, if training completed.

E

- Place patient on cardiac monitor.
- Obtain 12-lead ECG, if available.

- If ALS unit and no autoinjector available, draw from vial into syringe and administer epinephrine 1:1000 0.01 mg/kg IM to a max of 0.3 mg.
    - Usual adult dose is 0.3 mg.
    - A single dose may not reverse the effects.
    - Repeat every 5 minutes as needed.
    - If epinephrine is given, patient must be transported to the hospital.
- If patient has symptoms of wheezing, coughing, or tachypnea, administer albuterol/ipratropium (DuoNeb) nebulized treatment.

A

- Establish IV/IO access.
- Administer fluid bolus of normal saline.
- Consider supraglottic airway, if needed.
- Do not delay transport to establish IV/IO.
- If severe shortness of breath and/or wheezing are present, consider administering albuterol treatment with small volume nebulizer.

P

- Slowly administer epinephrine 1:10000 0.01 mg/kg IV/IO, up to maximum dose of 0.3mg if not administered or ineffective IM.
    - Repeat q 5 minutes as needed.
    - Typical adult dose is 0.3mg.
- Administer diphenhydramine (Benadryl) 0.5 mg/kg, up to 50 mg, IV/IO.
    - May be given IM if IV/IO access is not available.
- Consider endotracheal intubation.
- Consider administration of a steroid:
    - methylprednisolone (SoluMedrol) 125 mg IV/IO

      OR
    - dexamethasone (Decadron) 0.6 mg/kg IV/IO/IM to max of 20mg.
- May consider administration of ipratropium 0.5 mg via small volume nebulizer if albuterol alone is not effective or symptoms return.
- If persistent or recurrent symptoms occur, consider epinephrine infusion.
    - 2-10 mcg/min IV/IO.
    - Titrate to keep systolic blood pressure > 100.
- Contact medical control for anaphylaxis not responding to epinephrine.

Coma of Unknown Origin/Altered Level of Consciousness

History: diabetes, medical alert tag, drugs or paraphernalia at scene, report of toxic ingestion, history of trauma, syncope

Signs/symptoms: decrease or change in baseline mental status, bizarre behavior, cool/diaphoretic skin, warm/red skin, fruity breaths, Kussmal respirations, syncope, shortness of breath, chest pain

R

- Assure scene safety.
- Routine patient assessment.
- Maintain patent airway and spinal precautions.
- Assist breathing as necessary.
- Place oxygen if saturations < 90%.
- Monitor blood pressure, pulse and respirations.
- Check blood sugar.
- Administer naloxone (Narcan) 0.4mg via mucosal atomization device.

E

- Place patient on cardiac monitor.
- Obtain 12-lead ECG, if available.
- Perform secondary assessment, look for signs of trauma.
- Administer naloxone (Narcan) 0.4mg IM (drawn from vial with needle and syringe, if additional training completed).

A

- Establish IV/IO.
- Obtain blood samples.
- If blood glucose is < 60, administer 50% dextrose 50ml IV/IO.
- If not already done, administer naloxone (Narcan) 0.4mg IV/IO/IM.
- If no response to initial dose of naloxone, administer 1.6mg IV/IO.
- If blood glucose is > 250, consider normal saline 1000ml bolus.

P

- If patient appears malnourished or has EtOH on board, consider administering thiamine 100mg IV/IM prior to administration of glucose IV.
- If glucose < 60, may consider administration of glucagon 1mg IM/IN.

Notes:

- Be aware of altered mental status as presenting sign of an environmental toxin or Haz-Mat exposure and protect personal safety.
- It is safer to assume hypoglycemia than hyperglycemia if doubt exists.

- Do not let alcohol confuse the clinical picture. Alcoholics frequently develop hypoglycemia.
- Low glucose (< 60), normal glucose (60 - 120), high glucose (> 250).
- Consider Restraints if necessary for patient's and/or personnel's protection per the restraint procedure.
- Repeat blood glucose for any change in mental status after treatment has begun and after interventions.

Excited Delirium: The Agitated Uncontrolled Patient

This protocol deals with one of the most challenging clinical situations you may face in EMS. This protocol identifies goals of evaluation and treatment, but may only be implemented if there is a reasonable degree of safety for the EMS providers. Furthermore, the ability to achieve specific aspects of this protocol will be dependent on the severity of the patient's condition and their willingness to allow medical care.

History: situational crisis, psychiatric illness, medications, injury to self or threats to others, medical alert tag, substance abuse/overdose, diabetes.

Signs/symptoms: anxiety, agitation, confusion, affect change, hallucinations, delusional thoughts, bizarre behavior, combativeness, violent behavior, expression of suicidal or homicidal thoughts.

R

- Assess for scene safety. If it is not safe, leave scene immediately and contact law enforcement. Do not enter scene until cleared by law enforcement.
- Perform patient assessment.
- Maintain patent airway.
- Assist breathing as necessary.
- Place oxygen if saturations < 90%.
- Monitor blood pressure, temperature, pulse and respirations.
- If patient body temperature exceeds 102 degrees, move patient to cooler environment and remove clothing. Cool aggressively with wet sheets, cool packs, and/or evaporative airflow. Avoid ice packs and cold-water immersion. Lower body temperature to 101 degrees.
- Restrain only as necessary to safely allow for the patient's assessment and necessary care.
- When restraints are necessary, follow all precautions identified in the restraints for aggressive or violent patients policy (page 53), paying particular attention to providing for an adequate airway and ventilation.
- Apply protective face mask or hood to patient, if necessary, to reduce potential transmission of disease via saliva.
- Perform blood glucose test.
- If glucose < 60, attempt to give oral glucose if patient is alert enough to swallow safely with compromising airway.

E

- Place patient on cardiac monitor.

A

- Establish IV/IO if able to do so safely.
- If blood glucose, < 60, obtain blood samples and give 50% dextrose 50 ml IV/IO.

P

- For severe agitation, consider administering
  - midazolam (Versed) 2.5mg IV/IO/IM q 3-5 minutes to maximum dose of 10mg.
    - May be given via mucosal atomization device (MAD) at dose of 5mg.

    AND/OR
  - lorazepam 0.5-2mg IV/IO/IM/MAD.

    AND/OR
  - diazepam 2-5mg IV/IO/MAD
  - ketamine 5-10mg/kg IV/IO/IM/MAD
- Consider RSI (page 85) for long transport.

Notes:

- Be sure to consider all possible medical/trauma causes for behavior.
- Do not overlook the possibility of associated domestic violence or child abuse.
- Medications may be repeated for immediate safety of the patient or provider.

Hypoglycemia

History: Known diabetic, medical alert tag, insulin use, medical history, medications

Signs/symptoms: Decreased mental status, bizarre behavior, pale/cool skin, diaphoresis, syncope

R

- Perform patient assessment.
- Maintain patent airway.
- Assist breathing as necessary.
- Place oxygen if saturations < 90%.
- Monitor blood pressure, pulse and respirations.
- Check blood glucose.
- If glucose is < 60 and patient is conscious and responsive, give oral glucose tabs or gel.

E

- Apply cardiac monitor.
- Perform secondary assessment and look for signs of trauma.

A

- Establish IV/IO.
- If glucose is < 60 and patient is unconscious or unable to protect their airway, obtain blood sample and administer 50% dextrose 25ml or 10% dextrose (D10) 100ml IV/IO
- If patient is wearing an insulin pump, turn the device off or remove the subcutaneous needle using sharps precautions.

P

- If blood glucose is <60 and unable to establish IV, administer glucagon 1mg IM or SQ
- If patient does not respond to IV/IO dextrose or IM/SQ glucagon, proceed to coma of unknown origin protocol (page 159).

Mental Health Emergencies

Basic tenets for EMS personnel:

- Consider possible medical causes of mental health symptoms:
    - Head injury
    - Drugs
    - Poisoning
    - Hypoglycemia
    - Severe infection
    - Hypothermia
    - Hypoxia
- Prevent health-threatening circumstances, both your health and the patient's.
- Timing is critical. Working efficiently reduces the progression of a disorder and will free you sooner for other emergencies.
- Stay within the limits of your competence.
- Seek consultation and aid from with professionals. The more information you can gather, the better the quality of treatment that can be delivered.
- Gain and maintain control of emergency circumstances until control has been taken over by other professionals.
    - If you are afraid, do not act like you are not. It is better to let the patient know that, despite fear, you are in control of yourself and able to control the patient.
    - Violent patients want limits and will respond when you make it clear that you will restrain them and control their behavior.
    - When talking to violent patients, stand facing them with your arms crossed. This position is nonthreatening and will allow you to deflect blows above and below the belt.
    - Do not attempt to deal with patient in a small room.
        - Both patient and responder need space between them.
        - The patient may fear being touched and the responder needs room to maneuver, if attacked.
    - Do not sit or stand in the way of the door while interviewing a violent patient.
        - The patient will be less likely to attack if they feel they have a clear exit.
    - Ask the patient if they own a firearm and if so, what type and where it is located.
    - Don't threaten the patient.
    - Don't openly disagree with the statements of acutely disturbed individuals; listen instead.
    - Don't make promises that cannot be kept.
    - Don't joke, laugh, or discuss other patients or allow bystanders to do so in front of the patient.
- Contact mental health and law enforcement if patient refuses transport and is an apparent danger to self or others.
- If restraints are required, recruit support from law enforcement, see restraints for aggressive patients policy (page 53).

Overdose/Poisoning

History: Ingestion or suspected ingestion of potentially toxic substance, what substance was ingested by what route, quantity ingested, time of ingestion, reason (accidental, suicidal, criminal), available medications in the home, past medical history and medications, home remedies given to patient prior to aid arrival. Do not only rely on patient history of ingestion, especially in suicide attempts.

Signs/symptoms: mental status changes, hypotension/hypertension, decreased respiratory rate, tachycardia, dysrhythmias, seizures, mouth/throat/abdominal pain, vomiting/diarrhea, sweating, dilated or pinpoint pupils, increased secretions

R

- Perform patient assessment.
- Maintain patent airway.
- Assist breathing as necessary.
- Place high-flow oxygen if patient is comatose or in respiratory distress. Place appropriate delivery device if saturations < 90%.
- Monitor blood pressure, pulse and respirations.
- Check blood glucose.
- If patient is comatose or in respiratory distress, administer naloxone (Narcan) 0.4mg MAD.
    - If no response to initial dose after 2 minutes, administer 1.6mg.
- If glucose < 60 and patient is awake and alert, administer oral glucose.

E

- Place patient on cardiac monitor and obtain 12-lead ECG.
- If patient is comatose or in respiratory distress, administer naloxone (Narcan) 0.4mg MAD or IM (if additional training completed).
    - If no response to initial dose after 2 minutes, administer 1.6mg.
- Contact Poison Control at 1-800-222-1222 with product, route, amount and time of ingestion. Document poison control case number on patient report.
    - Contact medical control with poison control recommendations to receive orders.
- Bring bottles, contents, emesis, other home medications to the ED.

A

- Establish IV/IO.
- If glucose < 60 and patient is unconscious or unable to maintain their airway, administer dextrose 50% 25 ml or dextrose 10% 100 ml IV/IO.
- If patient is comatose or in respiratory distress, administer naloxone (Narcan) 0.4mg IV/IO.
    - If no response to initial dose after 2 minutes, administer 1.6 – 2 mg IV/IO/IM.

P

- If patient is comatose or in respiratory distress and does not respond to naloxone, consider intubation

- Treat specific medication overdoses if symptomatic: ECG changes, systolic blood pressure < 100, altered level of consciousness, pulse > 100.
    - Tricyclics (amitriptyline, nortriptyline, imipramine):
        - sodium bicarbonate 50 mEq IV/IO bolus followed by drip.
        - norepinephrine drip 7-35 mcg/min IV/IO, titrate to SBP > 100
            OR
        - dopamine drip 5-20 mcg/kg/min IV/IO, titrate to SBP > 100.
    - Calcium channel blockers (diltiazem, verapamil, amlodipine, nifedipine):
        - calcium chloride 500-1000 mg IV very slow IV push over 5-10 min.
        - consider transcutaneous pacing (page 96).
        - glucagon 3-5 mg IV over 5-10 minutes.
        - norepinephrine drip 7-35 mcg/min IV/IO, titrate to SBP > 100.
            OR
        - dopamine drip 5-20 mcg/kg/min IV/IO, titrate to SBP > 100.
    - Beta blockers (atenolol, carvedilol, metoprolol, propranolol):
        - glucagon 3-5 mg IV over 5-10 minutes.
        - norepinephrine drip 7-35 mcg/min IV/IO, titrate to SBP > 100.
            OR
        - dopamine drip 5-20 mcg/kg/min IV/IO, titrate to SBP > 100.
    - Organophosphates (insecticides, nerve gases, ophthalmic agents):
        - atropine 2mg IVP q 5-15 minutes, max 20mg.
        - See page 172.
    - CNS stimulants:
        - lorazepam 0.5-4mg IV/IO/IM/MAD.
        - midazolam 2.5-5mg IV/IO/IM/MAD.
        - diazepam 2-5mg IV/IO/IM/MAD.

Renal Failure and Dialysis Patients

History: known dialysis patient, dialysis schedule, last dialysis, recent changes to dialysis, medications, other medical history

Symptoms: change in level of consciousness, fever, palpitations, muscle spasms, weakness, fatigue, nausea/vomiting, rash

R

- Perform patient assessment.
- Maintain patent airway.
- Assist breathing as necessary.
- Place oxygen if saturations < 90%.
- Monitor blood pressure, pulse and respirations.
    - Measure blood pressure on the arm without dialysis fistula

E

- Place patient on cardiac monitor.
- Obtain 12-lead ECG.

A

- Establish IV/IO.
    - If unable to obtain IV/IO and patient is unstable, may access fistula.
- If hypotension is present and lungs are clear, give 500cc normal saline. May repeat once, if necessary.

P

- If patient has symptomatic bradycardia, administer atropine 0.5mg IV/IO.
- If patient has hypotension or bradycardia and ECG evidence of hyperkalemia (tall, peaked T waves, prolonged QRD, flat or absent P waves, complete heart block):
    - Administer calcium gluconate 10% 20ml slowly over 1-2 minutes
        - If calcium gluconate is not available, calcium chloride 10% 5-10 ml (500-1000mg) may be substituted
    - Administer sodium bicarbonate 1 mEq/kg slow IV
    - Administer albuterol (Ventolin) 5mg in 6ml NS via SVN
- Using HEAR system, alert the hospital to the potential need for emergency dialysis

Seizure

History: Prior history of seizures, seizure medications (including last dose taken), description of seizure activity, recent head trauma, congenital abnormality, pregnancy (go to pregnancy-induced hypertension/eclampsia protocol, page 179), medical alert tag, first time seizure

Signs/symptoms: observed seizure activity, altered mental status, incontinence, mouth trauma, other trauma, status epilepticus

R

- Perform patient assessment.
- Maintain patent airway.
- Position patient on side to prevent aspiration.
- Assist breathing as necessary.
- Place oxygen if saturations < 90%.
- Monitor blood pressure, pulse and respirations.
- Check blood glucose.
- If glucose is < 60 and patient is no longer seizing and is alert, give oral glucose

E

- Place patient on cardiac monitor.

A

- Establish IV/IO.
- If glucose < 60, give dextrose 50% 25 ml or dextrose 10% 100 ml IV/IO

P

- If glucose < 60 and no IV/IO access or no response to initial dextrose, administer glucagon 1mg IM/SQ/MAD
- If seizure activity persists for more than two minutes or patient has recurrent seizures, administer one of the following:
    - midazolam (Versed) 1-2mg IV/IO/IM/MAD q 3 minutes to max of 6mg
    - lorazepam 1-2mg IV/IO/IM/MAD
    - diazepam 2-5mg IV/IO/MAD
- Assess for cause of seizures (hypovolemia, hypoxia, hydrogen ion/acidosis, hypo-/hyperkalemia, hypoglycemia, hypothermia, toxins, tamponade, tension pneumo, thrombosis, trauma) and treat per appropriate protocol

Severe Sepsis

Detection (all three criteria are required)

- Suspected or known infection
- Two or more of the following:
  - Temperature >38°C (100.4°F) or < 36°C (96.8°F)
  - Tachycardia with P > 90
  - Tachypnea with R > 20 (or $PaCO_2$ < 32)
- Evidence of hypoperfusion as manifested by one of the following:
  - Systolic blood pressure < 90 mm Hg
  - Mean arterial pressure (MAP) < 65 mm Hg
  - Altered mental status
  - $PaCO_2$ < 25

R

- Perform patient assessment.
- Maintain patent airway.
- Assist breathing as necessary.
- Place oxygen if saturations < 90%.
- Monitor blood pressure, pulse, temperature and respirations.
- Notify receiving hospital of an incoming “severe sepsis patient”

E

- Place patient on cardiac monitor.
- Initiate $ETCO_2$ monitoring, if available.

A

- Establish two large bore IV. Consider IO access if necessary).
- Administer 20 cc/kg IV bolus of normal saline in 500cc increments for normotensive patients and 30 cc/kg IV for hypotensive patients.

P

- If SBP remains < 90 mmHg or MAP < 65 mm Hg after 2000 cc NS, initiate norepinephrine infusion at 8-12 mcg/min, titrated to maintain SBP > 90 mm Hg or MAP > 65 mm Hg
- If endotracheal intubation/RSI is required, consider using alternative to etomidate to sedate the patient.

Smoke Inhalation

History: confined space or enclosed environment, possibility of cyanide gas-producing substrates (burning synthetics, plastics or wool, dumpster fire, vehicle fire), duration of exposure, loss of consciousness, medical history, lung disease

Signs/symptoms: headache, confusion or altered mental status, dyspnea, chest tightness, nausea, vomiting, dilated pupils, seizures, coma, hyperventilation and hypertension (early), hypoventilation and hypotension (late)

R

- Ensure scene safety and your own personal safety before entering a potentially dangerous environment.
- Remove patient from exposure.
- Perform patient assessment.
- Maintain patent airway.
- Assist breathing as necessary.
- Administer high flow oxygen.
- Monitor blood pressure, pulse and respirations.

E

- Place patient on cardiac monitor
- Perform assessment of upper airway. Look for facial burns and soot in the airway, listen for stridor.
- Assess clinical severity of suspected carbon monoxide, cyanide, or combined exposure.
- If wheezing is present, administer albuterol (Ventolin) and ipratropium bromide (Atrovent) via SVN. May repeat and continue albuterol via SVN for as long as wheezing persists.

A

- Establish IV/IO.
- Administer normal saline IV/IO in 500 cc increments to maintain SBP > 90 mm Hg.

P

- Consider administration of hydroxocobalamin (Cyanokit) 5 g IV over 15 minutes, if the situation involves a confined space and combustion of possible cyanide gas-producing substrates (above, in history).
    - Prior to administration, measure carbon monoxide level, if equipment available, and obtain blood sample for cyanide assay and other labs.
    - May repeat dose as needed
    - A typical internal combustion engine does not produce cyanide gas.
- If patient is in cardiopulmonary arrest, administer hydroxocobalamin.

Treatment of Patients Exposed to Nerve Agents (GB and VX) and Organophosphorus Pesticides

The hazardous materials response policy should be applied to all responses involving these agents.

Scene safety is paramount. Patients whose skin or clothing is contaminated with liquid nerve agent can contaminate rescuers by direct contact and off-gassing vapor, so decontamination procedures must be followed.

The following treatment should be considered only when the patient manifests typical symptoms of exposure to these agents and the scene is suggestive of exposure.

Mass casualty incident: Early recognition that field patient treatment needs will exceed immediately available supplies should prompt an immediate call to the CDC to initiate the release of Chempacks.

Signs/symptoms: pinpoint pupils, muscle twitching, confusion, seizures, flaccid paralysis, coma, chest tightness, wheezing, shortness of breath, respiratory failure, nausea, vomiting, abdominal cramping, diarrhea with incontinence, runny nose, excessive salivation, urination, and sweating.

Defecation
Urination
Miosis
Bronchorrhea
Excitation
Lacrimation
Salivation
Seizures
Muscle weakness and paralysis
Tachycardia
Weakness
THypertension
Fasciculation

R/E

- Perform patient assessment.
- Maintain patent airway.
- For mild to moderate symptoms, administer one MARK 1 kit (EMR can administer to self and peers only, EMTs may administer to patients):
    1. Remove MARK 1 from protective pouch.
    2. Grasp atropine autoinjector (smaller of the two, contains 2mg in 0.7cc)) and remove it from slot number 1 of the plastic clip. The yellow safety cap remains on the clip and the autoinjector will be armed with the exposed.
    3. Grasp the unit and position the green tip into the victim's injection site (outer thigh or upper outer buttock).
    4. Apply firm, even pressure until the autoinjector pushes the needle into the injection site and it fires. Using jabbing motions may result in improper injection and injury to muscle.
    5. Hold the injector firmly in place for **at least 10 seconds**.
    6. Carefully remove autoinjector. Use caution and needle will be exposed.
    7. Remove the pralidoxime (2-PAM) autoinjector (contains 600mg in 2cc) from slot number 2 of the plastic tip.
    8. Inject the victim the SAME way as described for the atropine autoinjector in steps 3-6.
    9. Massage the injection site, if time permits.
    10. If symptoms persist after 5-10 minutes, repeat injections.

11. If symptoms persist in additional 10 minutes, repeat injections a third time.

- For severe symptoms (respiratory compromise, seizures, or coma), administer three MARK 1 kits in rapid succession.
    - If symptoms persist after third set of injections **DO NOT** administer any more antidotes.
    - Convulsant Antidote for Nerve Agent (CANA) (diazepam 10mg autoinjector)
        1. Hold diazepam autoinjector (CANA) in front of you
        2. Remove the grey safety cap by pulling it out.
        3. Do not touch the black end of the injector.
        4. Grasp the unit and position the black tip into the victim's injection site (outer thigh or buttock).
        5. Apply firm, even pressure until the autoinjector pushes the needle into the injection site and it begins firing. Using jabbing motion may result in improper injection or injury to muscle.
        6. Hold the injector firmly in place for at least 10 seconds.
        7. Carefully remove autoinjector from injection site. Use caution as needle will be exposed.
- Assist breathing as necessary.
- Place oxygen if saturations < 90%.
- Monitor blood pressure, pulse and respirations.

A

- Establish IV/IO.

P

- If severe symptoms/administration of 3 auto injector kits, administer lorazepam (Ativan) 1-2 mg IV/IO/IM.
    - May be repeated q 3-5 minutes, up to max of 4mg
- If patient's needs exceed immediately available supply of lorazepam, diazepam 10mg IM may be administered.
- Morphine, theophylline, aminophylline or succinylcholine should be used with caution for patients treated with 2-PAM
- Treatment using multi-dose vial medications or Atropen for adults or children:
    - Atropine
        - Infant (0-3 years, <13 kg): 0.05-0.1 mg/kg IM/IV (0.2-1 mg) or appropriate dose of Peds Atropen
        - Child (3-10 years, 13-35 kg): 1-4 mg IM/IV
        - Adolescent to adult: 2 mg IM/IV
        - Elderly/frail: 1-4 mg IM/IV
    - Pralidoxime (2-PAM)
        - Infant (0-3 years, < 13 kg): 25-50 mg/kg IM/IV or 150-600 mg
        - Child)3-10 years, 13-35 kg): 25-50 mg/kg IM/IV or 300-1200mg
        - Adolescent to adult (> 10 years, 35 kg):
            - Mild-moderate symptoms 1 dose from MARK 1, repeat as needed up to 3 total (or 600-1800 mg IM/IV)
            - Severe symptoms: 3 MARK 1 kits IM (or 1800 mg)
        - Elderly/frail: 1 dose MARK 1 or 10-25 mg/kg IM/IV
    - Diazepam (Valium)

- Infant (0-3 years, < 13 kg): 0.2-0.5 mg/kg IM/IV or 1.25-5 mg
- Child (3-10 years, 13-35 kg): 0.2-0.5mg/kg IM/IV or 2.5-10 mg
- Adolescent to adult: 5-10 mg IM/IV
- Elderly/frail: 1/25-10mg IM/IV

Section 5: OB/GYN Protocols

Cardiac Arrest in Pregnancy

- Dramatic alterations in maternal cardiovascular physiology induced by pregnancy make cardiopulmonary resuscitation of expectant mothers unique.
    - Maternal blood volume and cardiac output increase by up to 150% from nonpregnant levels.
    - Uterine blood flow increases 20-30% in the last trimester to accommodate the needs of the fetus.
    - When the mother is supine, the gravid uterus may compress the iliac vessels, inferior vena cava and abdominal aorta resulting in hypotension and reduction in cardiac output.
- When cardiac arrest occurs before the 24th week of gestation (onset of fetal viability), the rescuer's primary concern should be directed toward saving the mother.
    - Mother's chances of survival are better than those of the fetus.
    - Conventional procedures and protocols applicable to any arrest situation should be used as indicated and appropriate.
- Beyond the 24th week of gestation, the rescuer must consider the life of the potentially viable fetus as well as that of the mother.
- Precipitating events include arrhythmia, congestive heart failure, myocardial infarction, intracranial hemorrhage in toxemic patient, hypovolemia due to spontaneous bleeding.
- Most standard resuscitation procedures can and should be applied without modification.
- Closed chest compressions and support of ventilation should be done conventionally.
- To reduce the effects of the gravid uterus on venous return, a wedge, such as a pillow or other device, should be placed under the right flank/hip to move the uterus to the left side of the abdomen off the inferior vena cava.
- Lidocaine (Xylocaine) crosses the placenta, but appears to have little effect on the fetus when used in standard doses.
- The use of vasopressors such as epinephrine, norepinephrine, and dopamine should be avoided, if possible, since they induce uteroplacental vasoconstriction.
    - This is made worse in the presence of hypoxemia and/or hypotension.
    - This may endanger the life of the fetus.
- Maternal complications that can occur when CPR is performed include liver laceration, uterine rupture, hemothorax, and hemopericardium.

General OB/GYN considerations

- Most deliveries proceed without complications.
- Most routine and uncomplicated pregnancies in labor may be transported with a minimum of ALS intervention.
- Transport most pregnant women in position of comfort.
- If possible, transport unconscious or traumatized third-trimester pregnant women in left lateral decubitus position while protecting spine.
- If patient must be transported in supine position (i.e., severe trauma), place rolled towel or blanket under right hip or right side of backboard to move the pregnant uterus off the inferior vena cava.
- Treat hypotension aggressively in the pregnant woman.
- See childbirth protocol (page 100).

Complications of Delivery

Breech delivery:

- Administer high flow oxygen.
- If breech is obvious, transport patient ASAP.
- Place mother in supine or Trendelenburg position.
- If there is any other presenting part besides both feet (one foot, buttocks, hand, elbow), do not allow mother to push and transport ASAP.
- If delivery of both feet occurs during transport:
    - Allow mother to push. Gently extract baby. Do not pull.
    - Support delivered body and extremities on your hand and arm.
    - If head does not spontaneously deliver, place gloved hand inside vagina to form a "V" with your fingers around baby's mouth and nose, should it begin to breathe.
    - Perform the Mauriceau maneuver to deliver the head:
        - Fingers of left hand inserted into infant's mouth over mandible, to stabilize the neck and prevent cervical hyperextension.
        - Fingers of right hand curved over infant's shoulders.
        - Assistant exerts external suprapubic pressure on baby's head.

Prolapsed cord:

- Administer high flow oxygen.
- Place mother in knee chest or extreme Trendelenburg.
- Insert gloved hand into vagina and gently lift head/body off the cord.
- Observe cord for pulsations and continue that position until relieved by hospital staff.
- Transport ASAP and notify receiving hospital via H.E.A.R. or cell phone of the situation as soon as possible.

Cord wrapped around neck:

- Gently attempt to loosen cord.
- With two fingers behind the baby's neck, try to slip the cord forward over the baby's head.
- If unsuccessful, clamp cord with two clamps, carefully cut between clamps and unwrap cord from around the neck.
- Assist delivery.

Placenta previa or placental abruption (significant bright red vaginal bleeding, often painless):

- R/ Administer high flow oxygen.
- Elevate legs, if able to do so.
- Contact receiving hospital via H.E.A.R. system or cell phone as soon as possible.
- E/ Apply cardiac monitor.
- A/P/ Start IV/IO and administer 1000 ml normal saline.

Postpartum Hemorrhage

Early- usually due to uterine atony or tears of the cervix
Late (7-10 days)- Retained placental parts

R

- Perform patient assessment.
- Maintain patent airway.
- Assist breathing as necessary.
- Place high flow oxygen.
- Perform fundal massage (page 100).

E

- Place patient on cardiac monitor.

A

- Establish large bore IV or IO.
- If hypotensive, bolus normal saline 1000 ml.

P

- Consider administration of oxytocin 10 units IM then oxytocin 20 units in 1000 ml normal saline, titrate infusion rate to severity of bleeding (with medical control approval and order).
- Consider administration of TXA (p 322) if hemorrhage is not controlled with above measures, is ongoing, and accompanied by evidence of hemorrhagic shock.

Pre-Eclampsia/Eclampsia

History: Past medical history, pregnancy history, medications, drug use, renal disease, delivery history (eclampsia can present up to two months postpartum)

Signs/symptoms:

- Mild pre-eclampsia: moderate hypertension, edema, weight gain.
- Moderate to severe pre-eclampsia (any one of the following): hypertension > 160 systolic or > 110 diastolic; headache; mental status change or amnesia; visual disturbances; epigastric or right upper quadrant pain; dyspnea; cyanosis.
- Eclampsia (toxemia): seizure or post-ictal.

R

- Perform patient assessment.
- Maintain patent airway.
- Assist breathing as necessary.
- Place high flow oxygen.
- Monitor pulse, blood pressure, respirations.
- Transport should be gentle and quiet. Keep patient as calm as possible.

E

- Place patient on cardiac monitor.
- Obtain 12-lead ECG.

A

- Establish IV/IO.

P

- If seizing, administer magnesium sulfate 4 g diluted with 20 ml normal saline IV push or 4 g IM.
- If seizures continue, administer one of the following:
    - lorazepam 1-2 mg IV/IO/IM/MAD
    - midazolam 1-2 mg IV/IO/IM q 3 minutes to maximum of 6 mg
        - May be delivered via MAD at dose of 5mg
    - diazepam 2-5 mg IV/IO/MAD q 5 minutes to maximum 10mg.
- Doppler fetal heart tones, if available.
- Contact medical control if seizures persist.

Sexual Assault

General principles:

- Give emotional support and reassurance. Do not press inquiries and/or history if patient is unwilling or embarrassed to answer questions.
- Perform secondary survey, as indicated.
- Treat associated injuries.
- Advised patient not to bathe, douche, etc. If clothing has already been changed, collect clothing worn during assault in a paper bag and transport to hospital. Maintain chain of evidence.

Spontaneous Abortion/Miscarriage

History: first date of last menstrual period, past medical history, history of previous pregnancies or miscarriages, recent trauma, medications taken.

Signs/symptoms: vaginal bleeding, cramping, vomiting, hypotension, tachycardia

R

- Perform patient assessment.
- Maintain patent airway.
- Assist breathing as necessary.
- Administer high flow oxygen.
- Apply loose perineal pad. Collect any tissue passed and transport to hospital with patient.

E

- Place patient on cardiac monitor.

A/P

- Establish IV.
- If hypotensive, administer 1000 ml normal saline.

Section 6: Neonatal and Pediatric Protocols

General Pediatric Considerations

- Most pediatric medical emergencies are respiratory.
- Most pediatric respiratory emergencies can be managed with oxygen, suction, proper patient positioning, and, occasionally, with positive pressure ventilation with bag and mask.
- Pediatric medical and traumatic emergencies may also involve shock. Check heart rate, level of consciousness, capillary refill, and blood pressure. If unable to obtain blood pressure, check for pulse at wrist and groin.
- Medications and fluids can be administered by intraosseous infusion (IO) when IV cannot be established. In general, attempts at IV starts should be limited to 90 seconds or two attempts.
- Use color coded resuscitation tape, if available, for critically ill or injured pediatric patients less than 34 kg or 75 lb requiring medications or procedures.
- For general purposes, infants are defined as less than one year of age and children are defined as ages 1-12 years or until they have reached adult size.

Pediatric References

Weight	**4 kg** ***Grey***	**6 kg** ***pink***	**8 kg** ***red***	**10 kg** ***purple***	**12 kg** ***yellow***	**15 kg** ***white***	**19 kg** ***blue***	**24 kg** ***orange***	**30 kg** ***green***
Age	**Newbor**	**6 mos**	**9 mos**	**1 yr**	**2 yrs**	**3 yrs**	**5 yrs**	**7 yrs**	**10 yrs**
Pulse	100-160	100-160	100-160	90-150	90-150	80-140	70-120	70-120	70-120
Respiratory Rate	30-60	30-60	30-60	24-40	24-40	22-34	18-30	18-30	18-30
Blood Pressure	40 mmHg	60 mmHg	60 mmHg	70 mmHg	70 mmHg	80 mmHg	80 mmHg	80 mmHg	90 mmHg
Endotracheal uncuffed	3.0	3.5	3.5	4.0	4.5	5.0	5.5	6.0	6.5
Endotracheal cuffed	2.5	3.0	3.0	3.5	4.0	4.5	5.0	5.5	6.0
Nasogastric Tube	5 Fr	5 Fr	8 Fr	8-10 Fr	10 Fr	10 Fr	12 Fr	14 Fr	14 Fr
Defibrillation	8 J	12 J	16 J	20 J	24 J	30 J	38 J	48 J	60 J
Cardioversion	2-4 J	3-6 J	4-8 J	5-10 J	6-12 J	8-15 J	10-20 J	12-24 J	15-30 J
Fluid Challenge	80 mL	120 mL	160 mL	200 mL	240 mL	300 mL	380 mL	480 mL	600 mL
Suction Catheter	6Fr	8Fr	8Fr	10Fr	10Fr	10Fr	10Fr	10Fr	12Fr

APGAR Scale			
	0 Points	**1 Point**	**2 Points**
A – Appearance (Skin Color)	Blue / Pale	Normal, except for extremities	Normal over entire body
P – Pulse	Absent	Below 100	Above 100
G – Grimace (Reflex Irritability)	No Response	Grimace	Sneeze, cough, pulls away
A – Activity	Absent	Arms and Legs Flexed	Active Movement
R – Respiration	Absent	Slow, irregular	Good, strong cry

AVPU Infant / Child		
Response	**Infant**	**Child**
A – Alert	Curious / Recognizes parents	Alert / Aware of surroundings
V – Responds to Voice	Irritable / Cries	Opens eyes
P – Responds to Pain	Cries in response to pain	Withdraws from pain
U – Unresponsive	No response	No response

CUPS Pediatric	
C – Critical	**Absent airway, breathing or circulation** (cardiac or respiratory arrest or severe traumatic injury)
U – Unstable	**Compromised airway, breathing or circulation** (unresponsive, respiratory distress, active bleeding, shock, active seizure, significant injury, shock, near-drowning, etc.)
P – Potentially Unstable	**Normal airway, breathing & circulation but significant mechanism of injury or illness** (Post-seizure, minor fractures, infant <3 months with fever, etc.)
S – Stable	**Normal airway, breathing & circulation No significant mechanism of injury or illness** (small lacerations or abrasions, infant ≥3 months with fever)

Neonatal Resuscitation

Initial measures:

- Ask three questions:
  - Is the newborn term (>37 weeks)?
  - Is the newborn breathing or crying?
  - Does the newborn have good muscle tone?
- If <u>all</u> answers are yes, provide warmth, dry the infant, and bulb suction/clear airway only if there is an obvious obstruction to breathing. Place baby skin to skin with mom.
- If <u>any</u> answer is no, the infant should receive initial steps at the warmer or on the bed. Dry the infant and remove wet linen, clear airway by wiping mouth and nose, reposition, and stimulate infant (flicking soles of feet). <u>All the above steps should take no more than 30 seconds, total</u>.

Evaluate respirations and heart rate (<u>not</u> color):

- If P < 100 or if newborn is apneic or gasping, begin positive pressure ventilation with bag valve mask on room air.
  - Position neonate with head slightly extended (sniffing position).
  - Apply mask correctly.
  - Give breaths at rate of 40-60 per minute (breath – 2 – 3 – breath -) for 30 seconds.
  - Evaluate heart rate, SpO_2, bilateral breath sounds, and chest rise
- Apply pulse oximeter when resuscitation is anticipated, PPV is required for more than a few breaths, or supplemental oxygen is administered.
  - Place pulse oximeter on neonate's **right** hand or wrist.
- Resuscitation should begin with room air (21% oxygen).
  - Using pulse oximetry, supplemental oxygen concentration should be adjusted to achieve target values below, by age.
    - 1 minute 60-65%
    - 2 minutes 65-70%
    - 3 minutes 70-75%
    - 4 minutes 75-80%
    - 5 minutes 80-85%
    - 10 minutes 85-95%
- All positive-pressure devices, including self-inflating bag, should have integral pressure gauge, or if there is a site to attach manometer it should be attached.

When PPV begins, assess for rising heart rate and improving oxygen saturation.

- If not evident within 5-10 breaths, ask assistant to assess bilateral breath sounds and chest rise.
- If these are not immediately evident, perform as many of the ventilation corrective steps as needed to achieve bilateral breath sounds and chest rise. Use **MR SOPA** to help remember steps.
  - Adjust the **<u>m</u>**ask on the face
  - **<u>R</u>**eposition the head to ensure you have open airway. Reattempt ventilation.

    If not effective
  - **<u>S</u>**uction the mouth and nose.
  - Ventilate with the baby's mouth slightly **<u>o</u>**pen and lift the jaw forward. Reattempt ventilation.

    If not effective

- Gradually increase **p**ressure every few breaths (cautiously, to a max of 40 cm H2O), until there are bilateral breath sounds and visible chest movement.

If not effective

- Consider airway **a**lternative (endotracheal tube or laryngeal mask airway).

Establishing effective ventilations is the highest priority in neonatal resuscitation. **Do not** start chest compressions without first establishing effective ventilation (defined by audible breath sounds and chest movement).

- If heart rate is still below 60 despite 30 seconds of effective positive pressure ventilation, increase the oxygen concentration to 100% and begin chest compressions.
  - Rate 100-120 beats per minute
  - Ratio of 30:2 for either one- or two-person CPR
- Interruption of chest compressions to check the heart rate may result in decrease of perfusion pressure in the coronary arteries. Therefore, continue chest compressions and coordinated ventilations for at least 45-60 seconds before stopping briefly to assess the heart rate.

Endotracheal intubation is recommended when chest compressions begin or if apneic neonate has not responded to two 30-second periods of PPV.

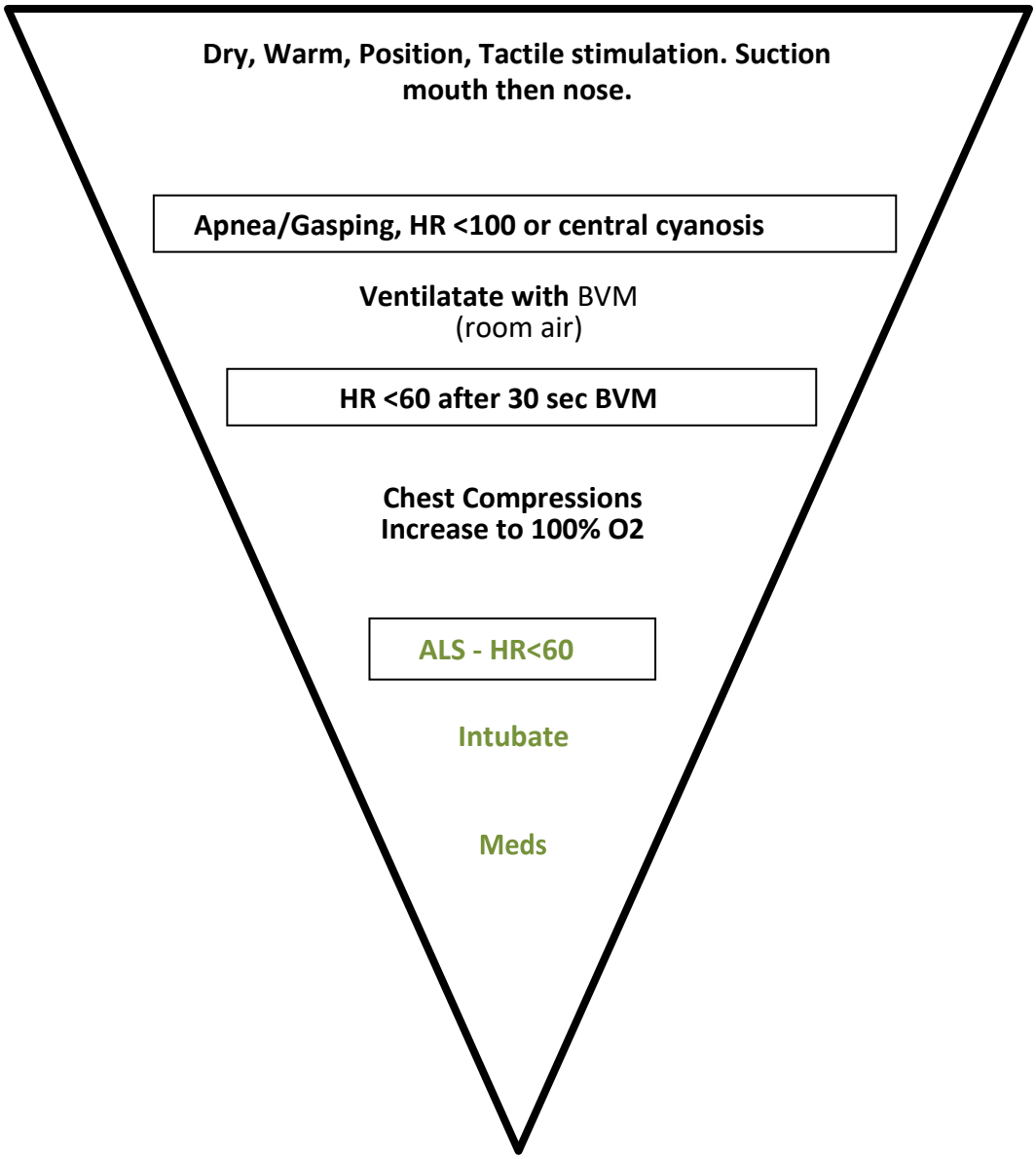
- Laryngeal mask airway may be indicated if one of the following is present:
  - Facial or upper airway malformations
  - PPV with face mask fails to achieve effective ventilation and intubation is not possible.

Epinephrine is indicated when the heart remains < 60 after 30 seconds of effective ventilation (preferably via ET tube) and at least another 45-60 seconds of coordinated compressions and ventilation.

- Intratracheal route has unreliable absorption and is likely to be ineffective but since it is the most accessible route, administration of a dose via ET tube should be considered while IV is being established (umbilical vein or peripheral IV).
- Epinephrine IV 1:10,000 (0.1mg/ml) 0.1-0.3 ml/kg rapid push, followed by 0.5-1ml saline flush.
- Epinephrine intratracheal 1:10,000 0.5-1 ml/kg via ET tube.
- Check heart rate 1 minute after giving IV dose, 2 minutes after ET dose.
- May be repeated every 3-5 minutes.

If heart rate does not respond to epinephrine:

- Consider hypovolemia as cause and administer 10 ml/kg normal saline bolus over 5-10 minutes.
- Consider pneumothorax as cause and perform needle decompression.
- Consider administration of naloxone (Narcan) 0.25 ml/kg rapid IV if respiratory depression and/or history of narcotic use in the mother is present.


Dry, Warm, Position, Tactile stimulation. Suction mouth then nose.
Apnea/Gasping, HR <100 or central cyanosis
Ventilatate with BVM (room air)
HR <60 after 30 sec BVM
Chest Compressions Increase to 100% O2
ALS - HR<60
Intubate
Meds

Child Abuse

- The following findings are suspicious of child abuse:
  - Explanations of mechanisms of injury conflicting with actual injury and exam findings
  - Cigarette burns, belt marks, and multiple bruises of varied ages
  - History of repeated injuries
  - Blame placed on others
  - Procrastination by caretaker in seeking aid
  - Sexual abuse may be present without physical signs of abuse
- Treat injuries according to appropriate trauma protocol.
- Carefully document caretaker's description of events.
- Observe carefully and note:
  - Environment
  - Reaction of all adults
  - Condition of patient's clothing (bring patient's clothing in with patient)
- Give the patient support and reassurance.
- Be non-judgmental and supportive to family concerns.
- Encouraged caretaker to allow transport of child to hospital for medical evaluation and/or treatment. If they do not agree, contact law enforcement.
- All EMS personnel are mandatory reporters. You do not have to be correct in your suspicions or have proof of any wrongdoing. Contact Child Protective Services at 509-363-3333 for every case.

Pediatric Airway Obstruction

History: Difficult airway risks, Trisomy 21/Down syndrome, congenital malformation, head or neck trauma, small jaw or limited jaw opening, limited cervical spine movement, midface hypoplasia, swelling of tongue/oropharynx/neck.

Signs/symptoms: sudden onset of severe breathing difficulty, ineffective or silent cough, weak or silent cry.

R/E/A

- Assess ABCs.
- Infant <1 year of age:
    - Perform up to 5 back slaps and up to 5 chest thrusts.
    - Repeat until effective or patient becomes unresponsive.
    - If patient is unresponsive with no normal breathing, begin CPR (no pulse check).
    - Before delivering breaths, look in the mouth.
        - If you see a foreign body that may be easily removed, remove it and attempt to ventilate.
- Child (1 year to adolescent):
    - Ask “Are you choking?”
    - Perform abdominal thrusts/Heimlich maneuver.
    - Repeat abdominal thrusts until effective or patient becomes unresponsive.
    - If patient is unresponsive with no normal breathing, begin CPR (no pulse check).
    - Before delivering breaths, look in the mouth.
        - If you see a foreign body that may be easily removed, remove it and attempt to ventilate.

P

- If unable to ventilate patient, attempt to remove obstruction with laryngoscope and McGill forceps.
- If obstruction persists in patients > 2 years of age, consider needle cricothyrotomy (page 71).

Pediatric Allergic Reaction

Obtain history of exposure

- Onset and location (the shorter the time from contact to onset, the more severe the reaction)
- Insect sting or bite
- Food allergy and possible exposure
- Medication allergy and possible exposure
- New clothing, soap detergent
- Past history of reactions

Not all signs and symptoms are present in every case:

- Itching, hives, redness, rash, pallor, cyanosis
- Coughing, wheezing, tachypnea, accessory muscle use, retractions
- Hoarseness, stridor, pharyngeal or oral edema
- Restlessness, decreased LOC, unresponsive
- Hypotension, tachycardia
- Nausea, vomiting, diarrhea, cramping

R

- Assure scene safety.
- Routine patient assessment.
- Maintain patent airway.
- Assist breathing as necessary.
- Place oxygen by mask or blow-by if saturations < 94%.
- Monitor blood pressure, pulse and respirations.
- Scrape stinger out, if present.
- Stabilize involved extremity and apply ice.
- If patient has symptoms of wheezing, coughing, or tachypnea and has an albuterol inhaler, assist them in using 2 puffs, if training completed.
- If there are systemic findings (hypotension, respiratory distress, decreased LOC), SEE ANAPHYLAXIS PROTOCOL (page 193) and call for ALS rendezvous.

E

- Place patient on cardiac monitor.
- If mild symptoms (hives, rash, no respiratory involvement), may assist patient with taking their own antihistamine: Benadryl (diphenhydramine), Claritin (loratadine), Zyrtec (cetirizine), Allegra (fexofenadine), Xyzal (levocetirizine), Clarinex (desloratadine), Vistaril (hydroxyzine).
- If moderate-severe symptoms administer epinephrine 1:1000 0.01 mg/kg IM to a max of 0.3 mg.
    - A single dose may not reverse the effects.
    - Repeat every 5 minutes as needed.
    - If epinephrine is given, patient must be transported to the hospital.
- If patient has symptoms of wheezing, coughing, or tachypnea, administer albuterol nebulized treatment with 2.5mg in 3 ml NS (3 ml premix) via small volume nebulizer.
- Be watchful for secondary allergic response. After apparent resolution of symptoms, the patient should be monitored by a responsible adult for 30-60 minutes.

A

- Establish IV/IO.
- Consider fluid bolus 10 ml/kg if systolic blood pressure is < 100.
    - May repeat x 1 or as needed.

P

- Administer diphenhydramine (Benadryl) 1mg/kg IV/IO up to maximum dose of 50mg.
    - May be administered IM if unable to establish IV.

Weight	4 kg *grey*	6 kg *pink*	8 kg *red*	10 kg *purple*	12 kg *yellow*	15 kg *white*	19 kg *blue*	24 kg *orange*	30 kg *green*
Diphenhydramine	**4 mg**	**6 mg**	**8 mg**	**10 mg**	**12 mg**	**15 mg**	**19 mg**	**24 mg**	**30 mg**
Epinephrine	**0.04 mg**	**0.06 mg**	**0.08 mg**	**0.1 mg**	**0.12 mg**	**0.15 mg**	**0.19 mg**	**0.24 mg**	**0.3 mg**

Pediatric Anaphylaxis

Obtain history of exposure

- Onset and location (the shorter the time from contact to onset, the more severe the reaction)
- Insect sting or bite
- Food allergy and possible exposure
- Medication allergy and possible exposure
- New clothing, soap detergent
- Past history of reactions

Not all signs and symptoms are present in every case:

- Itching, hives, redness, rash, pallor, cyanosis
- Coughing, wheezing, tachypnea, accessory muscle use, retractions
- Hoarseness, stridor, pharyngeal or oral edema
- Restlessness, decreased LOC, unresponsive
- Hypotension, tachycardia
- Nausea, vomiting, diarrhea, cramping

R

- Assure scene safety.
- Routine patient assessment.
- Maintain patent airway.
- Assist breathing as necessary.
- Place oxygen by mask or blow-by if saturations < 94%.
- Monitor blood pressure, pulse and respirations.
- Scrape stinger out, if present.
- Stabilize involved extremity and apply ice.
- Cardiovascular collapse may occur abruptly without prior skin or respiratory symptoms.
- Individuals at greater risk for fatal reaction include those with asthma, atopic dermatitis (eczema), prior anaphylaxis and delayed treatment.
- If patient has symptoms of wheezing, coughing, or tachypnea and has an albuterol inhaler, assist them in using 2 puffs, if training completed.
- Call early for ALS rendezvous.
- Evaluate for respiratory distress; airway management.
- Administer oxygen 10-15L via non-rebreather or bag valve mask for respiratory distress.

E

- Place patient on cardiac monitor.
- Obtain 12-lead ECG, if available.
- If no ALS crew or IV access is unavailable, administer epinephrine 1:1000 0.01 mg/kg IM to a max of 0.3 mg.
    - A single dose may not reverse the effects.
    - Repeat every 5 minutes as needed.
    - If epinephrine is given, patient must be transported to the hospital.

- If patient has symptoms of wheezing, coughing, or tachypnea, administer albuterol treatment with 2.5mg in 3 ml NS (3 ml premix) via small volume nebulizer.

A

- Establish IV/IO access.
- Administer fluid bolus of normal saline 20 ml/kg as rapidly as possible.
    - May repeat x 1 to achieve minimum BP for age and clinical improvement, i.e. capillary refill <2 sec, stronger pulses, warmer extremities, improving LOC.
        - Contact medical control to consider additional fluid administration.
- Consider supraglottic airway, if needed.
- Do not delay transport to establish IV/IO.

P

- Slowly administer epinephrine 1:10000 0.01 mg/kg IV/IO, up to maximum dose of 0.3mg if not administered or if ineffective IM.
    - Repeat q 5 minutes as needed.
- Administer diphenhydramine (Benadryl) 1 mg/kg, up to 50 mg IV/IO.
    - May be given IM if IV/IO access is not available.
- Consider endotracheal intubation.
- Consider administration of a steroid:
    - methylprednisolone (SoluMedrol) 2 mg/kg IV/IO to max of 125mg.

      OR
    - dexamethasone (Decadron) 0.6 mg/kg IV/IO/IM to max of 20mg.
- If persistent or recurrent symptoms occur, consider epinephrine infusion.
    - 0.1-1.5 mcg/kg/min IV/IO and titrate to keep systolic blood pressure >100.
- Contact medical control for anaphylaxis not responding to epinephrine.

Weight	4 kg *grey*	6 kg *pink*	8 kg *red*	10 kg *purple*	12 kg *yellow*	15 kg *white*	19 kg *blue*	24 kg *orange*	30 kg *green*
Diphenhydramine	**4 mg**	**6 mg**	**8 mg**	**10 mg**	**12 mg**	**15 mg**	**19 mg**	**24 mg**	**30 mg**
Methylprednisolone	**8 mg**	**12 mg**	**16 mg**	**20 mg**	**24 mg**	**30 mg**	**38 mg**	**48 mg**	**60 mg**
Prednisone	**4 mg**	**6 mg**	**8 mg**	**10 mg**	**12 mg**	**15 mg**	**19 mg**	**24 mg**	**30 mg**
Dexamethasone	**2.4 mg**	**3.6 mg**	**4.8 mg**	**6 mg**	**7.2 mg**	**9 mg**	**11.4 mg**	**14.4 mg**	**18 mg**
Epinephrine	**0.04 mg**	**0.06 mg**	**0.08 mg**	**0.1 mg**	**0.12 mg**	**0.15 mg**	**0.19 mg**	**0.24 mg**	**0.3 mg**

Epineprine Drip 1 mg Epinephrine 1:1,000 in 250 ml = 4 mcg/ml Use 60 gtt tubing					
Mcg/min	2	4	6	8	10
Administer	**30 gtts/min**	**60 gtts/min**	**90 gtts/min**	**120 gtts/min**	**150 gtts/min**
Run gtts/sec	**1 every 2**	**1 every second**	**1.5 every second**	**2 every second**	**2.5 every second**

Pediatric Brief Unexplained Events (BRUE) (formerly ALTE)

Definition: an event observed in infants younger than 1 year when an observer reports a sudden, brief (less than a minute), but then resolved episode of at least one of these: cyanosis or pale complexion; absent, decreased, or irregular breathing; marked change in muscle tone (hyper- or hypotonia); or altered responsiveness. These changes are not associated with choking or vomiting, fever, or upper respiratory symptoms.

R

- Assure scene safety.
- Routine patient assessment.
- Maintain patent airway and assist breathing as necessary.
- Place oxygen by mask or blow-by if saturations < 94%.
- Monitor blood pressure, pulse and respirations.
- Obtain full history and features of event. Specifically assess for history of:
    - apnea > 15 seconds.
    - increased or decreased tone.
    - change in color (pallor or cyanosis).
    - Altered responsiveness.
- If any of the above are yes, patient meets criteria for BRUE and must be transported for evaluation even if now appears well.
    - Contact medical control and/or law enforcement if caregiver refuses transport.

E/A/P

- Place patient on cardiac monitor.
- Obtain 12-lead ECG, if available.
- Perform secondary assessment, look for signs of trauma.
- Consider other treatment protocols as necessary.

Pediatric Asystole/Pulseless Electrical Activity

History: Time of arrest, medical history, possibility of foreign body, hypothermia, non-accidental trauma, SIDS, respiratory symptoms prior to collapse.

R

- Verify scene safety.
- Check for responsiveness.
- Check for breathing and pulse (simultaneously) for no more than 10 seconds.
- Begin high density CPR (page 101), starting with compressions, in ratio of 30 compressions: 2 breaths.
- Attach AED as soon as it is available.
    - Shock advised- shock once and resume CPR.
    - No shock advised- resume CPR.

E

- Airway management.
- Attach cardiac monitor, and proceed based on rhythm observed.

A

- Obtain IV/IO access.
- Place supraglottic airway and confirm effective oxygenation and ventilation.
- Administer epinephrine (see dose chart below) IV/IO every 3-5 minutes until return of spontaneous circulation (ROSC) or termination of resuscitation.
    -

P

- Place endotracheal airway if supraglottic not already in place or if ineffective oxygenation and ventilation.
- Use waveform capnography or capnometry to confirm and monitor ET tube placement and CPR quality.
- If no IV/IO available, may administer epinephrine 1:1000 0.1 mg/kg diluted in 3ml NS endotracheally. Search for and treat possible causes (Hs and Ts):
    - **H**ypovolemia
    - **H**ypoxia
    - **H**ydrogen ion (acidosis)
    - **H**ypo- or hyperkalemia
    - **H**ypothermia
    - **T**oxins
    - **T**ension pneumothorax
    - **T**amponade, cardiac
    - **T**hrombosis, pulmonary or cardiac
    - **T**rauma (hypovolemia, increased intracranial pressure)

- If rhythm check shows shockable rhythm (ventricular fibrillation or ventricular tachycardia), go to VF/VT protocol (page 226).
- If return of pulse without breathing, or pulse and breathing, go to post cardiac arrest care protocol (page 209).

Weight	*4 kg grey*	6 kg *pink*	8 kg *red*	10 kg *purple*	12 kg *yellow*	15 kg *white*	19 kg *blue*	24 kg *orange*	30 kg *green*
Epinephrine 1 : 10,000 0.01 mg/kg **IV / IO**	**0.04 mg**	**0.06 mg**	**0.08 mg**	**0.1 mg**	**0.12 mg**	**0.15 mg**	**0.19 mg**	**0.24 mg**	**0.3 mg**
Epinephrine 1 : 1,000 0.1 mg/kg **ET**	**0.4 mg**	**0.6 mg**	**0.8 mg**	**1 mg**	**1.2 mg**	**1.5 mg**	**1.9 mg**	**2.4 mg**	**3 mg**

Pediatric Bradycardia

Clinical indications:

- Patient with a pulse and rate <60 with any of the following:
    - Chest pain
    - Respiratory distress
    - Hypotension or shock
    - Altered mental status
    - Syncope

History: Medical history, possibility of foreign body, respiratory distress or arrest, possible toxin or poison exposure, congenital disease, medications (patient or anyone else in household).

R

- Verify scene safety.
- Perform patient assessment.
- Maintain patent airway.
- Assist breathing as necessary.
- Administer oxygen via mask or blow-by to maintain oxygen saturation >94%.
- Monitor blood pressure, pulse and respirations.
- Assess for signs of inadequate perfusion:
    - Hypotension
    - Altered mental status
    - Lethargy
    - Signs of shock
    - Delayed capillary refill
    - Cool, mottled extremities
    - Cyanosis
- Start CPR if pulse < 60 with poor perfusion despite oxygenation and ventilation.
- Call for ALS rendezvous.

E

- Place cardiac monitor and monitor oximetry.
- Obtain 12-lead EKG, if available.
- If no signs of inadequate perfusion, monitor and transport.

A

- Obtain IV/IO access.
- Administer fluid bolus of 20 ml/kg IV/IO.
    - May repeat x 2 (total 60 ml/kg) as needed for signs of shock.
- Administer epinephrine 1:10,000 0.01 mg/kg IV/IO every 3-5 minutes.

P

- If increased vagal tone or primary AV block, consider atropine 0.02mg IV/IO every 3-5 minutes (minimum dose 0.1mg, maximum single dose 0.5 mg).
    - Atropine may be administered via endotracheal tube if IV/IO cannot be established.
    - Dose is double when given endotracheally.
- If atropine is ineffective, consider transcutaneous pacing (page 97).
- If above are ineffective, contact medical control.

Weight	4 kg *grey*	6 kg *pink*	8 kg *red*	10 kg *purple*	12 kg *yellow*	15 kg *white*	19 kg *blue*	24 kg *orange*	30 kg *green*
Epinephrine 1 : 10,000 0.01 mg/kg **IV / IO**	**0.04 mg**	**0.06 mg**	**0.08 mg**	**0.1 mg**	**0.12 mg**	**0.15 mg**	**0.19 mg**	**0.24 mg**	**0.3 mg**
Epinephrine 1 : 1,000 0.1 mg/kg **ET**	**0.4 mg**	**0.6 mg**	**0.8 mg**	**1 mg**	**1.2 mg**	**1.5 mg**	**1.9 mg**	**2.4 mg**	**3 mg**
Atropine	**0.1 mg**	**0.12 mg**	**0.16 mg**	**0.2 mg**	**0.24 mg**	**0.3 mg**	**0.38 mg**	**0.48 mg**	**0.6 mg**

Pediatric Burns

Clinical indications: Chemical or thermal burns

R

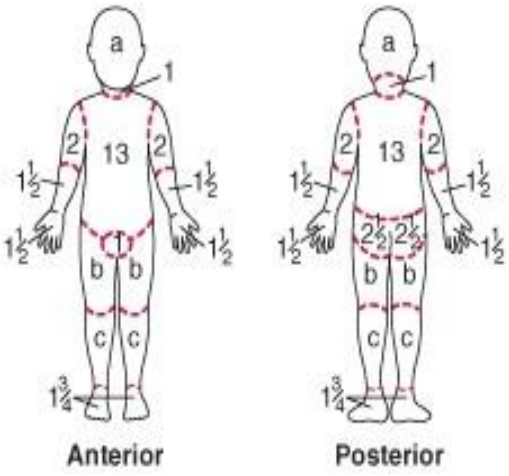
- Verify scene safety: power off, electrical lines secure, gas off, no secondary devices, hazmat determinations made, proper protective attire including breathing apparatus may be required
- Patient assessment. Observe and document:
    - Airway- stridor, hoarse voice
    - Mouth and nares- redness, blisters, soot, singed hairs
    - Breathing- rapid, shallow, wheezing
    - Associated trauma- blast, fall, assault

  CONTACT ALS FOR RENDEZVOUS IF ANY OF THESE ARE PRESENT!
- Vital signs including oxygen saturations.
- Administer high flow oxygen by mask or blow-by.
- Stop the burning process.
    - Soak clothing and skin with water if burning or smoldering. Remove clothing if not stuck to patient
    - Remove jewelry carefully, as it may be hot.
    - Leave blisters intact.
    - Brush off dry chemicals prior to flushing the site as water may activate a chemical reaction.
    - If chemical burn, flush patient's skin (and eyes, if involved) with copious amounts of water or normal saline.
- For chemical burns, consider contacting poison control at 800-222-1222 as soon as practical for consult.
    - Take a picture of product or bring labels or MSDS with the patient.
    - Note concentration and pH of chemical.
    - Note onset of burn (immediate vs delayed).
    - Brush off any excess chemical or powder.
    - Prevent further contamination.
    - Place contaminated clothing in bags.
    - If chemical does NOT react with water, flush area with water or normal saline.
    - If deemed necessary and manpower resources permit, patient may need to be transported by EMS providers that did not participate in the decontamination process, and in a response vehicle that has not been exposed to the chemical.
- Maintain body temperature and prevent systemic heat loss. Keep patient warm.
- Cover burns with clean, dry sheet or dressing. Do not apply any ointments or creams.

E

- Airway management.
- If evidence of possible airway burn (see above), consider aggressive airway management and contact ALS for rendezvous
- Cardiac monitor is important in chemical inhalation and electrical burns.
- Evaluate distal circulation in circumferentially burned extremities.

- Determine extent of burns using Rule of Nines (below). Do not include first degree burns in body surface area percentage (BSA%)



Relative percentage of body surface area (% BSA) affected by growth

	Age				
Body Part	**0 yr**	**1 yr**	**5 yr**	**10 yr**	**15 yr**
a = 1/2 of head	9 1/2	8 1/2	6 1/2	5 1/2	4 1/2
b = 1/2 of 1 thigh	2 3/4	3 1/4	4	4 1/4	4 1/2
c = 1/2 of 1 lower leg	2 1/2	2 1/2	2 3/4	3	3 1/4

- Determine thickness. If a partial thickness burn (second degree) is <10% of BSA, then may apply room temperature water or wet towels for no more than 15 minutes. Prolonged contact may cause heat loss/hypothermia.

A

- Obtain IV/IO access. Avoid placement through burned skin.
  - If hypotensive, bolus normal saline 20 ml/kg IV/IO.
  - If normotensive, normal saline at maintenance rate.
  - If patient is in shock, proceed with shock protocol (page 219).
- If 2nd or 3rd degree burns covering ≥ 20% BSA **and** transport time will be > 1 hour, contact medical control for additional fluid orders.

P

- If the patient has respiratory difficulty, burns of the mouth or neck, or is producing carbonaceous sputum and transport time will be prolonged, consider advanced airway.
- Consider early management of pain and nausea/vomiting.
- Consider the use of topical anesthetic eye drops (e.g. tetracaine or proparacaine) for chemical burns of the eye, if available.

Pediatric Cardiac Arrest

Clinical indications:

- Unresponsive patient with no pulse or breathing (or only agonal breathing present)

R

- Verify scene safety.
- Check for responsiveness.
- Check for breathing and pulse (simultaneously) for no more than 10 seconds.
- Begin high density CPR (page 101), starting with compressions, in ratio of 30 compressions: 2 breaths.
- Attach AED as soon as it is available.
    - Shock advised- shock once and resume CPR.
    - No shock advised- resume CPR.

E

- Airway management.
- Attach cardiac monitor, and proceed based on rhythm observed.

A

- Establish IV/IO access when able to do so without interrupting CPR.
- Establish supraglottic airway when able to do so without interrupting CPR.

P

- Establish endotracheal airway, if supraglottic airway is ineffective or not obtained.
- Use waveform capnography or capnometry to confirm and monitor ET tube placement and CPR quality.
- Give medications as indicated based on rhythm observed on monitor. See following protocols for each rhythm.

For spontaneous resuscitation refer to post resuscitation management protocol (page 209).

Pediatric Coma/Altered Level of Consciousness

History: medical problems, possible foreign body, vomiting/aspiration, fever, recent illness, medications of patient and anyone in household, trauma, seizure. Use mnemonic AEIOU TIPS:

A Alcohol, Acidosis
E Epilepsy
I Infection
O Overdose/ poisoning
U Uremia
T Trauma
I Insulin
P Psychosis
S Stroke

Signs/symptoms: decrease or change in baseline mental status, bizarre behavior, cool/diaphoretic skin, warm/red skin, fruity breaths, Kussmal respirations, syncope, shortness of breath, chest pain

R

- Assure scene safety.
- Routine patient assessment.
- Maintain patent airway and spinal precautions.
- Assist breathing as necessary.
- Place oxygen by mask or blow-by if saturations < 94%.
- Monitor blood pressure, pulse and respirations.
- Check blood glucose.

E

- Place patient on cardiac monitor.
- Obtain 12-lead ECG, if available.
- Perform secondary assessment, look for signs of trauma.
- Administer naloxone (Narcan) 0.1mg/kg to max dose of 2mg via mucosal atomization device.

A

- Establish IV/IO.
- Obtain blood samples.
- Administer normal saline at TKO rate.
    - If signs of shock are present, administer 20 ml/kg fluid bolus as rapidly as possible.
        - Repeat once to achieve minimum blood pressure for age and clinical improvement (capillary refill < 2 sec, stronger pulses, warmer extremities, improving LOC).
- If blood glucose is < 60, administer 50% dextrose 1 ml/kg or 25% dextrose 2 ml/kg (1 g/kg) IV/IO.
    - If patient <1 year, dilute 1:1 with normal saline.
- If not already given, give naloxone (Narcan) 0.1 mg/kg to max dose 2mg IV/IO/IM.
- If blood glucose is > 250, consider normal saline 20 ml/kg bolus.

P

- If glucose < 60, may consider administration of glucagon 0.05 mg/kg to max dose of 1mg IM.

Notes:

- Be aware of altered mental status as presenting sign of an environmental toxin or Haz-Mat exposure and protect personal safety.
- It is safer to assume hypoglycemia than hyperglycemia if doubt exists.
- Low glucose (< 60), normal glucose (60 - 120), high glucose (> 250).
- Repeat blood glucose for any change in mental status after treatment has begun and after interventions.

Weight	4 kg *grey*	6 kg *pink*	8 kg *red*	10 kg *purple*	12 kg *yellow*	15 kg *white*	19 kg *blue*	24 kg *orange*	30 kg *green*
D 25	**8 mL**	**12 mL**	**16 mL**	**20 mL**	**24 mL**	**30 mL**	**38 mL**	**48 mL**	**60 mL**
D50	**4 mL**	**6 mL**	**8 mL**	**10 mL**	**12 mL**	**15 mL**	**19 mL**	**24 mL**	**30 mL**
Glucagon	**0.2 mg**	**0.3 mg**	**0.4 mg**	**0.5mg**	**0.6 mg**	**0.75 mg**	**0.85 mg**	**1 mg**	**1 mg**
Naloxone	**0.4 mg**	**0.6 mg**	**0.8 mg**	**1 mg**	**1.2 mg**	**1.5 mg**	**1.9 mg**	**2 mg**	**2 mg**

Pediatric Fever

History: infections, medications or antibiotics, altered mental status, possible ingestion/poisoning, history of febrile seizures.

NOTE: Fever not associated with heat injury does not require rapid temperature reduction.

R

- Perform patient assessment.
- Maintain patent airway.
- Assist breathing as necessary.
- Place oxygen by mask or blow-by if saturations < 94%.
- Keep patient comfortable.
- Remove blankets or heavy/insulated clothing but patient does not need to be completely undressed.
- If no problem other than a fever identifiable, no therapy required at the scene.
- If child appears toxic, do not delay transport.
- If patient is in status epilepticus, go to pediatric seizure protocol (page 216).

E /A / P

- If no vomiting, no acetaminophen in the last 4 hours, and transport time > 15 minutes, consider acetaminophen 15 mg/kg PO/PR.

Weight	4 kg *grey*	6 kg *pink*	8 kg *red*	10 kg *purple*	12 kg *yellow*	15 kg *white*	19 kg *blue*	24 kg *orange*	30 kg *green*
Acetaminophen	**60 mg**	**90 mg**	**120 mg**	**150 mg**	**180 mg**	**225 mg**	**285 mg**	**360 mg**	**450 mg**

Pediatric Head Injury/Traumatic Brain Injury

History: loss of consciousness (immediate vs delayed, length of time), mechanism of injury, others injured in accident, protective equipment/helmet/seatbelt, position in vehicle, airbag deployment in MVC

Signs/symptoms: appears dazed or stunned, confusion, forgetfulness/repeated questioning, loss of coordination, behavior/personality changes, memory loss, weakness, abnormal vital signs, neurological deterioration over time, headache, nausea/vomiting, off balance or dizzy, blurry or double vision, dilated or unequal pupils, sensitivity to light or noise, numbness or weakness in extremities

R

- Perform patient assessment.
- Maintain patent airway while maintaining in-line axial support.
- Assist breathing as necessary.
- Place oxygen if saturations < 94%.
- Monitor blood pressure, pulse and respirations.
- Maintain spinal precautions (page 126).
- Call for ALS rendezvous.

E

- Place cardiac monitor and monitor oximetry.

A

- Obtain IV/IO access.
- If signs of shock are present (decreased LOC, cap refill > 2 seconds, rapid pulse, diminished distal pulses, cool extremities, hypotension), administer normal saline 20 mg/kg bolus IV/IO.
    - May repeat x 2, to maximum of 60 mg/kg.

P

- Place advanced airway if GCS <9 or focal neurologic abnormalities. See rapid sequence intubation (page 211).
- Ventilate patient to maintain $ETCO_2$ 30-35 mm Hg.

Pediatric Hypoglycemia

History: Known diabetic, medical alert tag, insulin use, medical history, medications

Signs/symptoms: Decreased mental status, lethargy, bizarre behavior, pale/cool skin, diaphoresis, syncope

R

- Perform patient assessment.
- Maintain patent airway.
- Assist breathing as necessary.
- Place oxygen if saturations < 92%.
- Monitor blood pressure, pulse and respirations.
- Check blood glucose.
- If glucose is < 60 and patient is conscious and responsive, give oral glucose tabs or gel.

E

- Apply cardiac monitor.
- Perform secondary assessment and look for signs of trauma.

A

- Establish IV/IO.
- If glucose is < 60 and patient is unconscious or unable to protect their airway, obtain blood sample and administer 25% dextrose 2 ml/kg or 10% dextrose 5ml/kg (1 g/kg) IV/IO.
    - If patient < 1 year, dilute 1:1 with normal saline.
- If patient is wearing an insulin pump, turn the device off or remove the subcutaneous needle using sharps precautions.

P

- If blood glucose is <60 and unable to establish IV, administer glucagon 0.05 mg/kg IM/SQ to maximum dose 1mg.
- If patient does not respond to IV/IO dextrose or IM/SQ glucagon, proceed to pediatric coma protocol (page 203).

Weight	4 kg *grey*	6 kg *pink*	8 kg *red*	10 kg *purple*	12 kg *yellow*	15 kg *white*	19 kg *blue*	24 kg *orange*	30 kg *green*
D 25	**8 mL**	**12 mL**	**16 mL**	**20 mL**	**24 mL**	**30 mL**	**38 mL**	**48 mL**	**60 mL**
D10	**20mL**	**30 mL**	**40 mL**	**50 mL**	**60 mL**	**75 mL**	**95 mL**	**120 mL**	**150 mL**
Glucagon	**0.2 mg**	**0.3 mg**	**0.4 mg**	**0.5mg**	**0.6 mg**	**0.75 mg**	**0.85 mg**	**1 mg**	**1 mg**

Pediatric Pain Management

R

- Perform patient assessment.
- Maintain patent airway and assist breathing as necessary.
- Place oxygen if saturations < 94%.
- Monitor blood pressure, pulse and respirations.

E

- Apply cardiac monitor.
- Rest, Ice/Immobilize, Compression, Elevation of injuries (RICE).
- May administer acetaminophen 10mg/kg PO if patient is alert and not vomiting.

A

- Establish IV/IO.

P

- For pain management, consider administration of:
  - morphine 0.1 mg/kg IV/IO/IM
    OR
  - fentanyl 2 mcg/kg IV/IO/IM/MAD
    OR
  - hydromorphone (Dilaudid) 0.015 mg/kg IV/IO/IM
- For anxiety, consider:
  - midazolam (Versed) 0.1 mg/kg IV/IO/IM/MAD
    OR
  - lorazepam (Ativan) 0.1 mg/kg IV/IO
- For nausea, consider ondansetron (Zofran) 0.1 mg/kg IV OR 4 mg PO if weight > 10 kg

Weight	4 kg *grey*	6 kg *pink*	8 kg *red*	10 kg *purple*	12 kg *yellow*	15 kg *white*	19 kg *blue*	24 kg *orange*	30 kg *green*
Morphine	**0.04 mg**	**0.06 mg**	**0.08 mg**	**1 mg**	**1.2 mg**	**1.5 mg**	**1.9 mg**	**2.4 mg**	**3 mg**
Fentanyl	**8 mcg**	**12 mcg**	**16 mcg**	**20 mcg**	**24 mcg**	**30 mcg**	**38 mcg**	**48 mcg**	**60 mcg**
Hydromorphone	**0.06mg**	**0.09mg**	**0.12mg**	**1 mg**	**1mg**	**1mg**	**1mg**	**1mg**	**1mg**
Midazolam	**0.4 mg**	**0.6 mg**	**0.8 mg**	**1 mg**	**1.2 mg**	**1.5 mg**	**1.9 mg**	**2 mg**	**2 mg**
Lorazepam	**0.4 mg**	**0.6 mg**	**0.8 mg**	**1 mg**	**1.2 mg**	**1.5 mg**	**1.9 mg**	**2 mg**	**2 mg**
Ondansetron IV	**Contact MC**			**1 mg**	**1 mg**	**1 mg**	**2 mg**	**2 mg**	**3 mg**
Ondansetron PO	**Contact MC**			**4 mg ODT**					

Pediatric Post Cardiac Arrest Care/Return of Spontaneous Circulation

Arrive here from cardiac arrest, asystole, or V-fib/V-tach protocols

R

- Optimize ventilation and oxygen:
  - Maintain target oxygen saturation at 94%.
  - Wean oxygen if saturation is 100%.
  - DO NOT hyperventilate. Rate of 10 breaths per minute is adequate.
- Call for ALS rendezvous.

E

- Consider supraglottic airway.
- 12-lead ECG.
- Report to the receiving hospital with the following information as soon as possible (use land line if more readily available than the H.E.A.R. system). DO NOT wait until routine patch.
  - State that you have cardiac arrest with ROSC
  - Patient name, if contact through secure cell or ground line
  - Age and gender
  - Clinical presentation, brief and to the point
  - Vital signs
  - Prehospital treatment

A

- Establish IV/IO access if not already done.
- Assess for and treat persistent shock (altered LOC, capillary refill > 2 sec, rapid pulse, diminished distal pulses, cool extremities and hypotension) with bolus of 20 ml/kg of normal saline IV/IO.
  - May repeat up to two times (total 40 mg/ml) as required.

P

- Consider intubation and waveform capnography.
  - Titrate $PETCO_2$ to target of 35-40 mm Hg.
  - When feasible, titrate FiO_2 to the minimum necessary to achieve $SpO_2 \geq 94\%$.
- For hypotension not responding to IV fluid bolus, consider:
  - Dopamine IV infusion 2-10 mcg/kg/min.
  - If dopamine unavailable, epinephrine 0.1-1 mcg/kg/min may be substituted.
  - Consider treatable causes (Hs and Ts):
    - **H**ypovolemia
    - **H**ypoxia
    - **H**ydrogen ion (acidosis)
    - **H**ypo- or hyperkalemia
    - **H**ypothermia

- **T**oxins
- **T**ension pneumothorax
- **T**amponade, cardiac
- **T**hrombosis, pulmonary or cardiac

Weight	4 kg *grey*	6 kg *pink*	8 kg *red*	10 kg *purple*	12 kg *yellow*	15 kg *white*	19 kg *blue*	24 kg *orange*	30 kg *green*
Normal saline	**80 ml**	**120 ml**	**160 ml**	**200 ml**	**240 ml**	**300 ml**	**380 ml**	**480 ml**	**600 ml**
dopamine	**8 mcg/ min**	**12 mcg/ min**	**16 mcg/ min**	**20 mcg/ min**	**24 mcg/ min**	**30 mcg/ min**	**38mcg/ min**	**48 mcg/ min**	**60 mcg/ min**
epinephrine	**0.4 mcg/min**	**0.6 mcg/mi n**	**0.8mcg/ min**	**1 mcg/min**	**1.2mcg/min**	**1.5mcg/min**	**1.9 mcg/min**	**2.4mcg/min**	**3mcg/min**

Pediatric Rapid Sequence Intubation

History: fever, infection, trauma, medical history, congenital defects, family history of malignant hyperthermia, known or suspected mitochondrial or skeletal myopathy, glaucoma, penetrating eye injury

R

- Perform patient assessment.
- Maintain patent airway.
- Assist breathing as necessary.
- Preoxygenate with 100% FiO_2 for 5 minutes.

E

- Place patient on cardiac monitor.

A

- Establish IV/IO.

P

- Consider atropine 0.2 mg/kg IV/IO
- For sedation:
    - If septic shock, consider administration of:
        - ketamine 1.5mg/kg IV/IO
          OR
        - fentanyl 2 mcg/kg IV/IO
          AND
        - midazolam 0.1 mg/kg IV/IO
    - If suspected intracranial hypertension, consider administration of:
        - lidocaine 1 mg/kg IV/IO
        - ketamine 1.5 mg/kg IV/IO
          OR
        - etomidate 0.3 mg/kg IV/IO
    - If neither of the above, administer:
        - ketamine 1.5 mg/kg IV/IO
          OR
        - etomidate 0.3 mg/kg IV/IO
          OR
        - fentanyl 2 mcg/kg IV/IO
          AND
    - midazolam 0.1 mg/kg IV/IO
- For paralysis, administer:

- Any history of malignant hyperthermia, mitochondrial or skeletal myopathy, glaucoma or penetrating eye injury:
  - rocuronium 1 mg/kg IV/IO
    OR
  - vecuronium 0.1mg/kg IV/IO
- If none of the above:
  - succinylcholine 2 mg/kg IV/IO
    OR
  - rocuronium 1mg/kg IV/IO

- See orotracheal intubation (page 78).

Weight	4 kg *grey*	6 kg *pink*	8 kg *red*	10 kg *purple*	12 kg *yellow*	15 kg *white*	19 kg *blue*	24 kg *orange*	30 kg *green*
Atropine	**0.1 mg**	**0.12 mg**	**0.16 mg**	**0.2 mg**	**0.24 mg**	**0.30 mg**	**0.38 mg**	**0.48 mg**	**0.60 mg**
Ketamine	**6 mg**	**9 mg**	**12 mg**	**15 mg**	**18 mg**	**22.5 mg**	**28.5 mg**	**36 mg**	**45 mg**
Etomidate	**1.2 mg**	**1.8 mg**	**2.4 mg**	**3 mg**	**3.6 mg**	**4.5 mg**	**5.7 mg**	**7.2 mg**	**9 mg**
Lidocaine	**4 mg**	**6 mg**	**8 mg**	**10 mg**	**12 mg**	**15 mg**	**19 mg**	**24 mg**	**30 mg**
Fentanyl	**8 mcg**	**12 mcg**	**16 mcg**	**20 mcg**	**24 mcg**	**30 mcg**	**38 mcg**	**48 mcg**	**60 mcg**
Midazolam	**0.4 mg**	**0.6 mg**	**0.8 mg**	**1 mg**	**1.2 mg**	**1.5 mg**	**1.9 mg**	**2.4 mg**	**3 mg**
Succinylcholine	**8 mg**	**12 mg**	**16 mg**	**20 mg**	**24 mg**	**30 mg**	**38 mg**	**48 mg**	**60 mg**
Vecuronium	**0.4 mg**	**0.6 mg**	**0.8 mg**	**1 mg**	**1.2 mg**	**1.5 mg**	**1.9 mg**	**2.4 mg**	**3 mg**
Rocuronium	**4 mg**	**6 mg**	**8 mg**	**10 mg**	**12 mg**	**15 mg**	**19 mg**	**24 mg**	**30 mg**

Pediatric Respiratory Arrest

History: fever, infection, trauma, medical history, congenital defects, possible foreign body, patient or household medications, possible poisoning/toxin ingestion

R

- Perform patient assessment.
- Maintain patent airway.
    - If airway positioning alone returns spontaneous respirations, oxygenate with high flow oxygen and assist ventilations as necessary.
    - If spontaneous respirations do not return, ventilate with bag valve mask and high flow oxygen, using adequate volume/pressure to make chest rise and breath sounds audible.
    - If airway is obstructed and ventilation is not possible, proceed to pediatric airway obstruction (page 191).
- Monitor pulse oximetry. Titrate oxygen and ventilate to maintain O_2 saturations $\geq$ 94%.
- Administer naloxone (Narcan) 0.1 mg/kg up to total dose of 2 mg via MAD or autoinjector.
- Perform blood glucose test.

E

- Place patient on cardiac monitor.
- Administer naloxone (Narcan) 0.1 mg/kg up to total dose of 2 mg IM via syringe and needle if training completed.

A

- Establish IV/IO.
- If blood glucose is < 60, obtain blood sample and administer dextrose 25% 2 ml/kg (1 mg/kg) IV/IO.
    - If patient is < 1 year, dilute 1:1 with normal saline.
- Administer normal saline at TKO rate.
- If blood pressure is low or other signs of shock, you may consider normal saline bolus 20 ml/kg IV/IO.

P

- Administer naloxone (Narcan) 0.1 mg/kg IV/IO/IM up to maximum dose of 2 mg.

Weight	4 kg *grey*	6 kg *pink*	8 kg *red*	10 kg *purple*	12 kg *yellow*	15 kg *white*	19 kg *blue*	24 kg *orange*	30 kg *green*
D 25	**8 mL**	**12 mL**	**16 mL**	**20 mL**	**24 mL**	**30 mL**	**38 mL**	**48 mL**	**60 mL**
D10	**20mL**	**30 mL**	**40 mL**	**50 mL**	**60 mL**	**75 mL**	**95 mL**	**120 mL**	**150 mL**
Naloxone	**0.4 mg**	**0.6 mg**	**0.8 mg**	**1 mg**	**1.2 mg**	**1.5 mg**	**1.9 mg**	**2 mg**	**2 mg**

Pediatric Respiratory Distress with Stridor

History: possibility of foreign body, recent upper respiratory or other infection, cardiac history, history of asthma or other respiratory disease

Signs/symptoms: harsh inspiratory sound (upper airway obstruction), tachypnea, accessory muscle use, retractions, perioral or other cyanosis.

R/E/A

- Perform patient assessment.
- Maintain patent airway.
    - Allow patient to assume position of maximum comfort, with parent, if necessary.
- Administer high-flow oxygen by mask or blow-by.
- Monitor pulse oximetry. Titrate oxygen and ventilate to maintain O_2 saturations $\geq$ 94%.
- Transport patient as soon as possible.

P

- If tachypneic, retractions or accessory muscle use, administer single dose of racemic epinephrine via small volume nebulizer.
    - Patient < 2 years: 0.25 ml (2.25%) in 3 ml normal saline.
    - Patient > 2 years: 0.5 ml (2.25%) in 3 ml normal saline.

Pediatric Respiratory Distress with Wheezing/Asthma

History: possibility of foreign body, recent upper respiratory or other infection, cardiac history, history of asthma or other respiratory disease

Signs/symptoms: expiratory wheeze, tachypnea, accessory muscle use, retractions, perioral or other cyanosis.

R

- Perform patient assessment.
- Administer high-flow oxygen by mask or blow-by.
- Monitor pulse oximetry. Titrate oxygen and ventilate to maintain O_2 saturations $\geq$ 94%.
- Assist patient in taking their own albuterol, if available and training completed

E

- Place patient on cardiac monitor.
- Administer albuterol (Ventolin) 2.5 mg in 3 ml normal saline (3 ml premix) via small volume nebulizer.

A

- Establish IV/IO.

P

- Consider administration of ipratropium bromide (Atrovent) 0.5 mg via small volume nebulizer if greater than 12 kg.
- Repeat albuterol SVN every 15 minutes until improvement.
- Consider administering a steroid:
    - methylprednisolone 2 mg/kg IV
      OR
    - dexamethasone 0.6 mg/kg IV/IO/IM/PO
      OR
    - prednisone 1 mg/kg PO

Weight	4 kg	6 kg	8 kg	10 kg	12 kg	15 kg	19 kg	24 kg	30 kg
Nebulizer	**Albuterol 2.5 mg only**				**Albuterol + Ipratropium 0.5 mg**				
Methylprednisolone	**8 mg**	**12 mg**	**16 mg**	**20 mg**	**24 mg**	**30 mg**	**38 mg**	**48 mg**	**60 mg**
Prednisone	**4 mg**	**6 mg**	**8 mg**	**10 mg**	**12 mg**	**15 mg**	**19 mg**	**24 mg**	**30 mg**
Dexamethasone	**2.4 mg**	**3.6 mg**	**4.8 mg**	**6 mg**	**7.2 mg**	**9 mg**	**11.4 mg**	**14.4 mg**	**18 mg**

Pediatric Seizures

History: prior history of seizures, seizure medication, history of VP shunt, fever, head trauma, possible ingestion of medication/toxin/poison

R

- Routine patient assessment.
- Maintain patent airway and spinal precautions.
- Assist breathing as necessary.
- Place oxygen by mask or blow-by if saturations < 95%.
- Monitor blood pressure, pulse, respirations and temperature. If T > 101°, see pediatric fever (page 203).
- Check blood glucose.
- If glucose is < 60 and patient is conscious and responsive, give oral glucose tabs or gel.

E

- Place patient on cardiac monitor.
- Perform secondary assessment, look for signs of trauma.

A

- Establish IV/IO.
- Obtain blood samples.
- If blood glucose is < 60, administer 25% dextrose 2 ml/kg or 10% dextrose 5 ml/kg (1 g/kg) IV/IO.
    - If patient <1 year, dilute 1:1 with normal saline.
- Administer normal saline at TKO rate.

P

- If glucose < 60, may consider administration of glucagon 0.05 mg/kg to max dose of 1mg IM.
- If active seizure persists for more than 2 minutes or patient has recurrent seizures, administer:
    - midazolam (Versed) 0.05-0.1 mg/kg IV/IO/IM
        - Repeat every 3 minutes until seizures are controlled
        - Maximum dose of 2 mg.
        - May be administered via MAD at dose of 0.2 mg/kg up to
            - maximum dose 2 mg.

        OR

    - lorazepam (Ativan) 0.1 mg/kg IV/IO/IM every 3 minutes until seizures are controlled or to maximum of 2 mg.
    -

Weight	4 kg *grey*	6 kg *pink*	8 kg *red*	10 kg *purple*	12 kg *yellow*	15 kg *white*	19 kg *blue*	24 kg *orange*	30 kg *green*
D 25	**8 mL**	**12 mL**	**16 mL**	**20 mL**	**24 mL**	**30 mL**	**38 mL**	**48 mL**	**60 mL**
D10	**20mL**	**30 mL**	**40 mL**	**50 mL**	**60 mL**	**75 mL**	**95 mL**	**120 mL**	**150 mL**
Glucagon	**0.4 mg**	**0.6 mg**	**0.8 mg**	**1 mg**	**1 mg**	**1 mg**	**1 mg**	**1 mg**	**1 mg**
Midazolam	**0.4 mg**	**0.6 mg**	**0.8 mg**	**1 mg**	**1.2 mg**	**1.5 mg**	**1.9 mg**	**2 mg**	**2 mg**
Diazepam	**0.4 mg**	**0.6 mg**	**0.8 mg**	**1 mg**	**1.2 mg**	**1.5 mg**	**1.9 mg**	**2 mg**	**2 mg**
Lorazepam	**0.4 mg**	**0.6 mg**	**0.8 mg**	**1 mg**	**1.2 mg**	**1.5 mg**	**1.9 mg**	**2 mg**	**2 mg**

Pediatric Shock (Non-traumatic)

History: medical history, respiratory distress or arrest, possible toxic or poison exposure, congenital disease, medication (patient or household), non-accidental trauma.

Signs/symptoms: altered level of consciousness, capillary refill < 2 seconds, rapid pulse, diminished distal pulses, cool extremities, hypotension.

R

- Assure scene safety.
- Routine patient assessment.
- Maintain patent airway and assist breathing as necessary.
- Place oxygen by mask or blow-by if saturations < 94%.
- Monitor blood pressure, pulse and respirations.

E

- Place patient on cardiac monitor.
- Obtain 12-lead ECG, if available.
- Perform secondary assessment, look for signs of trauma.

A

- Establish IV/IO.
- Obtain blood samples.
- Administer normal saline 20 ml/kg fluid bolus as rapidly as possible.
    - Repeat up to 2 more boluses to achieve minimum blood pressure for age and clinical improvement (cap refill < 2 sec, stronger pulses, warmer extremities, improving LOC).

P

- Orotracheal intubation may be appropriate and necessary.
- If no clinical response to fluid bolus, consider epinephrine 0.01 mg/kg IV/IO bolus, followed by epinephrine drip 0.1-0.5 mg/kg/min IV/IO.
- If signs of shock persist, contact medical control for further orders.

Weight	*4 kg grey*	6 kg *pink*	8 kg *red*	10 kg *purple*	12 kg *yellow*	15 kg *white*	19 kg *blue*	24 kg *orange*	30 kg *green*
Epinephrine 1 : 10,000 0.01 mg/kg **IV / IO**	**0.04 mg**	**0.06 mg**	**0.08 mg**	**0.1 mg**	**0.12 mg**	**0.15 mg**	**0.19 mg**	**0.24 mg**	**0.3 mg**

Epineprine Drip	**1 mg Epinephrine 1:1,000 in 250 ml = 4 mcg/ml**				**Use 60 gtt tubing**
Mcg/min	2	4	6	8	10
Administer	**30 gtts/min**	**60 gtts/min**	**90 gtts/min**	**120 gtts/min**	**150 gtts/min**
Run gtts/sec	**1 every 2 seconds**	**1 every second**	**1.5 every second**	**2 every second**	**2.5 every second**

Pediatric Tachycardia, Narrow Complex

Clinical indications:

- Patient with a pulse with rate > 150 and QRS < 0.09 sec

R

- Perform patient assessment.
- Maintain patent airway.
- Assist breathing as necessary.
- Place oxygen if saturations < 94%.
- Monitor blood pressure, pulse and respirations.
- Call for ALS rendezvous.

E

- Place cardiac monitor and monitor oximetry.
- Obtain 12-lead ECG, if available, and attempt to establish a specific diagnosis.
- Assess for signs of inadequate perfusion:
    - Hypotension
    - Acutely altered mental status
    - Signs of shock
    - Ischemic chest discomfort
    - Acute heart failure (CHF)
- If no signs of inadequate perfusion, monitor and transport.

A

- Obtain IV/IO access.
- Consider normal saline 10 mg/kg bolus, unless signs/symptoms of heart failure are present.

P

- If signs of inadequate perfusion, proceed with synchronized cardioversion (page 95).
    - Consider sedation (but do not delay cardioversion) by administering either:
        - etomidate 0.1 mg/kg IV/IO over 15-30 seconds

          OR
        - midazolam 0.1 mg/kg IV/IO

          OR
        - lorazepam 0.1 mg/kg IV/IO
    - Initial recommended synchronized cardioversion doses:
        - First shock: 0.5-1 J/kg.
        - If not effective: increase to 2 J/kg.
- Supraventricular tachycardia (regular, P waves absent or abnormal, HR not variable, infant rate $\geq$ 220/min, children rate $\geq$180/min)
    - Vagal maneuver.
    - Adenosine (see below).

- If no IV/IO access, proceed with synchronized cardioversion (see above).

- Sinus tachycardia (regular, P waves present/normal, variable R-R, consistent P-R, infant rate usually <220, children rate < 180).
  - Search for and treat possible causes (Hs and Ts)
    - **H**ypovolemia
    - **H**ypoxia
    - **H**ydrogen ion (acidosis)
    - **H**ypo- or hyperkalemia
    - **H**ypothermia
    - **T**oxins
    - **T**ension pneumothorax
    - **T**amponade, cardiac
    - **T**hrombosis, pulmonary or cardiac
    - **T**rauma (hypovolemia, increased intracranial pressure)
- Adenosine IV/IO
  - First dose: 0.1 mg/kg (max 6 mg) rapid IV push with immediate rapid 10 ml saline flush (large bore IV in antecubital is preferred).
  - Second dose (if required): 0.2 mg/kg (max 12 mg) rapid IV push with immediate rapid 10 ml saline flush.
- Transport patient as soon as possible.

Weight	4 kg *grey*	6 kg *pink*	8 kg *red*	10 kg *purple*	12 kg *yellow*	15 kg *white*	19 kg *blue*	24 kg *orange*	30 kg *green*
Adenosine 0.1 mg/kg – 1st dose	**0.4 mg**	**0.6 mg**	**0.8 mg**	**1 mg**	**1.2 mg**	**1.5 mg**	**1.9 mg**	**2.4 mg**	**3 mg**
Adenosine 0.2 mg/kg – 2nd dose	**0.8 mg**	**1.2 mg**	**1.6 mg**	**2 mg**	**2.4 mg**	**3 mg**	**3.8 mg**	**4.8 mg**	**6 mg**
Midazolam	**0.4 mg**	**0.6 mg**	**0.8 mg**	**1 mg**	**1.2 mg**	**1.5 mg**	**1.9 mg**	**2 mg**	**2 mg**
Etomidate	**0.4 mg**	**0.6 mg**	**0.8 mg**	**1 mg**	**1.2 mg**	**1.5 mg**	**1.9 mg**	**2 mg**	**2 mg**
Lorazepam	**0.4 mg**	**0.6 mg**	**0.8 mg**	**1 mg**	**1.2 mg**	**1.5 mg**	**1.9 mg**	**2 mg**	**2 mg**

Pediatric Tachycardia, Wide Complex

Clinical indications:

- Patient with a pulse with rate > 150 and QRS > 0.9 sec

R

- Perform patient assessment.
- Maintain patent airway.
- Assist breathing as necessary.
- Place oxygen if saturations < 94%.
- Monitor blood pressure, pulse and respirations.
- Call for ALS rendezvous.

E

- Place cardiac monitor and monitor oximetry.
- Obtain 12-lead ECG, if available, and attempt to establish a specific diagnosis.
- Assess for signs of inadequate perfusion:
    - Hypotension
    - Acutely altered mental status
    - Signs of shock
    - Ischemic chest discomfort
    - Acute heart failure (CHF)

A

- Obtain IV/IO access.
- Consider normal saline 20 mg/kg bolus, unless signs/symptoms of heart failure are present.

P

- If signs of inadequate perfusion, proceed with synchronized cardioversion (page 95).
    - Consider sedation (but do not delay cardioversion) by administering:
        - etomidate 0.1 mg/kg IV/IO over 15-30 seconds

          OR
        - midazolam 0.1 mg/kg IV/IO

          OR
        - lorazepam 0.1 mg/kg IV/IO
    - Initial recommended synchronized cardioversion doses:
        - First shock: 0.5-1 J/kg.
        - If not effective: increase to 2 J/kg.
- If rhythm is absolutely regular and QRS is monomorphic, contact medical control to consider administration of adenosine (Adenocard).
    - First dose: 0.1 mg/kg (max 6mg) rapid IV/IO push with immediate rapid 10 ml saline flush.

- May repeat in 2 minutes: 0.2 mg/kg (max 12 mg) rapid IV push with immediate rapid 10 ml saline flush.

- If rate is still elevated, contact medical control to discuss administration of one of the following:
  - amiodarone 5 mg/kg IV/IO over 20-60 minutes.

    OR
  - procainamide 15 mg/kg IV/IO over 30-60 minutes.
- Search for and treat possible causes (Hs and Ts)
  - **H**ypovolemia
  - **H**ypoxia
  - **H**ydrogen ion (acidosis)
  - **H**ypo- or hyperkalemia
  - **H**ypothermia
  - **T**oxins
  - **T**ension pneumothorax
  - **T**amponade, cardiac
  - **T**hrombosis, pulmonary or cardiac
  - **T**rauma (hypovolemia, increased intracranial pressure)
- Transport patient as soon as possible.

Weight	4 kg *grey*	6 kg *pink*	8 kg *red*	10 kg *purple*	12 kg *yellow*	15 kg *white*	19 kg *blue*	24 kg *orange*	30 kg *green*
Adenosine 0.1 mg/kg – 1st dose	**0.4 mg**	**0.6 mg**	**0.8 mg**	**1 mg**	**1.2 mg**	**1.5 mg**	**1.9 mg**	**2.4 mg**	**3 mg**
Adenosine 0.2 mg/kg – 2nd dose	**0.8 mg**	**1.2 mg**	**1.6 mg**	**2 mg**	**2.4 mg**	**3 mg**	**3.8 mg**	**4.8 mg**	**6 mg**
Amiodarone	**20 mg**	**30 mg**	**40 mg**	**50 mg**	**60 mg**	**75 mg**	**95 mg**	**120 mg**	**150 mg**
Procainamide	**60 mg**	**90 mg**	**120 mg**	**150 mg**	**180 mg**	**225 mg**	**285 mg**	**360 mg**	**450 mg**
Midazolam	**0.4 mg**	**0.6 mg**	**0.8 mg**	**1 mg**	**1.2 mg**	**1.5 mg**	**1.9 mg**	**2 mg**	**2 mg**
Etomidate	**0.4 mg**	**0.6 mg**	**0.8 mg**	**1 mg**	**1.2 mg**	**1.5 mg**	**1.9 mg**	**2 mg**	**2 mg**
Lorazepam	**0.4 mg**	**0.6 mg**	**0.8 mg**	**1 mg**	**1.2 mg**	**1.5 mg**	**1.9 mg**	**2 mg**	**2 mg**

Pediatric Toxic Exposure

History: Suspected or known ingestion of a potentially toxic substance, substance ingested by which route in what quantity, time of ingestion, reason (suicidal, accidental, criminal), available medications in the home, past medical history and medications, home remedies given to patient prior to aid arrival. Do not only rely on patient history of ingestion, especially in suicide attempts.

Signs/symptoms: mental status changes, hypotension/hypertension, decreased respiratory rate, tachycardia, dysrhythmias, seizures, mouth/throat/abdominal pain, vomiting/diarrhea, sweating, dilated or pinpoint pupils, increased secretions

R

- Perform patient assessment.
- Maintain patent airway.
- Assist breathing as necessary.
- Place high-flow oxygen if patient is comatose or in respiratory distress. Place appropriate delivery device if saturations < 94%.
- Monitor blood pressure, pulse and respirations.
- Contact Poison Control at 1-800-222-1222 with product, route, amount and time of ingestion. Document poison control case number on patient report.
    - Contact medical control with poison control recommendations to receive orders
- If patient is comatose or in respiratory distress, administer naloxone (Narcan) 0.1 mg/kg via MAD or autoinjector.

E

- Place patient on cardiac monitor and obtain 12-lead ECG.
- If patient is comatose or in respiratory distress, administer naloxone (Narcan) 0.1 mg/kg IM via needle/syringe if training completed. .
- Bring bottles, contents, emesis, other home medications to the ED.

A

- Establish IV/IO.
- If patient is comatose or in respiratory distress, administer naloxone (Narcan) 0.1 mg/kg IV/IO/IM.
- Consider fluid bolus of normal saline 20 mg/kg IV/IO.
    - May repeat x 2 (up to 60 ml/kg) if needed

P

- If patient is comatose or in respiratory distress and does not respond to naloxone, consider intubation
- Treat specific medication overdoses if symptomatic: ECG changes, systolic blood pressure < 100, altered level of consciousness, pulse > 100.

- Tricyclics (amitriptyline, nortriptyline, imipramine):
  - sodium bicarbonate 4.2% 1-2 mEq/kg IV/IO.
- Calcium channel blockers (diltiazem, verapamil, amlodipine, nifedipine):
  - calcium chloride 10 mg/kg IV/IO very slow IV push over 5-10 min.
  - consider transcutaneous pacing (page 96).
  - glucagon 0.1 mg/kg IV/IO over 5-10 minutes.
- Beta blockers (atenolol, carvedilol, metoprolol, propranolol):
  - epinephrine 0.01 mg/kg 1:1000 (or 0.1 mg/kg of 1:10,000) IV/IO q 3 minutes.
  - glucagon 0.1 mg/kg IV/IO over 5-10 minutes.
- Organophosphates (insecticides, nerve gases, ophthalmic agents):
  - atropine 0.08 mg/kg IV/IO..
- CNS stimulants:
  - midazolam 0.1 mg/kg IV/IO/IM/MAD.
  - lorazepam 0.1 mg/kg IV/IO/IM/MAD.

Weight	4 kg *grey*	6 kg *pink*	8 kg *red*	10 kg *purple*	12 kg *yellow*	15 kg *white*	19 kg *blue*	24 kg *orange*	30 kg *green*
Naloxone	**0.4 mg**	**0.6 mg**	**0.8 mg**	**1 mg**	**1.2 mg**	**1.5 mg**	**1.9 mg**	**2 mg**	**2 mg**
Sodium Bicarbonate	**4 mEq**	**6 mEq**	**8 mEq**	**10 mEq**	**12 mEq**	**15 mEq**	**19 mEq**	**24 mEq**	**30 mEq**
Calcium Chloride	**40 mg**	**60 mg**	**80 mg**	**100 mg**	**120 mg**	**150 mg**	**190 mg**	**240 mg**	**300 mg**
Glucagon	**0.4 mg**	**0.6 mg**	**0.8 mg**	**1 mg**	**1.2 mg**	**1.5 mg**	**1.9 mg**	**2.4 mg**	**3 mg**
Epinephrine	**0.04 mg**	**0.06 mg**	**0.08 mg**	**0.1 mg**	**0.12 mg**	**0.15 mg**	**0.19 mg**	**0.24 mg**	**0.3 mg**
Atropine	**0.32 mg**	**0.48 mg**	**0.64 mg**	**0.8 mg**	**0.96 mg**	**1.2 mg**	**1.52 mg**	**1.92 mg**	**2.4 mg**
Midazolam	**0.4 mg**	**0.6 mg**	**0.8 mg**	**1 mg**	**1.2 mg**	**1.5 mg**	**1.9 mg**	**2 mg**	**2 mg**
Lorazepam	**0.4 mg**	**0.6 mg**	**0.8 mg**	**1 mg**	**1.2 mg**	**1.5 mg**	**1.9 mg**	**2 mg**	**2 mg**

Pediatric Trauma

History: time and mechanism of injury, damage to structure or vehicle, location in structure or vehicle, others injured or dead, speed and details of MVC, restraints/helmet/protective equipment, symptoms preceding incident

Signs/symptoms: altered mental status or unconscious, difficulty breathing, wheezing, stridor, cyanosis, hypotension or shock, abdominal pain, tense abdomen, deformity, hypothermia

R

- Perform patient assessment.
- Maintain patent airway while maintaining in-line axial support.
- Assist breathing as necessary.
- Place oxygen if saturations < 94%.
- Monitor blood pressure, pulse and respirations.
- Maintain spinal precautions, see page
- Expose injuries.
- Control active bleeding, see hemorrhage control (page 243).
- Transport according to county operating procedure (page 56).
- If signs of head injury are present (dilated or unequal pupils, focal neurological signs, decreased LOC, posturing and/or GCS <9):
    - Elevated head 15° if no signs of shock. Observe spinal precautions.
- Call for ALS rendezvous.

E

- Place cardiac monitor and monitor oximetry.
- Splint unstable, deformed or painful extremity injuries.

A

- Obtain IV/IO access.
- If signs of shock are present (decreased LOC, cap refill > 2 seconds, rapid pulse, diminished distal pulses, cool extremities, hypotension), administer normal saline 20 mg/kg bolus IV/IO.
    - May repeat x 2, to maximum of 60 mg/kg.
    - Contact medical control if no response to 3 blouses

P

- If signs of head injury are present, consider intubation using succinylcholine and hyperventilate at 1.5 times the normal rate for age.
- Consider administration of TXA (p 322) if hemorrhage is ongoing and accompanied by evidence of hemorrhagic shock.

Pediatric Ventricular Fibrillation/Pulseless Ventricular Tachycardia

- Arrive here from pediatric cardiac arrest (page 202).

R

- Continue high density CPR (page 101).

E

- Shock immediately via AED.

A

- Obtain IV/IO access.
- Place supraglottic airway and confirm effective oxygenation and ventilation.
- Do not interrupt CPR to place airway if bag-valve mask ventilation is effective.

P

- Defibrillate immediately and resume CPR for 2 minutes:
  - First shock: 2 J/kg
  - Second shock: 4 J/kg
  - Subsequent shocks: ≥ 4 J/kg, maximum 10 J/kg or adult dose.
- Epinephrine 0.01 mg/kg (0.1 ml/kg of 1:10,000 concentration) IV/IO every 3-5 minutes.
  - If no IV/IO, may give 0.1 mg/kg (0.1 ml/kg 1:1000 concentration) via ET tube.
- Resume attempts to defibrillate every two minutes with high density CPR between defibrillations.
- Place endotracheal airway if supraglottic not already in place or if ineffective oxygenation and ventilation.
- Use waveform capnography or capnometry to confirm and monitor ET tube placement and CPR quality.
- Administer amiodarone IV/IO:
  - First dose: 5 mg/kg bolus.
  - May repeat up to 2 times for refractory VF/pulseless VT.
- If rhythm check shows non-shockable rhythm, go to asystole protocol (page 196).
- If return of pulse without breathing, or pulse and breathing, go to post cardiac arrest care protocol (page 209).

Weight	*4 kg grey*	6 kg *pink*	8 kg *red*	10 kg *purple*	12 kg *yellow*	15 kg *white*	19 kg *blue*	24 kg *orange*	30 kg *green*
Epinephrine 1:10,000 0.01 mg/kg **IV/IO**	**0.04 mg**	**0.06 mg**	**0.08 mg**	**0.1 mg**	**0.12 mg**	**0.15 mg**	**0.19 mg**	**0.24 mg**	**0.3 mg**
Amiodarone	**20 mg**	**30 mg**	**40 mg**	**50 mg**	**60 mg**	**75 mg**	**95 mg**	**120 mg**	**150 mg**

Sudden Infant Death Syndrome (SIDS)

SIDS is sudden death, without apparent cause, during sleep. It affects infants usually less than 6 months of age. It may be difficult to differentiate from suspected child abuse.

R/E/A/P

- Perform CPR (page 101), unless obvious signs of death.
- Apply cardiac monitor or AED and treat arrhythmias appropriately.
- Support parents and avoid questions or comments that suggest blame.
- Observe and carefully note:
    - Location and position of child.
    - Objects immediately surrounding child.
    - Behavior of all adults present.
    - Explanations provided.
    - Vomitus or foreign body in mouth, if present.
    - Report all observations to medical control, county coroner and/or law enforcement.

Section 7: Trauma Protocols

Abdominal Trauma

History: Details of accident (speed, distance of fall, object/weapons involved), if GSW- what caliber and type of gun and distance from shooter, last meal eaten, medications, history of abdominal surgery

R

- Establish scene safety prior to attending to patient. Law enforcement presence may be required.
- Perform patient assessment.
- Maintain patent airway.
- Assist breathing as necessary.
- Place high flow oxygen via mask or non-rebreather.
- Allow patient to maintain position of comfort if spinal injury is not suspected.
- If evisceration is present, **do not replace abdominal contents**. Cover with saline-moistened gauze dressing.
- If impaled object is present, **do not remove**. Stabilize in place with bulky gauze dressing to minimize movement of the object. If object is too large or unwieldy to transfer safely, attempt to cut object at a point more than 6 inches from the patient.
- If penetrating trauma is present without evisceration or impaled object, apply sterile dressing. If active bleeding, apply direct pressure to the wound.

E

- Place patient on cardiac monitor.
- Maintain high level of suspicion of critical injury in otherwise stable-appearing patient.
- Minimize scene time. Transport quickly.

A

- Establish two large bore IV/IO.
- Give fluid bolus of 500-1000 ml of normal saline or Ringer's Lactate.
- If patient is in shock, proceed with fluid resuscitation to maintain systolic blood pressure > 80 mm Hg.

P

- Consider administration of TXA (p 322) if hemorrhage is is ongoing and accompanied by evidence of hemorrhagic shock.
- Consider treating pain with opioids. Use minimal doses to control pain without affecting level of consciousness, if possible.

Animal Bites

R/E

- Establish scene safety prior to attending to patient, paying special attention to the presence of aggressive animals.
- Contact law enforcement to report the bite and for appropriate animal control to ensure capture, proper caging, restraint, or euthanasia of offending animal.
- Perform patient assessment.
- Maintain patent airway.
- Assist breathing as necessary.
- Place oxygen if saturations < 90%.
- Perform copious irrigation with sterile saline or water and apply sterile dressings.
- Remove constricting jewelry from a bitten extremity.
- If fracture is suspected, splint the extremity.

A

- If there is significant injury, establish IV/IO.

P

- Consider treatment of severe pain with fentanyl 0.5-1 mcg/kg IV/IO/IM, up to total dose of 3 mcg/kg and systolic blood pressure > 100 mm Hg.

Burns

R

- Verify scene safety: power off, electrical lines secure, gas off, no secondary devices, hazmat determinations made, proper protective attire including breathing apparatus may be required.
- Stop the burning process by removing the patient from physical contact with burning agents:
    - Soak clothing and skin with water if burning or smoldering. Remove clothing if not stuck to patient.
    - Remove jewelry carefully, as it may be hot.
    - Leave blisters intact.
    - Brush off dry chemicals prior to flushing the site as water may activate a chemical reaction.
    - If chemical burn, flush patient's skin (and eye, if involved) with copious amounts of water or normal saline.
- Patient assessment. Observe and document:
    - Airway- stridor, hoarse voice
    - Mouth and nares- redness, blisters, soot, singed hairs
    - Breathing- rapid, shallow, wheezing
    - Associated trauma- blast, fall, assault

  CONTACT ALS FOR RENDEZVOUS IF THESE ARE PRESENT!
- Vital signs including oxygen saturations.
- Administer high flow oxygen titrated to maintain saturations above 90%. Give to <u>all</u> burn patients rescued from a confined space, regardless of saturations.
- Assess for other possible non-burn trauma.
- For chemical burns, consider contacting poison control at 800-222-1222 as soon as practical for consult.
    - Take a picture of product or bring labels or MSDS with the patient.
    - Note concentration and pH of chemical.
    - Note onset of burn (immediate vs delayed).
    - Brush off any excess chemical or powder.
    - Prevent further contamination.
    - Place contaminated clothing in bags.
    - If chemical does NOT react with water, flush area with water or normal saline.
    - If deemed necessary and manpower resources permit, patient may need to be transported by EMS providers that did not participate in the decontamination process, and in a response vehicle that has not been exposed to the chemical.
- If chemical burns involve the eye(s), immediately flush with large amounts of low pressure water or normal saline for 15 minutes. Transport container, label or MSDS with patient.
- Maintain body temperature and prevent systemic heat loss. Keep patient warm.
- Cover burns with clean, dry sheet or dressing. Do not apply any ointments or creams.

E

- Airway management.
- If evidence of possible airway burn (see above), consider aggressive airway management and contact ALS for rendezvous
- Apply cardiac monitor in chemical inhalation and electrical burns.

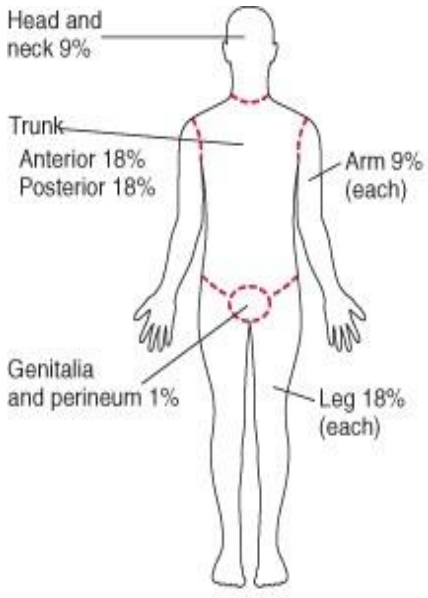
- Evaluate distal circulation in circumferentially burned extremities.
- Determine extent of burns using Rule of Nines (below). Do not include first degree burns in body surface area percentage (BSA%)
- Determine thickness. If a partial thickness burn (second degree) is <10% of BSA, then may apply room temperature water or wet towels for no more than 15 minutes. Prolonged contact may cause heat loss/hypothermia.

A

- Obtain IV/IO access if > 15% BSA burned or any facial burn. Avoid placement through burned skin.
    - If hypotensive, bolus normal saline 1000 ml IV/IO
    - If normotensive, normal saline at maintenance rate IV/IO
- If 2nd or 3rd degree burns covering ≥ 20% BSA **and** transport time will be > 1 hour, contact medical control for additional fluid orders.

P

- If the patient has respiratory difficulty, burns of the mouth or neck, or is producing carbonaceous sputum and transport time will be >10 minutes, consider advanced airway.
- Consider early management of pain and nausea/vomiting.
- Consider the use of topical anesthetic eye drops (e.g. tetracaine or proparacaine) for chemical burns of the eye, if available.



Cardiac Arrest Due to Trauma

Cardiac arrest due to major blunt or penetrating trauma is managed differently than the routine cardiac arrest not accompanied by hypovolemia, tension pneumothorax, or cardiac tamponade.

R

- Verify scene safety.
- Check for responsiveness.
- Check for breathing and pulse (simultaneously) for no more than 10 seconds.
- Begin high density CPR (page 101), starting with compressions, in ratio of 30 compressions: 2 breaths.
- Attach AED as soon as it is available.
    - Shock advised- shock once and resume CPR.
    - No shock advised- resume CPR.

E

- Airway management.
- Attach cardiac monitor, and proceed based on rhythm observed.

A

- Establish 2 large bore IV/IO.
- Rapidly administer lactated Ringers as needed to maintain arterial pressure and perfusion
    - Assume hypotension is due to hypovolemia unless there is evidence to the contrary in severely injured trauma patient.
- Establish supraglottic airway when able to do so without interrupting CPR.

P

- Patients should be intubated orotracheally if it may be accomplished without excessive movement of the cervical spine.
    - If endotracheal intubation cannot be performed rapidly and safely, a supraglottic or laryngeal mask airway may provide an alternate method of airway management.
- Use waveform capnography or capnometry to confirm and monitor ET tube placement and CPR quality.
- Give medications as indicated based on rhythm observed on monitor. See following protocols for each rhythm.
- Tension pneumothorax should be suspected in any trauma patient.
    - Check for unequal breath sounds or tracheal shift.
    - If either of these are found, perform needle thoracostomy (page 99).

For spontaneous resuscitation refer to post resuscitation management protocol (page 149).

Chest Trauma

History: Details of accident (speed, distance of fall, object/weapons involved), if GSW- what caliber and type of gun and distance from shooter, last meal eaten, medications, history of abdominal surgery

R

- Establish scene safety prior to attending to patient. Law enforcement presence may be required.
- Perform rapid patient assessment and primary survey.
- Maintain patent airway.
- Assist ventilation if respiratory rate is <10 or >30.
- Administer high flow oxygen via mask or non-rebreather to maintain saturations > 90%.
- Call ALS immediately for all penetrating trauma and significant blunt trauma.
- Allow patient to maintain position of comfort if spinal injury is not suspected.
- If impaled object is present, **do not remove**. Stabilize in place with bulky gauze dressing to minimize movement of the object. If object is too large or unwieldy to transfer safely, attempt to cut object at a point more than 6 inches from the patient.
- If open or penetrating wound is present, cover wound with occlusive dressing and secure on 3 sides.
    - If patient's condition deteriorates after placement of dressing, remove briefly and reapply.
- If flail segment/paradoxical movement is present, do not apply **any** weight to the flail segment.

E

- Place patient on cardiac monitor.
- If flail segment/paradoxical movement is present and patient is in respiratory distress, consider positive-pressure ventilation.
- Obtain EKG for all blunt chest trauma and any penetrating trauma within the area between the nipples and between the clavicle and the rib edges. Do not delay transport to get EKG.
- Maintain high level of suspicion of critical injury in otherwise stable-appearing patient.
- Minimize scene time. Transport quickly.

A

- Establish two large bore IV/IO.
- If blunt trauma and blood pressure is normal, administer normal saline at TKO rate.
- If penetrating trauma, give fluid bolus of 500-1000 ml of normal saline or Ringer's Lactate..
- If patient is in shock, proceed with fluid resuscitation to maintain systolic blood pressure > 90 mm Hg.
- For traumatic asphyxia/crush injuries, support respiration with BVM, establish 2 large bore IVs and infuse at least 1000cc of NS prior to or immediately after removal of compressive force.

P

- In presence of tension pneumothorax, perform needle decompression (page 100). Note that in patients with more body mass, whether muscle mass or obesity, it may be necessary to perform needle decompression in mid clavicular line at 2nd intercostal space to reach the pleural space.
    - Signs of tension pneumothorax:
        - Increasing respiratory distress or hypoxia AND
        - Increasing signs of shock including tachycardia or hypotension AND
        - One or more of the following:
            - diminished or absent unilateral breath sounds
            - jugular venous distension (dilated neck veins)
            - tympany (hyper resonance) on the affected side
            - deviation of the trachea above the sternal notch away from the side of injury (late sign)
- For massive flail chest with respiratory compromise, advanced airway management may be necessary.
- Consider administration of TXA (p 322) if evidence of massive blood loss or hemorrhagic shock.
- Consider treating pain with opioids. Use minimal doses to control pain without affecting level of consciousness or respiratory drive, if possible.

Crush Injury Syndrome

Prolonged compression of extensive areas of body and/or limbs for one hour or more may result in crush injury syndrome, requiring unique prehospital treatment.

R

- Establish scene safety prior to attending to patient. Law enforcement and fire department presence may be required.
- Perform patient assessment.
- Maintain patent airway with spinal precautions.
- Assist breathing as necessary.
- Place high flow oxygen via mask or non-rebreather.

E

- Place patient on cardiac monitor.
- Obtain 12-lead ECG, if available.
- Administer albuterol (Ventolin) 5mg in 6 ml NS (2 premix) via small volume nebulizer prior to release of the compression.

A

- Establish two large bore IV/IO.
- Administer fluid bolus of 500-1000 ml of normal saline or Ringer's Lactate.
- If patient is in shock, administer normal saline wide open and titrate to maintain systolic blood pressure > 90 mm Hg.
- In general, IV fluids and medical therapy should be initiated prior to release of compression.
    - The release of compression to the chest should not be delayed to establish IV and initiate medical treatment.
- Administer normal saline 250 ml IV/IO bolus prior to release of the compression:
    - Continue normal saline at 500 ml/hr, even if the patient is normotensive.
    - Discontinue if patient becomes markedly hypertensive and/or develops pulmonary edema.

P

- If intubation is indicated, do NOT use succinylcholine. If paralysis is needed to manage the airway, use vecuronium (Norcuron).
- Consider administering the following prior to release of compression:
    - sodium bicarbonate ($NaHCO_3$) 1 mEq/kg IV/IO
      AND/OR
    - calcium gluconate 20 ml IV/IO slowly over 2 minutes.
        - If calcium gluconate is not available, may substitute calcium chloride 10% 5-10 ml (0.5-1 gm) IV/IO over 2 minutes.

- If the patient has hypotension and bradycardia associated with ECG evidence of hyperkalemia (tall, peaked T waves, prolonged QRS, disappearance of P or T waves, complete heart block), initiate the following:
    - Calcium gluconate 10% 20 ml IV/IO slowly over 2 minutes.
    - Sodium bicarbonate ($NaHCO_3$) 1 mEq/kg IV/IO.
    - Albuterol (Ventolin) 5mg in 6 ml NS via SVN.
    - Sodium bicarb ($NaHCO_3$) 1 mEq/kg added to normal saline 1000ml and run wide open.
- Consider treating pain with opioids. Use minimal doses to control pain without affecting level of consciousness, if possible.

Extremity Trauma

History: mechanism of injury, speed or force applied, medications, preexisting injury or defect in the area, symptoms preceding injury.

R

- Perform patient assessment.
- Maintain patent airway with spinal precautions.
- Assist breathing as necessary.
- Evaluate for obvious deformity, shortening, rotation or instability and assess distal sensation and capillary refill.
- Manage bleeding, see hemorrhage protocol (page 243).
- Use splints as appropriate to limit movement of suspected fracture.
- Reassess distal neurovascular status after any movement or splinting.
- Elevate extremity injuries above the level of the heart when possible to reduce swelling.
- Apply ice/cool packs to limit swelling and help with pain. Do not apply directly to skin.

E

- Evaluate neurological status of extremity by sensation to light touch and distal movement.
- Evaluate vascular status of extremity. Note pallor, pulses, capillary refill and degree of bleeding/blood loss. Assess color of blood and whether it is pulsatile.
- If distal vascular function is compromised, gently attempt to restore normal anatomic position.

A

- Establish IV/IO for significant fractures or bleeding.
- If needed, administer normal saline 500-1000 ml bolus to maintain blood pressure > 90 mm Hg.

P

- Consider pain management before moving or splinting suspected fractures.

Facial Trauma

History: details about mechanism of injury, medical history, medications (ask specifically about blood thinners such as Coumadin/warfarin, aspirin, Plavix, Pradaxa, Xarelto, Eliquis, Arixtra, heparin, Lovenox, Aggrenox), other injuries, any devices that could have been dislodged in injury (bridges, crowns, dentures, prosthetics)

R

- Perform patient assessment.
- Maintain patent airway with spinal precautions.
- Assist breathing as necessary.
- Oxygen supplementation to maintain oxygen saturations > 90%.
- Evaluate for obvious deformity, shortening, rotation or instability and assess distal sensation and capillary refill.
- Manage bleeding, see hemorrhage protocol (page 243).
- If cervical spine pain or tenderness, see spinal care protocol (page 246).
- Perform mental status assessment. If abnormal, see traumatic brain injury protocol (page 241).
- Perform gross vision assessment (fingers or hand waving)
- Any tissue or teeth avulsed should be collected. Lost teeth not recovered at the scene may be in the airway!
- Avulsed tooth:
    - Avoid touching the root end of the tooth. Do not wipe off tooth
    - Pick up at crown (chewing) end. If dirty, rinse off under cold water for 10 seconds.
    - Place in milk or saline as storage medium.
        - An awake, alert patient can hold tooth in mouth under tongue using own saliva as storage medium.
- Eye trauma:
    - Consider eye shield or inverted paper cup for any significant trauma.
    - DO NOT use pressure dressing.
    - Look for leakage of intraocular fluid.
    - Cover uninjured eye to prevent lid and eye movement.
    - If there is an impaled object, DO NOT REMOVE. Stabilize in place with cup and bulky gauze dressing.
    - If globe avulsed, DO NOT attempt to put it back into socket. Cover with moist saline dressing and place cup over the globe to protect the area.
- Ear trauma:
    - DO NOT pack or probe ear canal.
    - Watch for fluid draining from ear and notify receiving facility.
    - Look for bruising behind the ears (Battle's sign)
- Mandible unstable:
    - Expect patient cannot spit/swallow effectively. Have suction readily available.
    - If spine cleared (see spinal care protocol), transport sitting up with spit/emesis basin.
- Epistaxis:
    - Squeeze nose (soft area, not the bridge of the nose) for 10-15 minutes continuously. Do not release to check bleeding until 10-15 minutes has passed.

- Nose/ear avulsion:
    - Recover tissue if it does not waste scene time.
    - Transport tissue wrapped in sterile gauze moistened (not dripping wet) with normal saline.
    - Severe bleeding due to nose and ear lacerations can be addressed with sterile dressing and direct pressure.

E

- Protect the airway and intervene if needed. Frequent reassessments are crucial.
- Transport sitting up if no neurological deficits/spinal injury, if bleeding or patient is having difficulty swallowing or handling secretions.

A

- Establish IV/IO for significant bleeding.
- If needed, administer normal saline 500-1000 ml bolus to maintain blood pressure > 90 mm Hg.

P

- Advanced airway may be needed for significant facial trauma if airway is compromised or may become so.
- If significant epistaxis is not controlled by pressure and patient is not significantly hypertensive, use oxymetolazone spray per acute epistaxis protocol (page 154).
- Consider use of topical TXA (p 322) if significant epistaxis with signs of hemorrhagic shock.
- Consider pain management, if needed.

Head Trauma/Traumatic Brain Injury

History: details of mechanism of injury, time of onset, loss of consciousness, bleeding, medical history, medications, alcohol or drug use

Risk factors for potentially significant head injury include: GCS < 15 2 hours post injury, anything below A on AVPU scale, age > 55, deterioration in neurologic status, post-traumatic seizure, focal neurological deficit, loss of consciousness > 5 minutes, suspicion of skull fracture, recurrent vomiting (more than twice), no coagulopathy or bleeding disorder (including anticoagulant use), persistent severe headache, persistent post-traumatic amnesia, multisystem trauma, large scalp hematoma/laceration, dangerous mechanism (fall > 20 feet-adult, fall > 10 feet-pediatric, high risk MVC, MVC vs pedestrian or bicyclist

Signs of herniation: GCS < 8, fixed or asymmetric pupils, neurologic posturing, Cushing's Triad (irregular respirations, decreasing pulse, increasing blood pressure with widening pulse pressure), intermittent apnea, neurological deterioration (decrease in GCS by 2 or more).

R

- Assess scene safety prior to attending to patient. Law enforcement presence may be needed.
- Perform patient assessment.
- Maintain patent airway with spinal precautions.
    - Consider oral airway if patient is unable to maintain airway on their own.
    - Do NOT place nasal airway if there is facial injury or suspicion for basal skull fracture.
- If breathing is inadequate, assist ventilation to maintain SaO_2 > 90%.
    - Do not over ventilate
    - Adult- 10 breaths/minute
    - Child- 12-20 breaths/minute
    - Infant- 20-30 breaths/minute
- Hyperventilation is rarely needed and can be harmful to head injured patient.
    - Hyperventilation leads to decreased cerebral blood flow due to constriction of blood vessels.
    - **Do not** hyperventilate unless two clear signs of impending herniation are present:
        - Extensor posturing or no response to painful stimuli
        - Asymmetric, dilated or nonresponsive pupils
        - Decrease in GCS >2 from patient's best score when initial score >9.
    - If two signs of herniation are present, hyperventilate at the following rates:
        - Adult- 20 breaths/minute
        - Child- 25 breaths/minute
        - Infant- 30 breaths/minute
        - Target $ETCO_2$ is 30-35 mm Hg
        - Discontinue hyperventilation as soon as symptoms improve and target $ETCO_2$ of 35-40 mm Hg.
- Monitor blood pressure, pulse, respirations and oximetry. Reassess frequently.
- Monitor GCS (page 107).
    - Recheck GCS often so changes are noted quickly.
- Place high flow oxygen via mask or non-rebreather to keep saturations > 90%.

- Control bleeding. Do not apply pressure to open or depressed skull fractures.
- Perform blood glucose test.
- If patient is alert and blood glucose is <60, administer oral glucose tabs or gel.
- If patient has altered level of consciousness and blood glucose is >60, administer naloxone (Narcan) 2mg via MAD or autoinjector.
- Spinal immobilization with head of bed elevated 30° if patient is not hypotensive.
- Call for immediate ALS rendezvous if GCS ≤8.

E

- Place patient on cardiac monitor.
- Monitor $ETCO_2$, if available, with goals to maintain $ETCO_2$ 27-32.
    - Avoid excessive hyperventilation.
- If patient has altered level of consciousness and blood glucose is >60, administer naloxone (Narcan) 2mg IM via needle/syringe if training completed.
- Perform secondary survey and look for other signs of trauma.

A

- Establish large bore IV/IO if able to do so without delaying transport.
- Administer normal saline at TKO if normotensive.
- If patient is in shock, administer normal saline wide open and titrate to maintain systolic blood pressure > 90 mm Hg.
- If glucose < 60, obtain blood sample and administer dextrose 50% (D50) 25 ml or dextrose 10% 100 ml IV/IO.
- Administer naloxone (Narcan) 0.4 mg IV/IO/IM.
    - If no response to initial dose, repeat at 1.6 mg IV/IO/IM.
    - May be given endotracheally if no IV/IO access. Dose is double the IV dose (0.8 and 3.2mg, respectively).

P

- Orotracheal intubation is indicated if GCS is ≤8 and BVM is ineffective or airway compromised.
    - Nasotracheal intubation should not be used in head injured patients.
    - Most patients with head injury maintain respiratory reflexes. Rapid transport to hospital without intubation is appropriate, when possible.
    - Intubation in the prehospital setting has been associated with worse outcomes and should be undertaken with extreme caution.
- Consider sedation with midazolam or lorazepam per protocol for patients who are combative and may endanger themselves or others.
- Consider treatment of nausea and vomiting with either:
    - Ondansetron 4 mg IV/IO/IM/SL
      OR
    - Promethazine 6.25-12.5mg IV/IM

Hemorrhage

R

- Assess scene safety prior to attending to patient. Law enforcement presence may be needed.
- Use personal protective equipment, including gown, eye protection and mask, if indicated.
- Perform initial patient assessment (ABCs).
- Maintain patent airway with spinal precautions, if indicated.
- Assist breathing as necessary.
- Apply direct pressure to wound with gauze for minimum of 5 minutes, then reevaluate. If still bleeding, reapply pressure for a minimum of 5 minutes and reevaluate.
- If life threatening bleeding is on an extremity and is uncontrolled by direct pressure, consider applying a tourniquet. See tourniquet protocol (page 129).
- Write time of tourniquet application on tourniquet and in report.
- If life-threatening hemorrhage is not controlled by tourniquet or is located in an area not amenable to tourniquet placement, consider applying hemostatic agent (Celox, TraumaDEX, etc.). For these to be effective, they must be packed into the wound as close to the site of bleeding as possible
    - Apply medication impregnated gauze to the wound and hold pressure for a minimum of 5 minutes.
    - Check for ongoing bleeding.
    - If bleeding has stopped, bandage appropriately.
    - If bleeding continues, reapply pressure for minimum of 5 minutes.
    - If bleeding stops, bandage appropriately.
    - If bleeding continued, remove initial hemostatic agent and reapply new hemostatic agent.
- Monitor blood pressure, pulse, respirations and oxygen saturation.
- Call medical control for bleeding not controlled with tourniquet or hemostatic agent.
- Contact ALS for rendezvous if tourniquet placed or if uncontrolled hemorrhage in a location where tourniquet is not viable option (head, neck, torso).
- Reassess vital signs and neurologic status often.
- If amputation (unattached tissue):
    - If grossly contaminated, rinse severed part briefly and gently with sterile water or normal saline to remove debris.
    - Wrap unattached tissue in sterile saline-moistened (not soaked) gauze
    - Place in waterproof container (glove or plastic bag).
    - Keep tissue cool.
    - **Do not put the severed appendage directly on ice.**
    - If necessary, use ice packs to provide some measure of cooling.
    - Transport tissue with patient.
    - Control bleeding of site with direct pressure or tourniquet, if necessary.
- If avulsion (attached tissue):
    - If grossly contaminated, rinse with normal saline.
    - Return tissue to normal position.
    - Secure with saline-moistened (not soaked) dressing.
    - Control bleeding with direct pressure.

E

- Place patient on cardiac monitor.

A

- Establish IV/IO.
- Administer normal saline 500-1000 ml bolus to maintain blood pressure > 90 mm Hg.
- If patient is in shock, proceed with fluid resuscitation per shock protocol.

P

- Consider administration of TXA (p 322) if hemorrhage is uncontrolled with tourniquet or if evidence of hemorrhagic shock.
- Consider administration of opiates for pain control, especially if tourniquet has been applied.

Neck Trauma

R

- Assess scene safety prior to attending to patient. Law enforcement presence may be needed.
- Use personal protective equipment, including gown, eye protection and mask, if indicated.
- Perform initial patient assessment (ABCs).
- Maintain patent airway with spinal precautions.
- Assist breathing as necessary.
- Administer high flow oxygen supplementation to maintain oxygen saturations > 94%.
- Call ALS immediately for all penetrating trauma and significant blunt trauma.
- If impaled object is present, **do not remove**. Stabilize in place with bulky gauze dressing to minimize movement of the object. If object is too large or unwieldy to transfer safely, attempt to cut object at a point more than 6 inches from the patient.
- If open or penetrating wound is present, cover wound with occlusive dressing.
- Control bleeding by using a dressing and gloved fingers to apply direct pressure to the source of bleeding.
    - Avoid applying pressure to large areas with the entire hand.
    - Use only as much pressure as is necessary to control bleeding.
- Transport patient with head down (Trendelenburg), if possible.

E

- Place patient on cardiac monitor.

A

- Establish two large bore IV/IO.
- If blunt trauma and blood pressure is normal, administer normal saline at TKO rate.
- If penetrating trauma, give fluid bolus of 500 ml of normal saline or Ringer's Lactate.
- If patient is in shock, proceed with fluid resuscitation to maintain systolic blood pressure > 90 mm Hg.

P

- If stridor is present, consider orotracheal intubation (page 78), or needle cricothyrotomy (page 71).

Spinal Trauma

R/E

- Establish scene safety prior to attending to patient.
- Assess the scene to determine risk of injury. Mechanism alone should NOT determine if a patient requires cervical spine immobilization. However, mechanisms that have been associated with higher risk of injury include the following:
    - Motor vehicle collisions, including automobiles, all-terrain vehicles, motorcycles, and snowmobiles.
    - Axial loading injuries to the spine
    - Associated substantial torso injuries
    - Falls > 10 feet
- Assess the patient in the position he/she was found. Initial assessment should focus on determining whether or not a cervical collar needs to be applied.
- Assess for:
    - mental status (Glasgow coma scale)
    - neurological deficits (motor response and sensory status of extremities)
    - spinal pain or tenderness
    - any evidence of intoxication with alcohol or drugs
    - other severe or distracting injuries.
- Perform frequent airway, vital signs and neurologic status reassessments.
- Apply high-flow oxygen.
- Immobilize the patient with a cervical collar if there are any of the following:
    - Patient complaints of midline neck or spine pain
    - Any midline or neck or spinal tenderness with palpation
    - Any abnormal mental status (including extreme agitation) or neurological deficit
    - Any evidence of drug or alcohol intoxication
    - Another severe or painful distracting injury is present
    - Torticollis in children
    - A communication barrier that prevents accurate assessment
    - If none of the above apply, patients should not have a cervical collar placed.
- If resistance of new neurologic symptoms develop during positioning and airway is adequate, immobilize cervical spine in the position encountered.
- Patients with penetrating injury to the neck should NOT receive spinal immobilization, regardless of whether they are exhibiting neurologic symptoms or now. Doing so can lead to delayed identification of injury or airway compromise.
- If extrication may be required
    - From a vehicle: after placing the cervical collar, if indicated, children in a booster seat or adults should be allowed to self-extricate. For infants or toddlers already strapped in a car seat with built-in harness, extricate the child while strapped into the car seat.
    - Other situations required extrication: A padded long board may be used for extrication, using the lift and slide (rather than log roll) technique.
- If a helmet needs to be removed, see helmet removal protocol (page 108).
- Patients should NOT routinely be transported on long boards, unless the clinical situation warrants long board use. An example of this may be facilitation of immobilization of multiple extremity injuries or an unstable patient where removal of a board will delay transport and/or

other treatment priorities. In these rare situations, long boards should be padded or have a vacuum mattress applied to minimize secondary injury to the patient.

- Be aware of potential airway compromise or aspiration in immobilized patients with nausea/vomiting or with facial/oral bleeding. Use suction early and often.
- Excessively tight immobilization straps can limit chest excursion and cause hypoventilation.
- Prolonged immobilization on a spine board can cause ischemic pressure injuries to skin.
- Children are abdominal breathers, so immobilization straps should go across the chest and pelvis and not across the abdomen, when possible
- Children have disproportionally larger heads. When securing children to spine board, the board should have a recess for the head, or the body should be elevated 1-2 cm to accommodate larger head size and avoid neck flexion (and airway compromise) when immobilized.
- Spinal immobilization should be considered a treatment or preventative therapy.
- Patients who are likely to benefit from immobilization should undergo this treatment.
- Patients who are not likely to benefit from immobilization, who have a low likelihood of spinal injury should not be immobilized.
- Long spine board should be reserved for patient movement in non-ambulatory patients who meet immobilization criteria and should be removed as soon as is practical.

A/P

- Establish large bore IV/IO.
- If blood pressure is normal, administer normal saline at TKO rate.
- If patient is in shock, proceed with fluid resuscitation to maintain systolic blood pressure > 90 mm Hg.

Taser Trauma

R/E/A/P

- Establish scene safety prior to attending to patient.
- Unlike other forms of penetrating foreign bodies, Taser barbed darts, because of their short length (1/4”), may be safely removed by EMS personnel when requested by law enforcement.
- The darts should only be removed in the field if they do not involve the eye, face, neck, breast or groin. Patients with retained darts in these areas should be transported to the hospital and have the darts removed by a physician.
- The patient must be in police custody and EMS personnel must be convinced the patient is adequately restrained.
- Personal protective equipment must be used.
- Ensure that wires are disconnected from the gun or the wires have been cut.
- Push on the body part where the barbed dart (straight #8 fish hook) is imbedded and simultaneously pull the dart straight out.
- Apply alcohol or iodine to puncture area and dress as needed.
- Treat the dart as a contaminated sharp. These darts should be placed in biohazard sharps container and turned over to law enforcement.
- If EMS provider’s safety is guaranteed, all patients must be thoroughly assessed to determine if other medical problems or injuries are present.
- If the patient does not have any other presenting injury or illness, they may be left in custody of law enforcement.
- If transported to the hospital, follow restraints for aggressive or violent patients protocol (page 53).

Section 8: Environmental Protocols

Drowning/Near-Drowning

Drowning is defined as death due to submersion (and usually suffocation) in water or other fluids.

Near drowning is the term used when recovery, at least temporarily, occurs following submersion injury. Some near-drowning victims have recurrence of respiratory symptoms 3-4 hours or more after initial episode.

History: Aspiration of fluid, submersion in water (regardless of depth), saltwater vs freshwater, water temperature, duration of submersion, possibility of trauma (MVC, diving accident, etc.), past medical history and comorbid conditions

R

- Assess scene safety. If rescue needed, contact Pend Oreille River Valley Dive Rescue Team. **DO NOT** enter the water to attempt to rescue a drowning victim unless you are qualified in water rescue. Drowning is #1 cause of death for would-be rescuers!
- Once victim is reached, open airway and begin mouth to mouth or mask to mouth ventilation as soon as it can be performed safely.
- If airway is blocked, perform abdominal thrusts (Heimlich maneuver).
- As soon as patient is in a stable position, check the carotid pulse.
    - The pulse may be difficult to assess because of vasoconstriction or depression of cardiac output.
    - If no pulse, begin CPR (page 101) and see cardiac arrest protocol (page 140).
- Maintain patent airway while maintaining in-line axial support.
- Assist breathing as necessary.
- Administer high-flow oxygen via nonrebreather to maintain SaO_2 as close to 100% as possible.
- Maintain spinal precautions.
- Monitor blood pressure, pulse, respirations, pulse oximetry.
- Obtain core temperature.
- Remove wet clothing and cover patient with warm blankets.
- All submersion patients who may have experienced near-drowning should be transported to hospital for evaluation.
- In cold water drowning, do not abandon resuscitative efforts until all ALS measures have been tried and patient's core temperature has been normalized. See hypothermia protocol (page 257).
- If extended underwater time (>1 hour), contact medical control for concurrence with not initiating resuscitation.

E

- Place patient on cardiac monitor.
- Obtain core temperature with low-read thermometer.
- Establish airway, as needed.
- Hyperventilate patient once airway control is established.
    - Adult rate: 30 breaths/minute.
    - Pediatric rate: 35-50 breaths/minute.

A

- Establish IV/IO.
- Administer lactated Ringers or normal saline as needed to maintain blood pressure > 90 mm Hg.

P

- Consider CPAP or PEEP valve.
- Consider advanced airway/intubation, as necessary.
- Monitor rhythm and treat arrhythmias per protocols.
- Treat for hypothermia
- Use of sodium bicarbonate ($NaHCO_3$) is not recommended.

Electrocution

The danger of cardiac arrest is related to magnitude and duration of electrical current. Alternating current at 60 Hertz (the frequency used by power companies) is generally more dangerous to humans than direct current at any voltage because it is more likely to induce ventricular fibrillation.

Current	Symptoms
1 mA	tingling, little chance of harm
10 mA	tetanic muscular contraction, difficult to let go of source
~30 mA	tetanic muscular contraction, impossible to let go of source
40-50 mA	tetanic contraction of all muscles, including diaphragm and intercostals Short duration- respiration resumes when current stops Long duration- prolonged apnea with hypoxemia, secondary cardiac arrest and death
100 mA +	direct induction of ventricular fibrillation

Associated injuries- damage similar to burn or crush injury, nerve damage, myoglobinuria causing kidney damage, secondary injury from being thrown from source (head injury, spinal injury, bone fractures)

Lightning acts as a massive DC countershock, depolarizing the entire myocardium at once. Following this, the heart may resume normal rhythm. 55% of people struck by lightning survive. Those who die suffered immediate cardiac or respiratory arrest. Respiratory arrest often lasts longer than asystole and victims may die of hypoxia if CPR is not started promptly. Patients who do not arrest immediately have an excellent chance of recovery.

R

- Verify scene safety. Rescuers must be certain the current is off (preferably at the source) before attempting to touch or move the patient.
- Check for responsiveness.
- Check for breathing and pulse (simultaneously) for no more than 10 seconds.
- Rescue breathing and/or chest compressions should be started when indicated.
    - Protect the cervical spine from further motion if there is any likelihood the patient was thrown or suffered a fall.
    - Use chin-lift or jaw thrust to open airway.
    - Cervical collar should be applied.
- When power lineman on a utility pole is electrocuted:
    - Rescue breathing can be initiated by rescuers on the pole.
    - Chest compressions can be initiated as soon as the victim can be lowered to the ground.
    - Even with no loss of consciousness, patient should be placed on cardiac monitor and transported to the hospital due to danger of delayed arrest from arrhythmia.
- Since almost all lightning injury patients who do not go into immediate arrest survive:
    - If multiple victims are simultaneously struck, patients who appear clinically dead should be treated immediately.
    - Patients showing signs of life can wait for treatment.
    - Complete recovery has been reported in arrests of several hours in some patients, so prolonged resuscitation is warranted.
- Attach AED as soon as it is available.
    - Shock advised- shock once and resume CPR.

- No shock advised- resume CPR.

E

- Airway management.
- Attach cardiac monitor, and proceed based on rhythm observed.

A

- Establish 2 large bore IV/IO.
- Rapidly administer lactated Ringers or normal saline as needed to maintain urine output at 50-100 ml/hr.
- Establish supraglottic airway when able to do so without interrupting CPR.

P

- Patients should be intubated orotracheally if it may be accomplished without excessive movement of the cervical spine.
  - If endotracheal intubation cannot be performed rapidly and safely, a supraglottic or laryngeal mask airway may provide an alternate method of airway management.
- Use waveform capnography or capnometry to confirm and monitor ET tube placement and CPR quality.
- Give medications as indicated based on rhythm observed on monitor. See appropriate protocols for each rhythm.

Frostbite

R/E

- Perform patient assessment.
- Examination of the affected area should be performed very gently. Ice crystals can damage tissues with rough handling.
- Protect patient from further exposure.
- Remove frozen, wet, or restrictive clothing from patient.
- Permit only gradual room temperature rewarming ONLY if absolutely certain refreezing will not occur.
- Protect damaged areas with loose, dry, sterile dressings. Splint if necessary for comfort.
- Elevate affected areas.
- Do not allow patient to use affected extremities.
- Monitor blood pressure, pulse and respirations.

A

- Obtain IV/IO access.
- Administer normal saline at TKO rate.

P

- Consider pain management with fentanyl 0.5-1 mcg/kg IV/IO/IM.
    - May repeat in 10 minutes, up to total dose of 3 mcg/kg.

Heat Cramps/Heat Exhaustion

History: exposure to increased heat and/or humidity, length of exposure, extreme exertion, medications (especially tricyclic antidepressants, phenothiazines, anticholinergic meds, salicylates), medical history, alcohol or illicit drug use (cocaine, amphetamines, MDMA, PCP)

Signs/symptoms: fatigue, feeling faint or dizzy, headache, nausea/vomiting, syncope, dilated pupils, heavy sweating, tachycardia, cool/moist skin, goosebumps while in the heat, muscle cramps, temp < 104.

R

- Perform patient assessment.
- Monitor blood pressure, pulse and respirations.
- Obtain core temperature.
- Move patient to cooler environment and remove excess clothing.
- Perform secondary survey, as indicated.
- Apply tepid compresses to forehead, neck, axilla, groin, and extremities.
- Consider evaporative airflow (fan).
- AVOID ice packs or cold-water immersion.
- Administer oral fluids (water, diluted sports drink-2 parts water for every 1 part sports drink)

E

- Place patient on cardiac monitor.

A

- Obtain IV/IO access.
- Administer normal saline bolus if unable to take oral fluids or if hypotensive.

P

- Consider treatment of nausea/vomiting with either:
    - ondansetron 4-8mg IV/IO/SL
    - Promethazine 6.25-12.5 mg IV/IO/IM

Heat Stroke

History: exposure to increased heat and/or humidity, length of exposure, extreme exertion, medications (especially tricyclic antidepressants, phenothiazines, anticholinergic meds, salicylates), medical history, alcohol or illicit drug use (cocaine, amphetamines, MDMA, PCP)

Signs/symptoms: bizarre behavior, altered mental status, tachycardia, tachypnea, nausea/vomiting, flushed skin, lack of sweating, seizures, temp > 103.

R

- Perform patient assessment.
- Monitor blood pressure, pulse and respirations.
- Obtain core temperature with wide range thermometer. Repeat q 5 minutes.
- Move patient to cooler environment and remove excess clothing.
- Perform secondary survey, as indicated.
- Cool aggressively with wet sheets, cool packs and/or evaporative airflow.
- AVOID ice packs or cold-water immersion.
- Administer high-flow oxygen.

E

- Place patient on cardiac monitor.

A

- Obtain IV/IO access.
- Administer trial of normal saline bolus, unless pulmonary edema develops.

P

- Consider endotracheal intubation.
- If shivering develops during cooling, consider administration of either:
    - midazolam 2.5-5 mg IV/IO/MAD
    - lorazepam 0.5-1 mg IV/IO/IM
- Treat seizures, arrhythmias or unconsciousness per appropriate protocol.

Hypothermia

History: details of exposure (temperature, humidity, length of exposure), water exposure/submersion, medications (especially barbiturates and phenothiazines), medical history (especially diabetes, hypoglycemia, hypothyroidism), head injury, history of cardiac dysrhythmias, alcohol intake.

Signs/symptoms: shivering (although as hypothermia progresses, shivering stops), dizziness, nausea, incoordination, difficulty speaking, confusion, fatigue, decreased LOC, slow shallow breathing, cardiac dysrhythmias become more probable as body temp falls.

Mild hypothermia- core temp $\geq$ 90° F (32° C)
Severe hypothermia- core temp < 90° F (32° C)

R

- Perform patient assessment.
- Monitor blood pressure, pulse and respirations.
    - Allow low heart rate, respiratory rate and blood pressure associated with lower metabolic state.
- Obtain core temperature with wide range thermometer. Repeat every 5 minutes.
- Remove wet clothing.
- Protect against heat loss and wind chill by using blankets, insulating materials, and moisture barriers. Remember to cover the head.
- Maintain horizontal position. Do not elevate the extremities.
- Hypothermic patients should be handled gently at all times, as tactile stimulation may precipitate arrhythmias and/or cause tissue damage.
- Perform secondary survey, as indicated.
- Administer warmed, high-flow oxygen to keep SaO_2 as close to 100% as possible.
- Assist ventilation, as needed.
    - DO NOT hyperventilate.
    - A normal respiratory rate may be hyperventilation for a hypothermic patient.
- Start rewarming measures:
    - Heat packs to neck, armpits, and groin.
    - Turn transport vehicles heat to high.
    - Attempt to rewarm SLOWLY. Goal is 2° F (1° C) per hour.
- If patient is pulseless and core temperature is < 86° F (30° C):
    - Perform CPR
    - Limit to one shock if advised by AED (ventricular tachycardia or ventricular fibrillation)
    - Transport to hospital as soon as possible.
- If patient and pulseless and core temperature is > 86° F (30° C):
    - Perform CPR
    - Repeat shocks if advised as core temperature rises.
- Rewarming to 95° F (35° C) is essential before resuscitative efforts may be terminated. Continue CPR and transport for continued rewarming.
- If patient is unconscious, perform blood glucose.
- Administer naloxone (Narcan) 2 mg via MAD or autoinjector.

E

- Place patient on cardiac monitor.
- Monitor $ETCO_2$, if available.
- Ventilate to keep $ETCO_2$ near 40. DO NOT hyperventilate.
- If unconscious and blood glucose > 60, administer naloxone (Narcan) 2mg IM via needle/syringe if training completed

A

- Obtain two large bore IV/IO access.
- Administer bolus of normal saline 500 ml.
    - Saline should be warmed to 42-44° C (107-110° F).
    - Repeat boluses of 500 ml until blood pressure $\geq$ 80 is achieved.
- Monitor for pulmonary edema due to sluggish myocardial contractility.
- If unconscious, and blood glucose < 60, obtain blood sample and administer dextrose 50% 25 ml or dextrose 10% 100 ml IV/IO.
- If unconscious and blood glucose > 60, administer naloxone (Narcan) 2mg IV/IO, if not already given via MAD.

P

- Perform endotracheal intubation if:
    - Unresponsive
    - Cardiac arrest
    - Severe dysrhythmias
    - Systolic blood pressure <70.
- Hyperventilate to correct respiratory acidosis prior to intubation.
- If patient is pulseless and temperature is < 86° F (30° C):
    - Limit to one shock for V tach/ V fib.
    - Withhold IV medications until temperature is > 86° F (30° C).
- If patient and pulseless and core temperature is > 86° F (30° C):
    - Repeat defibrillation for V tach/ V fib as temperature rises.
    - Administer IV medications as indicated, but at increased intervals between doses (i.e. 6-10 minutes for epinephrine rather than q 3-5 minutes).

Section 9: Respiratory Protocols

Adult Airway Obstruction

R/E/A

- Assess ABCs.
- Ask “Are you choking?”
- Perform abdominal thrusts/Heimlich maneuver.
    - Perform chest thrusts for pregnant or obese victims.
- Repeat abdominal/chest thrusts until effective or patient becomes unresponsive.
- If patient is unresponsive with no normal breathing, begin CPR (page 102) without pulse check.
- Before delivering breaths, look in the mouth.
    - If you see a foreign body that may be easily removed, remove it and attempt to ventilate.

P

- If unable to ventilate patient, attempt to remove obstruction with laryngoscope and McGill forceps.
- If obstruction persists, consider needle cricothyrotomy (page 71).

Asthma

R

- Perform patient assessment.
- Administer high-flow oxygen by mask.
- Monitor pulse oximetry. Titrate oxygen and ventilate to maintain O_2 saturations $\geq$ 90%.
- Assist patient in taking their own albuterol inhaler, if available.

E

- Place patient on cardiac monitor.
- Administer albuterol (Ventolin) and ipratropium (Atrovent) (DuoNeb) 1 premix vial via small volume nebulizer.

A

- Establish IV/IO.
- Repeat administration of albuterol (Ventolin) treatment only, using small volume nebulizer.
    - May be used continuously, if symptoms persist.

P

- Consider administration of epinephrine 1:1000 0.01 mg/kg IM, maximum adult dose 0.3 mg.
    - Use with caution in patients > 40 years old and/or with known coronary artery disease.
- Consider administration of magnesium sulfate 2g in 100 ml normal saline slow IV over 15 minutes.
- Consider CPAP if patient condition is appropriate.
- Consider endotracheal intubation if patient is in obvious respiratory failure, if patient's respiratory effort becomes inadequate, or if level of consciousness decreases.

Chronic Obstructive Pulmonary Disease (COPD)

R

- Perform patient assessment.
- Administer low-flow oxygen by nasal cannula.
    - Titrate to keep SaO_2 88-90%.
- Monitor pulse oximetry. Titrate oxygen and ventilate to maintain O_2 saturations $\geq$ 90%.
- Assist patient in taking their own albuterol inhaler, if available.

E

- Place patient on cardiac monitor.
- Administer albuterol (Ventolin) and ipratropium (Atrovent) (DuoNeb) 1 premix vial via small volume nebulizer

A

- Establish IV/IO.
- Repeat administration of albuterol (Ventolin) treatment only, using small volume nebulizer.
    - May be used continuously, if symptoms persist.

P

- Consider administration of epinephrine 1:1000 0.01 mg/kg IM, maximum adult dose 0.3 mg.
    - Use with caution in patients > 40 years old and/or with known coronary artery disease.
- Consider administration of SoluMedrol 125mg or dexamethasone 10mg IV
- In refractory cases with severe bronchospasm, consider administration of magnesium sulfate 2 g in 100 ml NS slow IV over 15 minutes.
- Consider CPAP if patient condition is appropriate.
- Consider endotracheal intubation if patient is in obvious respiratory failure, if patient's respiratory effort becomes inadequate, or if level of consciousness decreases.

Stoma Emergency Airway Management

Patients with total laryngectomy rely entirely on their open stoma for their airway.

Airway emergencies most commonly occur due to obstruction.

R

- Perform patient assessment.
- Remove stoma cover, if present.
- Remove inner tube, if present.
- Attempt to ventilate through stoma with bag-valve and pediatric mass.

E

- Place patient on cardiac monitor.

A

- Establish IV/IO.

P

- Suction through open stoma with appropriate size catheter if obstruction is suspected.
    - Advance catheter gently until resistance is felt.
    - Withdraw about 2cm, then apply continuous suction while withdrawing.
    - Suction procedure should not exceed 10 seconds.
- If unable to ventilate after suction, insert appropriate size cuffed endotracheal tube and inflate cuff.
- Confirm proper placement with chest rise, auscultation over epigastrium and lung fields, fogging/misting in ET tube, and end-tidal CO_2.
- Suction down RT tube with appropriately sized catheter, if necessary.
- Monitor capnography and oximetry.

Tracheostomy Emergency Airway Management

Patients with tracheostomy have intact airway anatomy between the tracheostomy and their mouth and nose.

Airway emergencies commonly occur due to obstruction.

R

- Perform patient assessment.
- Attempt to ventilate through tracheostomy tube with bag-valve mask, if BVM will connect.
- If unable to ventilate through tracheostomy tube, attempt to ventilate with bag valve mask sealed over mouth and nose while obstructing tracheostomy tube.
- If unable to ventilate, remove tracheostomy tube.
- Attempt to ventilate through stoma using bag valve and pediatric mask.

E

- Place patient on cardiac monitor.

A

- Establish IV/IO.

P

- If obstruction is encountered, suction down tracheostomy tube with appropriate size catheter.
    - Advance catheter gently until resistance is felt.
    - Withdraw approximately 2 cm then apply continuous suction while withdrawing.
    - Suction procedure should not exceed 10 seconds.
- Reattempt ventilation through tracheostomy tube.
- If obstruction persists, remove tracheostomy tube.
- Insert appropriate size cuffed endotracheal tube and inflate cuff.
- Confirm proper placement with chest rise, auscultation over epigastrium and lung fields, fogging/misting in ET tube, and end-tidal CO_2.
- Suction down RT tube with appropriately sized catheter, if necessary.
- Monitor capnography and oximetry.

Section 10: Medication Protocols

acetaminophen

Name
Tylenol

Class
Antipyretic, analgesic

Pharmacologic action
Unknown, but believed to be inhibition of cyclooxygenase (COX), primarily COX-2.

Indications
Fever, pain

Contraindications
Documented hypersensitivity

Caution
Use with caution in patients with long-term alcohol use.
Many over the counter preparations and prescription pain products contain acetaminophen.

Adult dose/route
20mg/kg. Usual adult dose is 650-1000mg

Pediatric dose/route
10-15 mg/kg. Liquid solutions vary in concentration; verify correct dose.

Onset
20-30 minutes

Duration
4-6 hours

activated charcoal

Name
Actidose Aqua, Insta-Char

Class
Antidotes, other

Pharmacologic action
Adsorbs variety of drugs and chemicals (e.g. physical binding of a molecule to the surface of charcoal particles); desorbtion of bound particles may occur unless the ratio of charcoal to toxin is extremely high.

Indications
Suspected overdose or accidental ingestion of drugs or chemicals.
Most effective if administered within 30 minutes of ingestion.

Contraindications
Decreased level of consciousness, unprotected airway (beware of aspiration), caustic/corrosive or petroleum distillate ingestions, intestinal obstruction.

Caution
Unpleasant taste, be prepared for spitting or vomiting. Use of a straw may facilitate administration.

Adverse effects
Vomiting, aspiration

Adult dose/route
25g-100g (1-2g/kg or 10 times the amount of poison ingested) premixed package orally or through NG tube

Pediatric dose/route
1g/kg for age younger than 1 year
15-30g or 1-2 g/kg for age 1-12 years

Onset
Immediate

Duration
24 hours

adenosine

Name
Adenocard

Class
Antidysrhythmics, endogenous purine nucleoside

Pharmacologic action
Slows conduction through AV node and interrupts AV reentry pathways, which restore normal sinus rhythm.

Indications
Conversion of regular, narrow complex tachycardia such as stable supraventricular tachycardia (SVT), or regular, monomorphic wide complex tachycardia

Contraindications
Hypersensitivity, second or third degree AV block (except those on pacemakers), sick sinus syndrome, atrial flutter or fibrillation, ventricular tachycardia

Caution
Some asthmatics may develop bronchospasm.
Individuals with long term use of nicotine or high doses of caffeine may require higher doses.
Warn patients of unpleasant effects of medications PRIOR to administration.

Adverse effects
Headache, dyspnea, chest pressure, dizziness, nausea/vomiting, transient asystole

Adult dose/route
6mg IV/IO rapid push. Second dose of 12mg may be given if not converted in 2 minutes. Push med quickly and flush quickly with 10-20cc NS

Pediatric dose/route
0.1mg/kg (max 6mg) IV/IO rapid push. Second dose 0.2mg/kg (max 12mg) IV/IO rapid push.

Onset
Immediate

Duration
10 minutes

albuterol

Name
Proventil, Ventolin, Proair, Accuneb

Class
Beta-2 agonist

Pharmacologic action
Beta-2 receptor agonist with some beta-1 activity; relaxes bronchial smooth muscle resulting in bronchodilation.

Indications
Bronchospasm (asthma, COPD, chronic bronchitis), wheezing associated with toxic smoke inhalation, renal failure with hypotension and bradycardia and EKG evidence of hyperkalemia, crush injury syndrome prior to release of compression or hypotension/bradycardia/EKG evidence of hyperkalemia.

Contraindications
Hypersensitivity, tachycardia secondary to heart condition

Caution
Cardiovascular disease, diabetes, hyperthyroidism
Patients on beta blockers may not respond as effectively to medication.
Patients on sympathomimetics may experience additive effects.

Adverse effects
Tachycardia, palpitations, dysrhythmias, nausea, hypertension, dizziness, restlessness, tremor

Adult dose/route
2-4 puffs of patient own metered dose inhaler (MDI)- EMR.
2.5mg (3ml) in small volume nebulizer attached to O2 >6L to vaporize. May initiate continuous nebulizer for persistent distress. Do not exceed 15mg/hr- EMT, AEMT, PM.

Pediatric dose/route
> 2 years old- 2.5mg (3ml) in small volume nebulizer
< 2 years old 1.25 mg (1.5 ml) in small volume nebulizer

Onset
5 minutes

Duration
3-4 hours

amiodarone

Name
Pacerone, Cordarone, Nexterone

Class
Class III Antidysrhythmics (has effects in all four classes; class I- sodium channel blockade; class II- noncompetitive alpha- and beta-adrenergic inhibition; class III- prolonged repolarization and refractoriness by increased action potential duration; class IV- calcium channel blockade).

Pharmacologic action
Inhibits adrenergic stimulation; suppresses ventricular ectopy; increases ventricular fibrillation threshold; markedly prolongs action potential and repolarization; decreases AV conduction and sinus node function; increases cardiac refractory period without influencing resting membrane potential; relaxes vascular smooth muscle, reducing peripheral vascular resistance.

Indications
Wide complex tachycardia in stable patients, ventricular fibrillation and pulseless ventricular tachycardia, supraventricular tachycardia.

Contraindications
Hypersensitivity, severe sinus node dysfunction, second degree or third degree heart block or bradycardia causing syncope (except with functioning pacemaker), cardiogenic shock.
Do not use with lidocaine or procainamide.
WARNING: avoid during breastfeeding.

Caution
Dosing varies for specific arrhythmias, pay attention to dosing/concentration for specific clinical presentation.
May potentiate effects of oral anticoagulants, digoxin, antiarrhythmics, and cyclosporine.
Will form precipitate in IV lines if combined with aminophylline, cefamandole, cefazolin, mezlocillin, heparin or sodium bicarbonate. If sodium bicarbonate needs to be administered after amiodarone, flush line with 10-20cc of normal saline.
Amiodarone leaches plasticizers from IV tubing and bags; bags should be mixed and run when needed. Do not premix or save any unused portions.

Adverse effects
Flushing, nausea/vomiting, headache, tinnitus, blurred vision, dizziness, restlessness, confusion, tremors, numbness, grayish-blue skin discoloration, hypotension, edema, dysrhythmias, sinoatrial node dysfunction, bradycardia (may be resistant to atropine and require pacing), QT prolongation, heart block, abdominal pain, muscle twitching, seizures, respiratory depression.
Phlebitis may occur at IV site with higher concentrations.
Discontinue if serious adverse effects occur.

Adult dose/route
Cardiac arrest- 300mg IV/IO. May give 2nd dose of 150mg IV/IO.

Stable wide-QRS tachycardia- 150mg over 10 minutes, repeat as needed if VT recurs. Follow with maintenance infusion of 1mg/min for first 6 hours.

Pediatric dose/route
Cardiac arrest- 5mg/kg bolus. May repeat up to 2 times for refractory VF/pulseless VT.
Stable wide-QRS tachycardia- 5mg/kg over 20-60 minutes.

Onset
15 minutes

Duration
Very long lasting. Half-life is 40 days.

aspirin/acetylsalicylic acid (ASA)

Name
Multiple over-the-counter medications, as well as scheduled drugs, include aspirin as an active ingredient. These include, but are not limited to, Bayer Buffered Aspirin, Alka-Seltzer with Aspirin, Ascripton, and Ecotrin.

Class
Antiplatelet agent, non-steroidal anti-inflammatory drug (NSAID), antipyretic, analgesic

Pharmacologic action
Inhibits synthesis of prostaglandin by cyclooxygenase; inhibits platelet aggregation and synthesis; has antipyretic and analgesic activity.

Indications
Suspected acute coronary syndrome

Contraindications
Hypersensitivity to aspirin or NSAIDs (aspirin-associated hypersensitivity reactions include aspirin-induced urticarial or aspirin-intolerant asthma), bleeding GI ulcers, hemolytic anemia from pyruvate kinase (PK) and glucose-6-phosphate dehydrogenase (G6PD) deficiency, hemophilia, hemorrhagic diathesis, hemorrhoids, lactating mothers, nasal polyps associated with asthma, sarcoidosis, thrombocytopenia, ulcerative colitis

Caution
Toxic dose is 200-300 mg/kg

Adverse effects
Angioedema, occult blood loss, nausea/epigastric pain, hepatotoxicity, tinnitus

Adult dose/route
324mg chewable tablet orally.

Contraindicated in pediatric patients

Onset
30-60 minutes

Duration
4-6 hours

atropine

Name
Atropen, Atreza, a component of Mark I kits and DuoDote

Class
Anticholinergic/parasympathetic blocker, toxicity antidotes, antidysrhythmic

Pharmacologic action
Competitively inhibits action of acetylcholinesterase on autonomic effectors innervated by postganglionic nerves, blocks acetylcholine receptors; decreases vagal tone resulting in increased heart rate and AV conduction; dilates bronchioles and decreases respiratory tract secretions; decreases GI secretions and motility.

Indications
Symptomatic bradycardia (primary or related to toxic ingestion), nerve agent toxicity, organophosphate and carbamate insecticide toxicity, increased airway secretions, premedication for RSI (adult with HR < 60, pediatric patients, severe alcohol intoxication).

NOTE: ineffective in bradycardia due to hypothermia.

Contraindications
No absolute contraindications for ACLS; documented hypersensitivity in non ACLS/ nerve agent/ organophosphate scenarios

RELATIVE CONTRAINDICATIONS
Asymptomatic bradycardia, asthma, narrow-angle glaucoma, GI obstruction, severe ulcerative colitis, toxic megacolon, bladder outlet obstruction, myasthenia gravis, hemorrhage with cardiovascular instability, thyrotoxicosis.

Caution
Patients with suspected acute myocardial infarction. Will not be effective for type II AV block or new third degree heart block (may cause paradoxical slowing- be prepared to pace).

Adverse effects
Tachycardia, increased myocardial oxygen demand, palpitations, nausea/vomiting, dilated pupils, increased intraocular pressure.

Adult dose/route
Bradycardia- 0.5mg IV/IO q 3-5 minutes, max 3mg
Insecticide or nerve agent poisoning- 2mg IM in mid-lateral thigh, may repeat 2 additional injections if severe symptoms develop. If severe symptoms initially, may give 3 injections of 2mg each in rapid succession

Pediatric dose/route
Bradycardia- 0.02 mg/kg IV/IO (min dose 0.1mg, max single dose child 0.5mg/ adolescent 1mg), may repeat x 1. Max total dose child 1mg/ adolescent 3mg.

Insecticide or nerve agent poisoning- 0.02-0.05mg/kg IV/IO initially, then repeat IV/IO q 20-30 minutes until symptoms reverse (>12 years- adult dosing).

Onset
2-5 minutes

Duration
20 minutes

calcium chloride

Name
No brand name

Class
Antidotes, other; calcium salts; inotropic agent

Pharmacologic action
Bone mineral component; cofactor in enzymatic reactions; essential for neurotransmission, muscle contraction, and many signal transduction pathways; couples electrical and mechanical events of the myocardium; increases myocardial contractility.

Indications
Topical burns by hydrofluoric acid, calcium channel blocker overdose, hyperkalemia, hypermagnesemia, crush syndrome, specific arachnid envenomation.

Contraindications
Hypercalcemia, ventricular fibrillation (unless due to hyperkalemia), documented hypersensitivity, known or suspected severe hypokalemia (life-threatening cardiac arrhythmias may occur)

Caution
Causes tissue necrosis if extravasation occurs.
Precipitates with sodium bicarbonate.
May cause digoxin toxicity.
Clear IV with 20cc normal saline before and after administration.

Adverse effects
Bradycardia, hypotension, syncope

Adult dose/route
10-20 mg/kg (500-1000 mg) slow IV/IO over 2 minutes.

Pediatric dose/route
10 mg/kg slow IV/IO over 2 minutes.

Onset
5-15 minutes

Duration
Dose dependent, but may persist up to 4 hours

calcium gluconate

Name
No brand name

Class
Antidotes, other; calcium salts; inotropic agent

Pharmacologic action
Bone mineral component; cofactor in enzymatic reactions; essential for neurotransmission, muscle contraction, and many signal transduction pathways; couples electrical and mechanical events of the myocardium; increases myocardial contractility.

Indications
Calcium channel blocker overdose, hyperkalemia, hypermagnesemia, crush syndrome

Contraindications
Hypercalcemia, ventricular fibrillation (unless due to hyperkalemia), documented hypersensitivity, known or suspected severe hypokalemia (life-threatening cardiac arrhythmias may occur)

Caution
Causes tissue necrosis if extravasation occurs.
Precipitates with sodium bicarbonate.
May cause digoxin toxicity.
Clear IV with 20cc normal saline before and after administration.

Adverse effects
Bradycardia, hypotension, syncope

Adult dose/route
20 ml (2000 mg, 9 mEq) slow IV/IO over 2 minutes.

Pediatric dose/route
Infants: 2 ml slow IV/IO over 2 minutes
Children: 2-8 ml (per Breslow tape) slow IV/IO over 2 minutes.

Onset
1-3 minutes

Duration
30-50 minutes

dexamethasone

Name
Decadron

Class
Synthetic glucocorticoid steroid.

Pharmacologic action
Enters target cells and binds to specific receptors, initiating many complex reactions that are responsible for its anti-inflammatory and immunosuppressive effects.

Indications
Allergic reactions and anaphylactic shock, status asthmaticus, croup

Contraindications
Hypersensitivity

Caution
Use cautiously in renal disease, hepatic disease, hypothyroidism, ulcerative colitis with impending perforation, diverticulitis, active or latent peptic ulcer, inflammatory bowel disease, congestive heart failure, uncontrolled hypertension, thromboembolic disorders, seizure disorder, diabetes, breastfeeding mothers.

Adverse effects
Stomach upset, headache, dizziness

Adult dose/route
4-10 mg IV/IO/IM/PO.

Pediatric dose/route
0.6 mg/kg IV/IO/IM/PO.

Onset
4-8 hours

Duration
24-72 hours

dextrose

Name-
D50W, D5W, D51/2NS, D10W, DGlucose, glucose

Class
Glucose-elevating agents; metabolic and endocrine; hypotonic solution

Pharmacologic action
Parenteral dextrose is oxidized to glucose, carbon dioxide and water, providing 3.4 kilocalories/gram of d-glucose.

Indications
Hypoglycemia, hyperkalemia (with concurrent insulin administration), altered level of consciousness/coma of unknown origin

Contraindications
Hyperglycemia, anuria, hyperglycemia, diabetic ketoacidosis, patients with delirium, glucose-galactose malabsorption syndrome, and documented hypersensitivity

Caution
Extravasation causes tissue necrosis.
May increase cerebral ischemia in CVA. Caution with intracranial or intraspinal hemorrhage.

Adverse effects
Thrombophlebitis, osmotic diuresis, pulmonary edema, may worse Wernicke's encephalopathy

Adult dose/route
12.5-25 ml of 50% dextrose (6.25-12.5 g) IV/IO, may be repeated if needed.
50-100 ml of 10% dextrose (5-10 g) IV/IO
Consider administration of thiamine 100 mg.

Pediatric dose/route
1 g/kg IV/IO, may be repeated.

Infant dose/route
0.5-1 g/kg diluted 1:1 with normal saline IV/IO.

Onset
30-60 seconds

Duration
Depends on severity of hypoglycemia

diazepam

Name
Valium, Diastat, AcuDial

Class
Benzodiazepine, anticonvulsant, skeletal muscle relaxants, anxiolytic

Pharmacologic action
Modulates postsynaptic effects of GABA-A transmission, resulting in an increase in presynaptic inhibition. Appears to act on part of the limbic system, as well as on the thalamus and hypothalamus to induce a calming and amnestic effect.

Indications
Tonic-clonic seizures, status epilepticus, premedication for painful procedures, agitated or violent patients, nerve agent exposure or organophosphate poisoning with seizures.

Contraindication
Documented hypersensitivity, severe respiratory depression, hypotension

Caution
Inject slowly, do not use in small veins.
Should not administer to patients in shock, with coma, or acute alcohol intoxication with depressed vital signs.
Use in caution in elderly patients.
Short duration of action- seizures may recur. Watch patient closely after administration.
May use IM but absorption is widely variable and should be administered by other routes, if possible.

Adverse effects
Hypotension, respiratory depression

Adult dose/route
5-10 mg IV/IO, MDV or MARK-1. May repeat q 10-15 min prn, max 30mg.
Elderly or frail: 1.25-5 mg IV/IO, MDV, or MARK-1.

Pediatric dose/route
1mo-5 years- 0.2-0.5mg IV/IO slowly q 2-5 min, max 5mg.
5-12 years- 1mg IV/IO slowly q 2-5 min, max 10mg.

diltiazem

Name
Cardizem, Dilacor, Dilitiaz

Class
Calcium channel blocker, antidysrhythmic type IV

Pharmacologic action
Inhibits extracellular calcium ion influx across membranes of myocardial cells and vascular smooth muscle cells resulting in inhibition of cardiac and vascular smooth muscle contraction and thereby dilating main coronary and systemic arteries; no effect on serum calcium concentrations; slows AV > SA node conduction velocity; decreases myocardial contractility; decreases peripheral vascular resistance.

Indications
Narrow complex tachycardias (atrial fibrillation, atrial flutter, supraventricular tachycardia)

Contraindication
Documented hypersensitivity, Wolff-Parkinson-White syndrome, Lowe-Ganong-Levine syndrome, symptomatic severe hypotension (systolic BP < 90 BPM), sick sinus syndrome (if no pacemaker), second- and third-degree heart block (if no pacemaker), and complete heart block. use in newborns (because of benzyl alcohol), concomitant beta-blocker therapy, cardiogenic shock, ventricular tachycardia, wide complex tachycardia of unknown origin.

Caution
May precipitate with use of furosemide.
Use cautiously in elderly, may elect to give calcium chloride 200 mg IV prophylactically in elderly, especially if dehydrated or if drug-induced hypotension.
Congestive heart failure.
Potentiates beta-blockers, lithium, carbamazepine/Tegretol, cyclosporine.

Adverse effects
Arrhythmias, heart failure, bradycardia, heart block, hypotension, pulmonary edema

Adult dose/route
0.25mg/kg up to max of 20mg slow IV/IO (over 2 minutes). May repeat after 15 minutes at 0.35mg/kg up to max of 25mg slow IV/IO.

Contraindicated in pediatric patients

Onset
2-10 minutes

Duration
1-3 hours

diphenhydramine

Name
Benadryl, other over-the-counter medications

Class
Antihistamine- first generation

Pharmacologic action
Histamine H1-receptor antagonist of effector cells in respiratory tract, blood vessels and GI smooth muscle.

Indications
Anaphylaxis, urticaria and/or pruritus in allergic reactions, dystonia/akathisia, nausea, sedation

Contraindication
Documented hypersensitivity, use controversial in lower respiratory tract disease (such as acute asthma or COPD), premature infants and neonates

Caution
Potentiates CNS depressants.
Reduce dose in elderly.

Adverse effects
Hypotension, headache, tachycardia, sedation, disturbed coordination, thickening of bronchial secretions, seizures

Adult dose/route
12.5-50 mg IV/IO/IM.

Pediatric dose/route
1 mg/kg IV/IO/IM (max dose 50mg).

Onset
Immediate

Duration
6-8 hours

dopamine

Name
Intropin

Class
Inotropic agent; catecholamine/sympathomimetic; pressor

Pharmacologic action
Endogenous catecholamine, acting on both dopaminergic and adrenergic neurons. Low dose (1-2 mcg/kg/min) stimulates mainly dopaminergic receptors, producing renal and mesenteric vasodilation (no effect on heart rate or blood pressure); higher dose (2-10 mcg/kg/min) stimulates both beta-1-adrenergic and dopaminergic receptors, producing cardiac stimulation and renal vasodilation (no increase in heart rate); large dose (10-20 mcg/kg/min) stimulates alpha-adrenergic receptors, causing peripheral vasoconstriction and increased blood pressure.

Indications
Cardiogenic shock, vasogenic shock, neurogenic shock, sepsis, refractory hypotension, bradycardia.

Contraindication
Hypersensitivity to dopamine, pheochromocytoma, ventricular fibrillation, uncorrected tachyarrhythmias, hypovolemic shock (without aggressive fluid resuscitation).

Caution
Dopamine is a vesicant and can cause severe tissue damage if extravasation occurs.
Reduce dose if patient is on monoamine oxidase inhibitors (MAOIs).
May be deactivated by alkaline solutions.
Blood pressure should be constantly monitored.

Adverse effects
Angina, ectopy, headache, tachydysrhythmias, ventricular tachycardia, ventricular fibrillation, increased myocardial ischemia, myocardial infarction, hypertension.

Adult dose/route
Mix 400mg/250ml of D5W (1600 mcg/ml), use 60 gtt IV sets.
Start IV infusion at 5 mcg/kg/min, titrate by 5-10 mcg/kg/min intervals every 5-10 minutes to desired effect/blood pressure, max 50 mcg/kg/min.
(see table next page)

Pediatric dose
1-20 mcg/kg/min IV.
Epinephrine is drip of choice for shock in pediatric patients.

Concentration: 1600 mcg/kg/ml **All doses in microgtts/min**

Weight (kg)	5 (mcg/kg/min)	10 (mcg/kg/min)	15 (mcg/kg/min)	20 (mcg/kg/min)
50	10	20	30	40
60	10	25	35	45
70	15	25	40	50
80	15	30	45	60
90	15	35	50	70
100	20	35	55	75
110	20	40	60	85

Onset
< 5 minutes

Duration
< 10 minutes

epinephrine

Name
EpiPen, TwinJect, Adrenaclick, Auvi-O, Adrenalin, AsthmaNephfrin, Vaponefrin

Class
Alpha/beta adrenergic agonist, sympathomimetic agent (catecholamine)

Pharmacologic action
Strong alpha-adrenergic effects, which can cause an increase in cardiac output and heart rate, a decrease in renal perfusion and peripheral vascular resistance, and a variable effect on BP, resulting in systemic vasoconstriction and increase vascular permeability. Strong beta-1 and moderate beta-2-adrenergic effects, resulting in bronchial smooth muscle relaxation.

Indications
Anaphylaxis, shock, cardiac arrest (ventricular fibrillation, pulseless ventricular tachycardia, pulseless electrical activity, asystole), bradycardia, or in the nebulized form for croup/bronchiolitis and IM form for refractory acute asthma.
Pressor of choice in the case of pediatric shock. Dopamine may be ineffective.

Contraindication (not applicable for anaphylaxis, cardiac arrest or shock)
Hypersensitivity, cardiac dilation and coronary insufficiency

Caution
Use with caution when given IV in anaphylactic shock as myocardial ischemia and/or cardiac arrest may occur

Adverse effects
Hypertension, tachycardia, increased myocardial oxygen demand

Adult dose/route
Pulseless arrest- 1mg 1:10,000 IV/IO every 3-5 minutes- AEMT
Post arrest infusion- 1mg 1:1000 in 250ml D5W (4 mcg/ml) at rate of 0.1-0.5 mcg/kg/minute (70-kg adult: 7-35 mcg/min)- PM
Bradycardia with pulse infusion- 1mg 1:10000 in 250ml D5W (4 mcg/ml) at rate of 2-10 mcg/min. Titrate to response- PM
Anaphylaxis (moderate), asthma, allergic reaction- 0.01 mg/kg up to 0.3mg 1:1000 IM- PM (autoinjector-all levels)
Anaphylaxis (severe)- 0.5mg 1:1000 IM, may repeat every 10-15 minutes OR 0.01 mg/kg up to 0.5mg 1:10000 IV slow push- PM
Profound refractory hypotension (shock): 2-10 mcg/min infusion- PM

Pediatric dose/route
Pulseless arrest and bradycardia with a pulse- 0.01 mg/kg (0.1 ml/kg) 1:10000 max dose 1mg IV/IO every 3-5 minutes OR 0.1mg/kg (0.1 ml/kg) 1:1000 ET q 3-5 min- AEMT
Hypotensive shock- 0.1-1 mcg/kg/min IV/IO infusion- PM

Anaphylaxis- 0.01 mg/kg 1:1000 up to 0.3mg IM every 15 minutes prn OR 0.01mg/kg 1:10000 (max 0.3mg) IV/IO every 3-5 min if hypotensive OR 0.1-1 mcg/kg/min IV/IO infusion if hypotension persists despite fluids and IM injection-PM (autoinjector- all levels)
Asthma- 0.01 mg/kg 1:1000 SQ every 15 minutes (max 0.3mg)- PM
Croup- 0.25-0.5mg racemic solution (2.25%) mixed with 3ml NS via neb OR 3ml 1:1000 solution mixed with 3ml NS via nebulizer- PM

1 mg epinephrine 1:1000 in 250 cc = 4 mcg/ cc use 60gtt tubing					
Mcg/ min	2	4	6	8	10
administer	30 gtt/min	60 gtt/min	90 gtt/min	120 gtt/min	150 gtt/min

Onset
Immediate if IV.
5-10 minutes if SQ/IM.

Duration
3-5 minutes if IV.
20 minutes if SQ/IM.

etomidate

Name
Amidate

Class
Hypnotic, non-sedative, non-narcotic, non-analgesic

Pharmacologic action
Short acting nonbarbiturate sedative-hypnotic with minimal effect on heart rate, blood pressure, cardiac output, or ventilation. No analgesic effects.

Indications
Rapid sequence intubation, particularly in patients who are hypotensive; sedation for painful procedures

Contraindication
Hypersensitivity to etomidate; pregnancy

Caution
Do not re-dose with etomidate.
Long term use can lead to adrenal insufficiency
MUST use sedative (midazolam, lorazepam) for intubation maintenance

Adverse reactions
nausea, vomiting, myoclonic skeletal muscle movement, apnea, laryngospasm, dysrhythmias, hiccups, snoring, seizures

Adult dose/route
0.1-0.3 mg/kg IV/IO infused over 30-60 seconds, max dose 40mg (use lower dose for cardioversion).

Pediatric dose/route
0.1-0.3 mg/kg IV/IO infused over 30-60 seconds, max dose 20mg.

Onset
15-20 seconds

Duration
3-5 minutes

fentanyl

Name
Currently only available in the generic form (formerly Sublimaze)

Class
Synthetic opioid agonist, narcotic analgesic

Pharmacologic action
Narcotic agonist-analgesic of opiate receptors; inhibits ascending pain pathways, thus altering response to pain; increases pain threshold; produces analgesia, respiratory depression, and sedation.

Indications
Analgesia, pulmonary edema, acute myocardial infarction

Contraindications
Hypersensitivity to fentanyl

Caution
Use with caution in the elderly and in patients with hypotension, suspected gastrointestinal obstruction, head injury, and concomitant CNS depressants.
Rapid injection may cause respiratory arrest or chest rigidity-give over 30-60 seconds.

Adverse effects
CNS depression, respiratory depression, hallucinations, hypotension, hypertension, arrhythmias, nausea/vomiting

Adult dose/route
1-2 mcg/kg IV/IO/IM slow push (commonly 25-50 mcg). Dose may be repeated in 10 minutes and should be titrated to pain relief up to total dose of 3 mcg/kg.

Pediatric dose/route
Only in children over 2 years of age: 0.5-1 mcg/kg IV/IO/IM slow push. May be repeated in 10 minutes x1.

Onset
1-2 minutes IV/IO
7-15 minutes IM

Duration
30 minutes to 1 hour IV/IO
1-2 hours IM

furosemide

Name
Lasix

Class
Potassium wasting loop diuretic

Pharmacologic action
Blocks sodium and chloride reabsorption promoting excretion of sodium, water, chloride and potassium in the thick ascending limb in the loop of Henle. Also, reduces preload by increasing venous capacitance.

Indications
Acute pulmonary edema

Contraindications
Documented hypersensitivity to furosemide, hypotension (SBP < 100), known hypokalemia/hyponatremia/hypomagnesemia, dehydration, concurrent use of lithium, renal insufficiency or failure, hepatic coma, and pregnancy (except life-threatening circumstances)

Caution
Ototoxicity is associated with rapid IV administration (>4 mg/min).
Increased risk of hypokalemia in patients taking digoxin, or with dehydration or pneumonia.

Adverse effects
Dizziness, electrolyte imbalance, headache, fatigue and muscle cramps

Adult dose/route
0.5-1 mg/kg, max dose 80mg IV/IO slow infusion one time only.

Pediatric dose
2 mg/kg IV/IO.

Onset
5 minutes for preload reduction, 30 minutes for diuresis

Duration
~2 hours

glucagon

Name
GlucaGen, Glucagon Emergency Kit, GlucaGen HypoKit

Class
Polypeptide hormone, hypoglycemia antidote, glucose elevating agents, other antidotes (e.g. beta-blocker or calcium channel blocker overdose)

Pharmacologic action
Insulin antagonist. Stimulates cAMP synthesis to accelerate hepatic glycogenolysis and gluconeogenesis. Glucagon also relaxes smooth muscles of GI tract.

Indications
Hypoglycemia, symptomatic bradycardia after beta blocker or calcium channel blocker overdose

Contraindications (not applicable in emergency setting)
Known hypersensitivity to glucagon, pheochromocytoma, insulinoma

Caution
DO NOT dilute with saline, will form a precipitate

Adverse effects
Nausea/vomiting, hyperglycemia, hypersensitivity reaction

Adult dose/route
1mg IM/IV one time for hypoglycemia.
3-5 mg IV/IO bolus followed by 3-5 mg/hr infusion for calcium channel or beta blocker overdose.

Pediatric dose/route
0.05 mg/kg up to 1 mg IM/IV for hypoglycemia.
30-150 mcg/kg IV/IO bolus followed by 70 mcg/kg infusion for calcium channel or beta blocker overdose.

Onset
5-20 minutes, peak effect at 30 minutes

Duration
1-1.5 hours

heparin

Name
No brand name available

Class
Other anticoagulants

Pharmacologic action
Accelerates the rate at which antithrombin III inhibits factors Xa and IIa.

Indications
ST elevation myocardial infarction (STEMI), deep venous thrombosis and pulmonary embolism with authorization from medical control

Contraindications
Hemorrhage; known sensitivity to heparin; history of heparin induced thrombocytopenia; recent surgery, trauma or invasive procedure; hemostatic defect or blood dyscrasias; uncontrolled hypertension; indwelling catheter; thrombocytopenia; peptic ulcer disease

Caution
Do not administer heparin preserved with benzyl alcohol to neonates, infants or pregnant or lactating women.
Do not use heparin sodium injection as a catheter lock flush, fatal medication errors have occurred.
Invert infusing solution periodically to prevent pooling.
Do not use in the same line with droperidol.

Adverse effects
Bleeding, heparin-induced thrombocytopenia, hyperkalemia

Adult dose/route
STEMI- bolus 60 units/kg IV load (max 4000 units) then infuse 12 units/kg/hr (max dose 1000 units/hr).

Onset
Immediate

Duration
1.5 hours

hydromorphone

Name
Dilaudid

Class
Opioid analgesic

Pharmacologic action
Narcotic agonist-analgesic of opiate receptors; inhibits ascending pain pathways, thus altering response to pain; increases pain threshold; produces analgesia, respiratory depression and sedation.

Indications
Acute moderate to severe pain

Contraindications
Hypersensitivity to hydromorphone, hypotension (blood pressure < 100), respiratory depression (respiratory rate <12), decreased LOC, head injury, current nausea or vomiting (prior to anti-emetics).

Caution
Caution should be used in patients who have taken other central nervous depressants, narcotic analgesics, sedative/hypnotics, or tricyclic antidepressants.
This is a strong opiate. Start with lower doses given slowly and add additional small doses as needed.
1 mg hydromorphone = 7mg morphine

Adverse effects
Respiratory depression, headache, decreased LOC, nausea/vomiting, increased sedation, abdominal pain.

Adult dose/route
0.5 mg slow IV/IO push q 3-5 minutes, max 4 mg (less in elderly).
1-2 mg IM.

Pediatric dose
0.015 mg/kg IV/IO/IM.

Onset
IV- immediate
IM- 7-15 minutes

Duration
4-5 hours

hydroxocobalamin

Name
Cyanokit

Class
Antitoxin

Pharmacologic action
Binds cyanide to form cyanocobalamin, which is excreted in the urine.

Indications
Known or suspected cyanide poisoning, including patients in cardiopulmonary arrest secondary to smoke inhalation.

Contraindications
Hypersensitivity to hydroxocobalamin or cyanocobalamin

Caution
Obtain blood sample prior to administration, as hydroxocobalamin and cyanocobalamin interfere with many laboratory blood tests.
Incompatible with dopamine and fentanyl and co-administration may cause precipitation in IV lines.
Pregnancy category C, however, treatment of cyanide poisoning may be lifesaving to mother and fetus.

Adverse effects
Nausea, vomiting, diarrhea, abdominal pain, eye irritation or swelling, red urine, red skin and mucus membranes, acne-like rash.

Adult dose/route
5 g (two 2.5 g vials) IV over 15 minutes. Each vial should be reconstituted with 100 ml normal saline and rocked or rotated for 30 seconds to mix solution and infused over 7.5 minutes. May be repeated once based on clinical severity of poisoning with infusion rate varying from 15 minutes to 2 hours, depending on patient's condition.

Onset
immediate

Duration
28-60 days

Safety and administration data for pediatric dosing has not been established by the FDA.
However, it is a potentially lifesaving medication in acute cyanide poisoning. See table below for pediatric dosing.

Pediatric dose for Hydroxocobalamin

70mg/kg over 15minutes not to exceed a single dose of 5 grams

Supplied packaging of Hydroxocobalamin is 2.5gm in 100ml

- concentration of 25mg/ml

Weight in kg / lbs	Amount in mg	Volume in ml	Infusion method of choice
2 kg / 4.4 lbs	140 mg	5.6 ml	Syringe pump
3 kg / 6.6 lbs	210 mg	8.4 ml	Syringe pump
4 kg / 8.8 lbs	280 mg	11.2 ml	Syringe pump
5 kg / 11 lbs	350 mg	14 ml	Syringe pump
10 kg / 22 lbs	700 mg	28 ml	Syringe pump
15 kg / 33 lbs	1050 mg	42 ml	Syringe pump
20 kg / 44 lbs	1400 mg (1.4 gm)	56 ml	Syringe pump
25 kg / 55 lbs	1750 mg (1.8 gm)	70 ml	Withdraw 30 ml infuse the remaining 70 ml from vial
30 kg / 66 lbs	2100 mg (2.1 gm)	84 ml	Withdraw 16 ml infuse the remaining 84 ml from
35 kg / 77 lbs	2450 mg (2.5 gm)	98 ml	Infuse 1 entire vial
40 kg / 88 lbs	2800 mg (2.8 gm)	112 ml	Infuse 1 entire vial + 12 ml
45 kg / 99 lbs	3150 mg (3.2 gm)	126 ml	Infuse 1 entire vial + 26 ml
50 kg / 110 lbs	3500 mg (3.5 gm)	140 ml	Infuse 1 entire vial + 40 ml

ipratropium

Name
Atrovent, present as part of DuoNeb

Class
Anticholinergic bronchodilator

Pharmacologic action
Anticholinergic (parasympatholytic) agent; inhibits vagally mediated reflexes by antagonizing acetylcholine action; prevents increase in intracellular calcium concentration that is caused by interaction of acetylcholine with muscarinic receptors on bronchial smooth muscle, reduces bronchospasm; dries respiratory tract secretion.

Indications
Bronchospasm due to asthma and COPD, organophosphate poisoning.

Contraindications
Documented hypersensitivity to ipratropium, atropine, or derivatives

Caution
Use with caution in patients with narrow-angle glaucoma

Adverse effects
Anxiety, nausea/vomiting, palpitations

Adult dose/route
500mcg (0.5 mg, 1 unit dose vial) with 1 unit dose albuterol (DuoNeb) in small volume nebulizer attached to O2 at >6L to vaporize solution q 6-8 hours.

Pediatric dose
0.25 mg with ½ of a unit dose albuterol (0.5 unit dose DuoNeb) by SVN.

Onset
15-30 minutes

Duration
5-7 hours

ketamine

Name- Ketalar

Class
General anesthetics, systemic

Pharmacologic action
Produces dissociative anesthesia. Blocks N-methyl D-aspartate (NMDA) receptor.

Indications
Agitated or violent behavior (excited delirium), rapid sequence intubation, pain control

Contraindications
Hypersensitivity to ketamine, head trauma, intracranial mass/hemorrhage, uncontrolled hypertension, hyperthermia, angina, stroke, underlying psychiatric disorder

Caution
Overdose may lead to panic attacks and aggressive behavior ("reemergence phenomenon").
Very similar in chemical makeup to PCP (phencyclidine), but it is shorter acting and less toxic.
Can cause hyperthermia, be prepared to cool immediately if this occurs.
Increases respiratory secretions. Consider adjunctive use of anti-sialagogue such as atropine 0.1mg.
If elevated intracranial pressure is suspected, use lower dose with midazolam.

Adverse effects
Laryngospasm, hypersalivation, nausea/vomiting, arrhythmias, emergence delirium, hallucinations, elevated blood pressure, hypotension, hyperthermia (be prepared to cool, if necessary).

Adult dose/route
RSI: 1-2 mg/kg IVP or 4-5mg/kg IM.
Excited delirium: 5-10mg/kg IM. If using in combination with benzodiazepine, decrease dose to 4-7 mg/kg.

Pediatric dose/route
RSI: 1.5 mg/kg IVP over 1 minute or 4-5mg/kg IM.

Onset
IV- 30 seconds (30-120 sec for peds)
IM- 3-4 minutes (5-10 minutes for peds)

Duration
IV- 5-10 minutes (20-60 minutes for peds)
IM- 12-25 minutes (30-90 minutes for peds)

ketorolac

Name- Toradol

Class
Non-steroidal anti-inflammatory drug, analgesic, antipyretic

Pharmacologic action
Inhibits synthesis of prostaglandins.

Indications
Acute pain, especially musculoskeletal pain and renal colic (abdominal/flank pain)

Contraindications
Hypersensitivity to aspirin or other NSAIDs, bleeding disorders, renal impairment, active peptic ulcer disease, pregnant or nursing mothers, suspected or possible dissecting AAA, patients taking any anticoagulant

Caution
Patients that are > 65 years old or < 50 kg should receive half dose.
Use with caution in elderly, renal or hepatic disease

Adverse effects
Possible anticoagulation effects, anaphylaxis, drowsiness, sweating/diaphoresis, nausea, pain at injection site.

Adult dose/route
30-60 mg IM.
15-30 mg IV/IO.

Not indicated for pediatric patients

Onset
IV- 15-30 minutes
IM- 45-60 minutes

Duration
IV and IM 4-6 hours

labetalol

Name- Trandate, Normodyne

Class
Sympathetic alpha-1, nonselective beta-blocker

Pharmacologic action
Blocks adrenergic receptors which decreases peripheral vascular resistance; non-selective beta blocker with intrinsic anti-sympathomimetic activity, plus alpha blockade.

Indications
Severe hypertensive crisis with end-organ damage (brain, cardiovascular, renal). Call medical control for approval unless in another specific protocol

Contraindications
COPD, asthma, congestive heart failure, second- and third-degree heart block, bradycardia, cardiogenic shock

Caution
Place patient in supine position (and maintain position for 3 hours, minimum) and monitor blood pressure, heart rate and EKG continuously. Atropine and transcutaneous pacing immediately available. Reduce blood pressure $\leq$20% in the first hour then toward 160/100 within the next 2-6 hours. Excessively rapid blood pressure reduction may precipitate coronary, cerebral, or renal ischemia. Pregnancy and nursing category C; use only if potential benefits justify potential risk to fetus/nursing infant.

Adverse effects
Bronchospasm, congestive heart failure, heart block, bradycardia, postural hypotension, nausea.

Adult dose/route
5-10 mg IV slow push over 2 minutes, repeat q 10 minutes until desired supine blood pressure obtained 200 mg placed in 500 ml D5W to deliver 2 mg/min IV drip rate. Max total 300 mg.

Not indicated for pediatric patients

Onset
5 minutes

Duration
Dose dependent

lidocaine

Name
Lidocaine CV, Lidopen, Xylocaine

Class
Class Ib antidysrhythmics, amide derivitive

Pharmacologic action
Combines with fast sodium channels and thereby inhibits recovery after repolarization, resulting in decreasing myocardial excitability and conduction velocity. The drug acts preferentially on diseased or ischemic myocardial tissue, exerting its effect on the conduction system by inhibiting reentry mechanisms and halts ventricular arrhythmias.

Indications
Rapid sequence intubation with known or suspected closed head injury.
Refractory or recurrent ventricular fibrillation or pulseless VT **(NO LONGER ON ACLS GUIDELINES)**

Contraindications
Hypersensitivity to lidocaine or amide-type local anesthetic, Adams-Stokes syndrome, SA/AV/intraventricular heart block in the absence of artificial pacemaker, CHF, cardiogenic shock, second- and third-degree heart block (if not pacemaker), Wolff-Parkinson-White syndrome.

Caution
Patients > 70 years of age or with liver disease, renal disease, congestive heart failure, respiratory depression, and shock.

Adverse effects
Seizures, slurred speech, altered mental status.

Adult dose/route
Head injury patients prior to succinylcholine for intubation- 1mg/kg IV/IO.

Pediatric dose
RSI- 1 mg IV/IO.

Onset
45-90 seconds

Duration
10-20 minutes

lorazepam

Name
Ativan

Class
Anticonvulsants, other; antianxiety agent; anxiolytics; benzodiazepines

Pharmacologic action
Sedative hypnotic with short onset of effects and relatively long half-life; by increasing the action of gamma-aminobutyric acid (GABA), which is a major inhibitory neurotransmitter in the brain, lorazepam may depress all levels of the CNS, including limbic and reticular formation; skeletal muscle relaxation.

Indications
Seizures, uncontrolled shivering in hypothermia, intubation maintenance, and agitated or violent patients suffering behavioral emergencies.

Contraindications
Documented hypersensitivity to lorazepam, acute narrow angle glaucoma, severe respiratory depression, pregnancy.

Caution
When administering IV, dilute 1:1 with equal volume of normal saline (do not dilute when administering IM).
Use cautiously in patients with renal or hepatic impairment.
Additive CNS depression in patients intoxicated or on other depressant-type drugs.

Adverse effects
Orthostatic hypotension, drowsiness, respiratory depression, tachycardia, confusion.

Adult dose
0.04-0.05mg/kg IV/IO/IM (usual dose 1-2 mg for anxiolysis, 4mg for seizure). May repeat in 5-10 minutes to total of 4mg (8mg in seizure).

Pediatric dose
0.05-0.1mg/kg IV/IO, max 2mg/dose, push over 2-5 minutes. For status epilepticus, may repeat 0.05mg/kg dose in 10-15 minutes.

Onset
IV- 1-5 minutes
IM- 15-30 minutes

Duration
4-6 hours

magnesium sulfate

Name
MgSO4

Class
Class V antidysrhythmic, electrolyte

Pharmacologic action
Depresses CNS, blocks peripheral neuromuscular transmission, produces anticonvulsant effects; decreases amount of acetylcholine released at end-plate by motor nerve impulse. Slows rate of sino-atrial (SA) node impulse formation in myocardium and prolongs conduction time. Promotes movement of calcium, potassium, and sodium in and out of cells and stabilizes excitable membranes.

Indications
Torsades de pointes, severe bronchoconstriction with impending respiratory failure, eclampsia

Contraindications
Hypersensitivity to magnesium, heart block, hypermagnesemia, hypercalcemia

Caution
Calcium chloride should be readily available as an antidote is respiratory depression occurs.
Check respiratory rate and patellar tendon reflex often. Any decrease in either warrants decreased dose.
Administration in patients taking digoxin may cause severe hypotension and/or cardiac arrest.

Adverse effects
Hypotension, cardiac arrest, respiratory depression, bradycardia, dysrhythmias, CNS depression, flushing, sweating, loss of deep tendon reflexes.

Adult dose/route
Seizures in eclampsia- 4 g in 20 ml normal saline IV/IO loading dose, then 1-g/hr IV/IO.
Torsades de pointes- 1-2 g in 10ml normal saline IV/IO.
Status asthmaticus or refractory COPD- 2 g in 100 ml normal saline or D5W over 15 minutes with medical control order.

Pediatric dose/route
Torsades de pointes- 25-50 mg/kg IV/IO (max 2g) bolus for pulseless VT OR over 10-20 minutes (VT with pulse). Max dose is 2g.
Refractory status asthmaticus- 25-50 mg/kg IV/IO (max 2g) slow infusion over 30-60 minutes with medical control order.

Onset
1-5 minutes

Duration
30 minutes

methylprednisolone

Name
Medrol, Medrol Dosepak, DepoMedrol, SoluMedrol

Class
Corticosteroid, anti-inflammatory agent

Pharmacologic action
Potent glucocorticoid with little to no mineralocorticoid activity. Modulates carbohydrate, protein and lipid metabolism and maintenance of fluid and electrolyte homeostasis. Controls or prevents inflammation by controlling rate of protein synthesis, suppressing migration of polymorphonuclear leukocytes (PMNs) and fibroblasts, reversing capillary permeability, and stabilizing lysosomes at cellular level.

Indications
Acute bronchospasm (COPD, asthma, upper airway burns), anaphylaxis, allergic reactions, adrenal insufficiency

Contraindications
Untreated serious infection, documented hypersensitivity to methylprednisolone, traumatic brain injury (high doses), preterm infants, newborns, systemic fungal infections.

Caution
Use with caution in patients with GI bleeding or diabetes.
Insulin and oral hypoglycemic agents may not achieve their normal hypoglycemic response.
May potentiate hypokalemia when used with other potassium-depleting agents.

Adverse effects
Seizures, congestive heart failure, hypertension, hypokalemia, alkalosis, headache, nausea, vomiting.

Adult dose/route
125 mg IV/IO

Pediatric dose/route
2 mg/kg IV/IO, Max dose 60mg.

Onset
20 minutes- 2 hours

Duration
18-36 hours

metoprolol

Name
Lopressor, Toprol XL

Class
Beta blocker, beta-1 selective

Pharmacologic action
Blocks response to beta-adrenergic stimulation; cardioselective for beta-1 receptors at low doses with little to no effect on beta-2, reducing automaticity of contractions (and thus heart rate). Negative inotropic and chronotropic effects are manifested by slowed AV conduction, antidysrhythmic effects, and decreased myocardial oxygen demand.

Indications
Narrow complex tachycardias

Contraindications
Hypersensitivity to metoprolol, uncompensated congestive heart failure, cardiogenic shock, AV conduction abnormalities, asthma, bradycardia.

Caution
May cause 1st, 2nd, or 3rd degree heart block. Carefully monitor pulse, blood pressure and ECG during administration.
Co-administration of calcium channel blockers and phenothiazines may potentiate effects and cause toxicity.
May increase toxicity of digoxin, flecainide, clonidine, epinephrine, nifedipine, prazosin, verapamil, and lidocaine.

Adverse effects
Hypotension, congestive heart failure, chest pain, dizziness, headache, bronchospasm, bradycardia.

Adult dose/route- 2.5-5mg IV/IO q 2-5 minutes prn, max dose 15 mg.

Not indicated for use in pediatric patients

Onset
Immediate, peak in 20 minutes

Duration
5-8 hours

midazolam

Name
Versed

Class
Anticonvulsants, other; antianxiety agent/anxiolytic; benzodiazepines

Pharmacologic action
Binds receptors at several sites within the CNS, including the limbic system and reticular formation; effects may be mediated through gamma-aminobutyric acid (GABA) receptor system.

Indications
Seizures, uncontrolled shivering in hypothermia, premedication prior to cardioversion or intubation, and agitated or violent patients suffering behavioral emergencies.

Contraindications
Documented hypersensitivity to midazolam, severe respiratory depression, overdose of alcohol or other CNS depressant, acute angle closure glaucoma, shock, pregnancy

Caution
Use with caution in patients with renal impairment or history of COPD.
Sedative effect is potentiated by barbiturates, alcohol and opiates.

Adverse effects
Respiratory depression or arrest, hypotension, bradycardia, headache, nausea/vomiting, hiccups, pain at injection site.

Adult dose/route
1-2 mg IV/IO/IM every 3 minutes to a max of 6 mg.
May be given via Mucosal Atomization Device (MAD) at dose of 5mg.
For excited delirium: 2.5 mg IV/IO/IM every 3-5 minutes to a max dose of 10 mg.

Pediatric dose/route
0.05-0.1mg/kg IV/IO/IM every 3 minutes to max of 2mg.
May be given via Mucosal Atomization Device (MAD) at a dose of 0.2 mg/kg up to max dose of 2mg.

Onset
IV/IO: 1-3 minutes
IM: 10-20 minutes

Duration
Dose dependent

morphine sulfate

Name
MS Contin, Avinza, Depodur, Duramorph, Infumorph, Atramorph, Kadian, MSO4

Class
Opioid analgesic

Pharmacologic action
Narcotic agonist-analgesic of opiate receptors; inhibits ascending pain pathways, thus altering response to pain; produces analgesia, respiratory depression, and sedation; suppresses cough by acting centrally in medulla.

Indications
Acute pain, pulmonary edema, procedural sedation, acute myocardial infarction

Contraindications
Hypersensitivity, hypotension or volume depletion, head injury, depressed respiratory drive

Caution
Use cautiously in patients with acute asthma, COPD, and pulmonary edema caused by irritants.
Naloxone and respiratory equipment should be immediately available.

Adverse effects
Respiratory depression, altered level of consciousness, hypotension, nausea, vomiting.

Adult dose/route
2-6 mg IV/IO bolus then 2 mg every 5 minutes, titrate to pain relief, max total dose 12 mg.
May give 5-15 mg IM/SQ based on patient's weight.

Pediatric dose/route
0.1mg/kg IV/IO/IM up to 4mg, titrate to pain relief, max total dose 8mg.

Onset
IV: immediate onset, peak effect 20 minutes.
IM/SQ: 15-30 minutes, peak effect 30-60 minutes.

Duration
2-7 hours

naloxone

Name
Narcan, Evzio

Class
Opioid reversal agent

Pharmacologic action
Competitively binds with opiate receptor sites in the CNS; synthetic congener of oxymorphone.

Indications
Reversal of acute opioid toxicity, suspected or known narcotic overdose, coma of unknown origin

Contraindications (none in the emergent setting)
Hypersensitivity to naloxone

Caution
Administration of naloxone can result in the sudden onset of opiate withdrawal (agitation, tachycardia, ventricular arrhythmias, pulmonary edema, nausea, vomiting).
Short half-life so doses may need to be repeated frequently.

Adverse effects
Hypertension, dysrhythmias, tremors, nausea, vomiting.

Adult dose/route
0.4mg IV/IO/IM. If initial dose unsuccessful, give second dose of 1.6mg 2 minutes later. Repeat IV dose every 2-3 minutes to max dose 10mg.
IV infusion for refractory cases- 2mg in 500ml D5W or NS, titrate to response.
EMT: May be given via Mucosal Atomization Device- 1mg each nare (2mg total), may repeat once in 3-5 minutes.

Pediatric dose/route
0.01 mg/kg IV/IM/ET/MAD. If initial dose unsuccessful, give second dose of 0.1mg/kg 2 minutes later.

Onset
IV/IO: immediate
SQ/IM: 5-10 minutes

Duration
20-30 minutes

nitroglycerin

Name
Nitrostat, Nitrolingual Pumpspray, NitroQuick

Class
Nitrates, anti-anginal

Pharmacologic action
Organic nitrate which causes systemic vasodilation, decreasing preload. Relaxes smooth muscle via dose-dependent dilation of arterial and venous beds to reduce both preload and afterload, as well as myocardial oxygen demand, left ventricular workload, blood pressure. Causes esophageal smooth muscle relaxation.

Indications
Acute coronary syndrome, angina, pulmonary edema

Contraindications
Hypersensitivity to nitroglycerin, recent use of medications for erectile dysfunction (sildenafil/Viagra within last 24 hours, tadalafil/Cialis within last 48 hours, vardenafil/Levitra within last 48 hours, or other phosphodiesterase-5 inhibitors), hypotension (systolic blood pressure < 100), intracranial bleeding or head trauma.

Caution
Will cause severe decrease in blood pressure if administered to a patient with inferior MI

Adverse effects
Hypotension, headache, syncope, reflex tachycardia, skin flushing.

Adult dose/route
0.4mg tablet sublingual. May give every 5 minutes up to 3 doses if blood pressure remains above 100.
IV infusion- start 5 mcg/minute and increase in 5 mcg/min increments every 3-5 minutes until pain improves. If no response seen at 20 mcg/min, increase by increments of 10 mcg/min as long as SBP remains over 100.

Pediatric dose/route
Initiate at 0.25-0.5 mcg/kg/min IV/IO infusion, titrate by 1 mcg/kg/min every 15-20 minutes as tolerated, max dose 10 mcg/kg/min.
Adolescents- use adult infusion dosing.

Onset
0-3 minutes

Duration
Up to 30 minutes

nitrous oxide

Name
Nitronox (50% nitrous oxide blended in oxygen)

Class
Inhaled anesthetic

Pharmacologic action

Unknown, but it is thought to release endogenous endorphins which react with opioid receptors in the central nervous system to elevate the pain threshold and produce feelings of euphoria

Indications

Moderate to severe pain as in trauma, acute MI, burns, renal colic and labor.

Contraindications

Nitrous oxide is self-administered by face mask so is contraindicated in any altered state of consciousness, (eg. head injury, alcohol ingestion, drug OD) or inability to hold the mask (facial trauma, age). It is also contraindicated in COPD patients, hypoxia, acute pulmonary edema, pneumothorax, decompression sickness, air embolus, and abdominal pain with distention or suspicion of obstruction, pregnancy (except during delivery), and malignant hyperthermia.

Caution

Since nitrous oxide is heavier than air, it may accumulate on the floor of ambulance. During transits of more than 15 minutes, nitrous oxide may affect ambulance personnel.

Adverse effects

Light-headedness, confusion, drowsiness, nausea and vomiting

Adult dose/route

Blended mixture of 50% nitrous oxide and 50% oxygen, which is self-administered through inhalation. Also apply O2 cannula at 4-6 L to maintain O2 therapy when nitrous oxide is not being administered. The dose is considered to be sufficient when the patient reports pain relief or the mask drops out of their hand.

Pediatric dose/route
Not approved in children under 3 years of age or a chronologically or behaviorally immature child

Onset
2-5 minutes

Duration
2-5 minutes

norepinephrine

Name
Levophed, Levarterenol

Class
Sympathomimetic, alpha/beta adrenergic agonist

Pharmacologic action
Strong beta-1 and alpha-adrenergic effects and moderate beta-2 effects, which increase cardiac output and heart rate, decrease renal perfusion and peripheral vascular resistance, and cause variable BP effects.

Indications
Pressor agent in management of shock, BP control in certain acute hypotensive states (MI, septicemia, blood transfusion, drug reaction)

Contraindications
Hypersensitivity to norepinephrine, sulfite allergy, hypotension due to hypovolemia (except emergency measures to maintain coronary and cerebral artery perfusion until blood volume replacement completed), mesenteric and peripheral vascular thrombosis.

Caution
Norepinephrine is a vesicant and can cause severe tissue damage if extravasation occurs. Check site frequently for free flow and blanching along course of infused vein, sometimes without obvious extravasation, can increase permeability of vein wall, permitting leakage.
Do not use in the same IV line as alkaline solutions, as these may deactivate norepinephrine.
Extreme caution with monoamine oxidase inhibitor and tricyclic antidepressants, as they can cause severe, paradoxical, prolonged hypotension.
Decrease dose in hyperthyroidism and elderly patients, as well as patients with hepatic and renal dysfunction.
Administer through large bore IV in AC, if possible.
Avoid abrupt withdrawal.
Administration in saline not recommended (use D5W).

Adverse effects
Anxiety, palpitations, hypertension, reflex bradycardia.
Ventricular tachycardia or fibrillation in patients with profound hypoxia or hypercarbia.
Overdose may cause severe hypertension, violent headache, photophobia, stabbing retrosternal chest pain, increased sweating, pallor, vomiting.

Adult dose/route
Start infusion at 8-12 mcg/min IV/IO, titrate to blood pressure response.
Mix 4 mg in 500ml D5W (8 mcg/ml); rate of 22.5 ml/hr delivers 3 mcg/min.

Pediatric dose/route-
0.05-0.1 mcg/kg/min IV/IO, titrate to BP response, max 2 mcg/kg/min.

Onset
Immediate

Duration
1-2 minutes following discontinuation of infusion

Mix 8mg into 250mLD5W Usual dose range 2-16mcg/min									Final Concentration 32mcg/mL Maximum dose 20mcg/min								
Dose (mcg/min)	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Dose in mg	3.8	6	8	9	11	13	15	17	19	21	23	24	26	28	30	32	34

octreotide

Name
Sandostantin

Class
Synthetic gastrointestinal hormone

Pharmacologic action
Longer-acting, synthetic form of the hormone somatostatin. Constricts splanchnic blood vessels. Inhibits the release of other GI hormones, such as serotonin, vasoactive intestinal peptide, gastrin, secretin, and pancreatic polypeptide. Potent inhibitor of growth hormone, glucagon, and insulin.

Indications
Esophageal variceal bleeding (initiated by sending hospital)

Contraindications
Hypersensitivity, bradycardia (relative contraindication)

Caution
Beware of interactions with insulin, oral hypoglycemia agents, and beta-blockers. Cardiac monitoring and blood sugar check every 20 minutes are necessary. Caution in patients with gall bladder disease, severe renal failure requiring dialysis, and during lactation.

Adverse effects
Sinus bradycardia, chest pain, hyperglycemia, redness, flushing, pruritis, abdominal pain, nausea/vomiting, headache, fever, fatigue, dizziness

Adult dose/route
25-50 mcg bolus (given at hospital) followed by 25-50 mcg/hr drip

Not indicated for pediatric use

Onset
10 minutes

Duration
90-120 minutes

ondansetron

Name
Zofran, Zofran ODT, Zuplenz

Class
Antiemetic, selective 5-HT3 antagonist

Pharmacologic action
Mechanism not fully characterized; binds to 5-HT3 receptors both in periphery and in CNS, with primary effects in GI tract. No effect on dopamine receptors, therefore does not cause extrapyramidal symptoms.

Indications
Nausea and vomiting

Contraindications
Hypersensitivity to ondansetron; co-administration with apomorphine- combination reported to cause profound hypotension and loss of consciousness

Caution
EKG monitoring is recommended in patients who have electrolyte abnormalities, CHF, or bradyarrhythmia or who are also receiving other medications that can cause QT prolongation.
May cause dose-dependent QT prolongation, avoid in patients with congenital long QT syndrome.
Decrease dose if patient is taking amiodarone or has liver disease.

Adverse effects
Fatigue, pyrexia, dizziness, headache, constipation, urinary retention

Adult dose/route
4mg PO/SL x 1- EMT
4 mg IV/IM over 2-5 minutes, may repeat x 1 in 15 min- AEMT, PM

Pediatric dose/route (in children 2 years and older)
> 40 kg 4 mg IV/IM/SL over 2-5 min, may repeat x 1 in 15 minutes.
< 40 kg 0.1 mg/kg over 2-5 minutes, may repeat x 1 in 15 min.

Onset
Minutes

Duration
5 hours

oxymetazoline

Name
Afrin, Duramist Plus, Dristan 12 Hr, Sinarest 12 Hr, Vicks Sinus 12 Hr

Class
Intranasal decongestant, alpha-adrenergic agonist

Pharmacologic action
Intranasal decongestant stimulates alpha-adrenergic receptors and produces vasoconstriction in the arterioles of nasal mucosa.

Indications
Epistaxis, premedication of nasotracheal intubation

Contraindications
Hypersensitivity to oxymetazoline.

Caution
Unlikely to be of benefit in severe nasal or facial trauma.
Normal pupillary reflex may be affected after use.
Use with caution in patients with hyperthyroidism, heart disease, hypertension, diabetes mellitus.
Use of monoamine oxidase inhibitors or ephedrine may result in hypertensive crisis.

Adult dose/route
2-3 sprays in each bleeding nare.

Not approved for pediatric use

Onset
Immediate

Duration
30 minutes- 4 hours

oxytocin

Name
Pitocin

Class
hormone

Pharmacologic action
Synthetic water-soluble protein identical to naturally-occurring oxytocin secreted by posterior pituitary. Directly produces phasic uterine contractions characteristic of normal labor and delivery and to treat uterine atony.

Indications
Postpartum hemorrhage

Contraindications
Hypersensitivity to oxytocin, toxemia of pregnancy, undelivered baby or placenta.

Caution
Status post cervical or uterine surgery, intrauterine infection, primipara after age 35.
Additive effects with other vasopressors, ephedrine, amphetamines or methamphetamines resulting in severe hypertension.
Make certain there is only one fetus after delivery, prior to administration!

Adverse effects
Hypertension, subarachnoid hemorrhage, anxiety, dysrhythmias, tetany, uterine rupture, hyponatremia

Adult dose/route
10 units IM, followed by 20 units in 1000 ml normal saline administered IV at 50-100 ml/hr to control bleeding.

Onset
IV: 1 minutes
IM: 3-7 minutes

Duration
IV: 30 minutes
IM: 60 minutes

pralidoxime chloride

Name
2-PAM, Protopam

Class
antidote

Pharmacologic action
Reactivates cholinesterase, primarily peripherally.

Indications
Organophosphate poisoning or nerve gas exposure

Contraindications
None in emergency setting

Caution
Give in conjunction with atropine.
Less effective if given > 6 hours after exposure.
Do not administer promethazine (Phenergan) with pralidoxime.

Adverse effects
Myasthenia gravis exacerbation, dizziness, visual changes, headache, drowsiness, nausea, tachycardia, increased blood pressure, hyperventilation, muscle weakness.

Adult dose/route
1-2 doses sequentially from the Mark-1 kit or (600-1800 mg IM/IV from multidose vial) for mild-moderate symptoms, 3 doses or 1800 mg for severe symptoms.
Elderly or frail: 10-25 mg/kg IM/IV from Mark-1 or multidose vial.

Pediatric dose
0-3 years, <13 kg: 25-50 mg/kg (150-600 mg) IM/IV.
4-12 years, >13 kg: 25-50 mg/kg (300-1200 mg) IM/IV.

Onset
10-40 minutes

Duration
3-6 hours

procainamide

Name
Pronestyl

Class
Class 1A antiarrhythmic

Pharmacologic action
Membrane stabilizer inhibits recovery after repolarization resulting in decreasing myocardial excitability and conduction velocity.

Indications
Perfusing ventricular tachycardia, wide-complex tachycardia of unknown origin, Wolff-Parkinson-White.

Contraindications
Second- and third-degree heart block, bradycardia, Torsades des Pointes, prolonged QT, systemic lupus erythematosus

Caution
May exacerbate arrhythmias or produce paradoxical ventricular tachycardia in atrial fibrillation or flutter.
STOP infusion if QRS widens by 50% or hypotension occurs.

Adverse effects
Widening QRS, seizures, CNS toxicity, hypotension, anxiety, nausea.

Adult dose/route
Loading dose 100 mg IV q 10 minutes or 20 mg/minute up to 17 mg/kg (or 1000 mg) followed by infusion of 1-4 mg/minute. Mix 2 grams in 250 ml normal saline for 8 mg/ml.

Pediatric dose
Loading dose 2-6 mg/kg IV over 5 minutes, max 100 mg, repeat q 5-10 mins prn to max dose 15 mg/kg, then infuse 20-80 mcg/kg/min.

Onset
30 minutes- 2 hours

Duration
18-36 hours

promethazine

Name
Phenergan

Class
Antiemetic, phenothiazine; antihistamine, H1 receptor agonist

Pharmacologic action
Blocks dopamine receptors in the brain; blocks cholinergic receptors in the vomiting center; competes with histamine for H1 receptor site.

Indications
Nausea and vomiting

Contraindications
Documented sensitivity to promethazine, coma, severe CNS depression, concurrent use of large amounts CNS depressants, poorly controlled seizure disorder, patients with nerve agent or organophosphate pesticide exposure, subcortical brain damage, glaucoma, children < 2 years old or weighing < 9kg.

Caution
Risk of severe tissue injury with extravasation, including gangrene, **give slowly**- rapid administration can cause vein irritation, phlebitis and sclerosis.
May cause hypotension or cardiac arrest if given too quickly.
May cause extrapyramidal effects or dystonic reaction, treat with diphenhydramine.
Avoid concomitant use with epinephrine as it may result in hypotension.

Adverse effects
Reduces seizure threshold (including in heat stroke patients), sedation, allergic reaction, dysrhythmia, hyperexcitability, hypertension, paradoxical nausea/vomiting.
Use in children may cause hallucinations, seizures and sudden death.

Adult dose/route
6.25 mg slow IV/IO infusion, may repeat x 1 in 10 minutes, may give up to 12.5mg deep IM. Must be diluted.

Not approved for pediatric use

Onset
IV: 5 minutes
IM: 20 minutes

Duration
4-6 hours

rocuronium

Name
Zemuron

Class
Nondepolarizing neuromuscular blocker

Pharmacologic action
Neuromuscular blockade by competing for cholinergic receptors at muscle plate causing paralysis of all skeletal and respiratory muscles.

Indications
Rapid sequence intubation, maintenance of paralysis after induction with succinylcholine and transport time > 15 minutes.

Contraindications
Known hypersensitivity, muscular disorders

Caution
Patients with hepatic dysfunction and neuromuscular disorders may have potentiated effect.
Cautions in patients over 65 years of age.

Adverse effects
Hypotension, altered mental status, increase in pulmonary resistance.

Adult dose/route
0.6-1.2 mg/kg IV.

Pediatric dose
0.6 mg/kg IV

Onset
60-70 seconds

Duration
20-30 minutes

sodium bicarbonate

Name
Bicarb, $NaHCO_3$

Class
Alkalizing agent; antidote, other

Pharmacologic action
Increases blood and urinary pH by releasing bicarbonate ion, which in turn neutralizes hydrogen ion concentrations. Also causes forced urine alkalization, diuresis, membrane stabilization of cardiac cells, and restores electrolyte balance.

Indications
Cardiac arrest in cases in which either hyperkalemia or tricyclic antidepressant (TCA) overdose is suspected or contributory; QRS prolongation in known or suspected TCA overdose; seizures with ventricular tachycardia/fibrillation arrest in methamphetamine/cocaine overdose; crush injury.

Contraindications
Documented hypersensitivity to sodium bicarbonate, severe pulmonary edema, known alkalosis, hypernatremia or hypocalcemia

Cautions
Do not administer in the same IV with calcium chloride or calcium gluconate, as it leads to precipitate. Prepare to ventilate patient.

Adult dose/route
1 mEq/kg IV/IO bolus, may repeat every 10 min x 3 for persistent QRS > 100 msec. If crush injury, add 1 mEq/kg to 1000 ml normal saline and run wide open after initial bolus given.

Pediatric dose/route
1 mEq/kg IV/IO bolus, may repeat every 10 min x 3 for persistent QRS > 100 msec. If crush injury, add 1 mEq/kg to 1000 ml normal saline and run wide open after initial bolus given.

Onset
< 15 minutes

Duration
1-2 hours

succinylcholine

Name
Anectine, Quelicin

Class
Neuromuscular blockers

Pharmacologic action
A biphasic ultra-short acting depolarizing skeletal muscle relaxant with short duration of action. Paralyzes all skeletal muscles including respiratory muscles and gag reflex.

Indications
Paralysis for intubation

Contraindications
Known hypersensitivity to succinylcholine, malignant hyperthermia, hyperkalemia. Contraindications should always be weighed relative to the threat of respiratory failure

Caution
Patients with severe cellular damage, i.e. crush injuries, burns > 8 hours old, or atrophy due to neurogenic damage may develop cardiac dysrhythmias or arrest after administration.
Avoid in patients with known or suspected penetrating eye injury.
Do not mix with alkaline solutions.

Adverse effects
Respiratory depression, apnea, anaphylaxis, hypertension, hypotension, renal failure, hyperkalemia, increased intraocular pressure, dysrhythmia, malignant hyperthermia.

Adult dose/route
Give etomidate or versed prior to succinylcholine.
1.5 mg/kg IV/IO, may repeat x 1 if necessary, 3 mg/kg IM/ET up to total dose of 150mg.

Pediatric dose/route
1.5 mg/kg IV/IO, may repeat x 1 if necessary, 3 mg/kg ET, may repeat x 1 if necessary.

Onset
1 minutes

Duration
4-6 minutes

tenecteplase

Name
TNKase

Class
Thrombolytic, tissue plasminogen activator

Pharmacologic action
Binds to fibrin and converts plasminogen to plasmin; decreases systemic activation of plasminogen and the resulting degradation of circulating fibrinogen.

Indications
STEMI confirmed with medical control authorization required

Contraindications
Active internal bleeding; history of stroke, intracranial/intraspinal surgery or trauma in the past 2 months; intracranial neoplasm/arteriovenous malformation or aneurysm; severe uncontrolled hypertension.

Caution
Blood vessel punctures should be minimized, especially non-compressible sites.

Adverse effects
Bleeding

Adult dose/route
Single bolus over 5 seconds:

< 60 kg/132 lbs	30 mg
60-70 kg/132-154 lbs	35 mg
70-80 kg/154-176 lbs	40 mg
80-90 kg/176-198 lbs	45 mg
>90 kg/198 lbs	50 mg

Not indicated for pediatric use

Onset
<1 minute

Duration
2-4 hours

thiamine

Name
Betalin, Biamine, vitamin B1

Class
B complex vitamin

Pharmacologic action
Required for normal metabolism of glucose; combines with ATP to form thiamine pyrophosphate coenzyme, a necessary component for carbohydrate metabolism.

Indications
Coma and seizures of unknown origin especially if alcohol use/abuse is suspected; malnutrition or thiamine deficiency; suspected Wernicke or Korsakoff syndrome

Contraindications
Known hypersensitivity

Caution
Rapid administration can cause cardiovascular collapse.
Use prior to or concurrent with D50.

Adverse effects
Anaphylaxis, nausea, vomiting, hypotension, anxiety/agitation

Adult dose/route
100 mg slow IV/IM.

Not indicated for pediatric use

Onset
Rapid

Duration
Variable

tranexaminc acid

Name
TXA, Cyclokapron

Class
Anti-fibrinolytic

Pharmacologic action
TXA temporarily prevents clots from being broken down in the body by plasmin. It prevents activation of plasminogen to plasmin and noncompetitively blocks plasmin at the receptor.

Indications
TXA is approved for use in patients with known or suspected hemorrhage/internal bleeding* due to blunt or penetrating trauma with evidence of **marked ongoing blood loss**. TXA should be initiated within the first 3 hours (preferably within the 1st hour) after trauma.
*Blunt or penetrating abdominal or thoracic trauma, multisystem trauma, unstable pelvic fractures, traumatic amputation or major arterial bleeding requiring tourniquet, patients with suspected significant bleeding, regardless of cause, post-partum hemorrhage

Pregnant patients and patients on anti-coagulation medications are eligible

Contraindications
Greater than three hours since traumatic event
Hemorrhagic shock controlled with other hemostatic agents/measure
Non-hemorrhagic shock (neurogenic, cardiogenic, septic, hypovolemic)
Evidence of disseminated intravascular coagulation
Isolated head injury
Known history of severe renal failure
Known hypersensitivity (allergy) to TXA
Known history of thromboembolism (relative)

Caution
Do not give through same IV as Hexand or blood products.
Will cause hypotension if given IV push. Must be given over 10 minutes.
Patients taking oral tretinoin for treatment of leukemia may have enhanced effects- call medical control.

Adverse effects
TXA has not been shown to cause significant increase in deep vein thrombosis (DVT), pulmonary embolus, myocardial infarction, or stroke in published trials to date.
Dizziness, headache, nausea, vomiting, diarrhea, orthostatic hypotension (with rapid administration), seizures (seen mainly in the pediatric cardiac surgery population)
Female patients taking or using any form of birth control containing estrogen and progestin are at increased risk for blood clots (enhanced thrombogenic effects) and TXA increases that risk.

Adult dose/route
1 gram in 100ml NS or LR over 10 minutes, followed by 1 gram in 250 ml NS/LR over 8 hours (31 ml/hr)
100-200mg soaked in cotton or gauze topical for dental extraction hemorrhage or epistaxis

Pediatric dose/route
15 mg/kg (max 1 gram) in 100 ml NS/LR over 10 minutes followed by 2 mg/kg in 250ml NS/LR over 8 hours (31 ml/hr) or until bleeding stops
Use adult dose for children 12+

Onset
Within 4 hours of administration but exact time of onset unclear and variable

Duration
Variable, up to 48 hours

vecuronium

Name
Norcuron

Class
Neuromuscular blocker

Pharmacologic action
Prevents acetylcholine from binding to receptors on the motor end plate, thus blocking depolarization. Paralyzes all skeletal muscles including respiratory muscles and gag reflex.

Indications
Maintains paralysis of intubated patients when renewed muscular activity following administration of succinylcholine imperils patient care and transport time to the hospital is greater than 15 minutes

Contraindications
Documented hypersensitivity to vecuronium, short prehospital transport times and/or lack of definitive airway stabilization via endotracheal intubation, newborn infants, myasthenia gravis.

Caution
Patient must be sedated.
When magnesium sulfate has been administered, the effects of vecuronium may be prolonged.
Administer with cautions in patients with hepatic dysfunction and neuromuscular diseases.

Adverse effects
Apnea

Adult dose/route
0.1mg/kg IV/IO, may repeat if unusually prolonged transport time.

Pediatric dose/route
not approved in infants < 7 weeks of age
0.1 mg/kg IV/IO, may repeat if unusually prolonged transport time.

Onset
1-2 minutes

Duration
30 minutes

EMS alternative medication list

ALLERGIC REACTIONS

MEDICATION	APPROVED USE	ALTERNATIVE MEDICATIONS	APPROVED INDICATION, ROUTE, & DRUGS
Diphenhydramine	Moderate to severe anaphylaxis	Other H2/H1 Inhibitors (e.g., Vistaril, Pepcid)	1. **Hydroxyzine**- 25-50mg IM; *Peds 0.1mg/kg* 2. **Famotidine**- 20mg IV; *Peds 0.25mg/kg IV*
Epinephrine	Severe anaphylaxis	Epinephrine drip investigate other packaging options (multi-dose vials of 1:10,000, single dose vials, etc.) Epi-Pen	

ANTICONVULSANT; SEDATION

MEDICATION	APPROVED USE	ALTERNATIVE MEDICATIONS	APPROVED INDICATION, ROUTE, & DRUGS
Diazepam	Anticonvulsant; Sedation during RSI except head injury & trauma; Excited delirium or severe agitation; Sedation prior to cardioversion;	Other available Benzodiazepines; In order of preference: Midazolam, Lorazepam. Ketamine (may be used for sedation, not for anticonvulsant)	1. **Midazolam**- 3-5 mg IV/IO, IM; *Peds-0.1-0.2 mg/kg IV/IO, IM* 2. **Lorazepam**- 1-2 mg IV/IO, IM; *Peds-0.1 mg/kg IV/IO, IM, PR*
Midazolam	Anticonvulsant; Sedation during RSI; Excited delirium or severe agitation; Sedation prior to cardioversion	Other available Benzodiazepines (Diazepam, Lorazepam); Ketamine (may be used for sedation, not for anticonvulsant)	1. **Lorazepam**- 1-2 mg IV/IO, IM; Peds-0.1 mg/kg IV/IO, IM, PR 2. **Diazepam**- 5-10 mg IV/IO, IM, PR; Peds-0.2-0.5mg/kg IV/IO
Lorazepam	Anticonvulsant; Sedation during RSI; Excited delirium or severe agitation; Sedation prior to cardioversion	Other available Benzodiazepines (Diazepam, Lorazepam); Ketamine (may be used for sedation, not for anticonvulsant)	1. **Midazolam**- 3-5 mg IV/IO, IM; Peds-0.1-0.2 mg/kg IV/IO, IM 2. **Diazepam**- 5-10 mg IV/IO, IM, PR; Peds-0.2-0.5mg/kg IV/IO

CARDIAC MEDICATIONS

MEDICATION	APPROVED USE	ALTERNATIVE MEDICATIONS	APPROVED INDICATION, ROUTE, & DRUGS
Atropine	Bradycardia	✓ Transcutaneous Pacing ✓ Epinephrine infusion ✓ Dopamine infusion	1. **Transcutaneous Pacing** 2. **Epinephrine**‡- 2-10mcg/min IV infusion; *Peds 0.1mcg/kg/min* 3. **Dopamine**- 2-10mcg/kg/min
Amiodarone	Ventricular dysrhythmias	✓ Lidocaine ✓ Procainamide- Peds use limited to SVT, A-flutter and VT w/ pulses	1. **Lidocaine**- 1-1.5 mg/kg, repeat 0.5-0.75 prn max 3mg/kg; *Peds- 1mg/kg max 3mg/kg* 2. **Procainamide**† 20mg/min IV/IO, max 17mg/kg; *Peds 15mg/kg IV/IO over 30-60 mins*
Lidocaine	Ventricular dysrhythmias	✓ Amiodarone ✓ Procainamide- Peds use limited to SVT, A-flutter and VT w/ pulses	1. **Amiodarone:** Recurrent V-Fib/pulseless V-Tach: 300mg IV/IO repeat 150mg x 1 prn. V-Tach/WCT: 150mg over 10 mins IV/IO x 2 prn; *Peds- 5.0 mg/kg IV/IO* 2. **Procainamide**† 20mg/min IV/IO, max 17mg/kg; *Peds 15mg/kg IV/IO over 30-60 mins*
Diltiazem	Narrow complex supraventricular tachycardia	✓ Verapamil ✓ Propranolol	1. **Verapamil**-2.5-5.0 mg IV repeat prn 5-10mg in 15-30 mins to max of 20mg; *Peds- 0.1-0.3mg/kg max 5mg. Repeat x 1 prn max 10mg.* 2. **Propranolol**- 0.5-1mg/min, repeat prn max 0.1mg/kg; *Peds- 0.01-0.1mg/kg over 10mins*

CARDIAC MEDICATIONS CONTINUED

MEDICATION	APPROVED USE	ALTERNATIVE MEDICATIONS	APPROVED INDICATION, ROUTE, & DRUGS
Dopamine	Cardiogenic shock; hypotension not related to hypovolemia	Epinephrine infusion	**Epinephrine**+- 2-10mcg/min IV infusion; *Peds 0.1mcg/kg/min*
Furosemide	Pulmonary Edema; Hypertensive Crisis	Nitroglycerine	**Nitroglycerine**- 0.4mg SL, Buccal
Epinephrine (1:10,000)	Asystole; PEA	Vasopressin	**Vasopressin** 40 units IV/IO q 20 min.

DIABETIC EMERGENCIES

MEDICATION	APPROVED USE	ALTERNATIVE MEDICATIONS	APPROVED INDICATION, ROUTE, & DRUGS
50% Dextrose	Hypoglycemia	✓ 25% Dextrose ✓ Glucagon	**Glucagon**- 1mg SC, IM, IV; *Peds- 0.5mg SC, IM, IV*

PAIN MANAGEMENT

MEDICATION	APPROVED USE	ALTERNATIVE MEDICATIONS	APPROVED INDICATION, ROUTE, & DRUGS
Morphine	Acute pain control	Fentanyl (1st choice if available); ✓ Dilaudid ✓ Ketorolac	1. **Fentanyl**- 25-50mcg IV/IO, IM max 3mcg/kg; *Peds 1-2 mcg/kg IV/IO, IM max of 3 mcg/kg.* 2. **Dilaudid**- 0.2-0.6 mg q 2-3 hrs.; give slowly over 2-3 min. *Peds 0.015 mg/kg slow IV/IM q 4-6 hrs.* 3. **Ketorolac**- 30mg IV/IO, 60mg IM. ½ dose if >65y/o OR <50kg. Repeat prn Max 60mg; *Peds >2y/o- 0.5mg/kg IV/IO, 0.1mg/kg IM. Repeat prn Max 15mg IV, 30mg IM*
Fentanyl	Acute pain control	Morphine (1st choice if available); ✓ Dilaudid ✓ Ketorolac	1. **Morphine**- 5-10 mg IV/IO, IM q 5 min prn; *Peds- 0.1-0.2mg/kg IV/IO, IM* 2. **Dilaudid**-0.2-0.6 mg q 2-3 hrs give slowly over 2-3 min. Peds 0.015 mg/kg slow IV/IM q 4-6 hrs. 3. **Ketorolac**- 30mg IV/IO, 60mg IM. ½ dose if >65y/o OR <50kg. Repeat prn Max 60mg; *Peds >2y/o- 0.5mg/kg IV/IO, 0.1mg/kg IM. Repeat prn Max 15mg IV, 30mg IM*

RAPID SEQUENCE INDUCTION (RSI)

MEDICATION	APPROVED USE	ALTERNATIVE MEDICATIONS	APPROVED INDICATION, ROUTE, & DRUGS
Succinylcholine	Induce paralysis during RSI	Non-Depolarizing Neuromuscular Blocker (Rocuronium, Vecuronium)	Induce Paralysis during RSI; IV/IO only 1. **Rocuronium**- 1-1.2 mg/kg 2. **Vecuronium**- 0.3-0.4 mg/kg
Pancuronium	Maintain paralysis after intubation	Other long acting Non-Depolarizing Neuromuscular Blocker (Rocuronium, Vecuronium)	Maintain Paralysis; IV only 1. **Rocuronium**-0.1-0.2 mg/kg q 20-30 min. 2. **Vecuronium**- 0.1mg/kg q 20-30 min. 3. **Pancuronium**-0.015-0.1 mg/kg q 30-60 min.
Vecuronium	Maintain paralysis after intubation	Other long acting Non-Depolarizing Neuromuscular Blocker (Rocuronium, Pancuronium)	Maintain Paralysis; IV/IO only 1. **Rocuronium**-0.1-0.2 mg/kg q 20-30 min. 2. **Pancuronium**-0.015-0.1 mg/kg q 30-60 min.
Rocuronium	Maintain paralysis after intubation	Other long acting Non-Depolarizing Neuromuscular Blocker (Vecuronium, Pancuronium)	Maintain Paralysis; IV/IO only 1. **Vecuronium**- 0.1mg/kg q 20-30 min. 2. **Pancuronium**- 0.015-0.1mg/kg q 30-60 min.
Etomidate	Sedative agent during RSI	✓ Benzodiazepines, if available. ✓ Ketamine ✓ Fentanyl	1. **Midazolam** 3-5 mg IV/IO 2. **Diazepam** 5 – 10 mg IV/IO 3. **Ketamine*** 1-2 mg/kg IV/IO 4. **Fentanyl** 25-50mcg IV/IO *Peds 1-2 mcg/kg IV/IO*

OTHER PREHOSPITAL MEDICATIONS

MEDICATION	APPROVED USE	ALTERNATIVE MEDICATIONS	APPROVED INDICATION, ROUTE, & DRUGS
Naloxone	Opiate Overdose	No Alternative	**Airway Management**, Intubate prn
Ondansetron	Severe Nausea	✓ Phenergan ✓ Inapsine (droperidol)	1. **Phenergan**- 12.5-25mg IV, IM, PR; *Peds >2y/- 0.25-1mg/kg PR* 2. **Inapsine**- 0.625-2.5 mg IV, IM; *Peds >2y/o- 0.1 mg/kg*

Section 11: Reference

APGAR Scoring

	0 (Points)	1	2
Appearance	Blue or pale all over	Blue extremities, but torso pink	Pink all over
Pulse	None	< 100	≥ 100
Grimace	No response	Weak grimace when stimulated	Cries or pulls away when stimulated
Activity	None	Some flexion of arms	Arms flexed, legs resist extension
Respirations	None	Weak, irregular or gasping	Strong cry

0-3 Critically Low, 4-6 Fairly Low, 7-10 Generally Normal

Approved Abbreviations

A

ā	before
a-fib, AF	atrial fibrillation
ABC	airway/breathing/circulation
Abd	abdomen, abdominal
AC	antecubital
ALOC	altered level of consciousness
ALS	advanced life support
a.m.	morning
AMA	against medical advice
amp	ampule
A&O x 1,2,3 or 4	alert and oriented to person, place, time and circumstance
approx	approximately
ASA	aspirin
ASAP	as soon as possible
AV	atrioventricular
AVPU	alert, responds to verbal stimulus, painful stimulus, unresponsive

B

BBB	bundle branch block
BID	“bis en die”, twice daily
Bicarb	sodium bicarbonate
Bigem	bigeminy
BLS	basic life support
BP	blood pressure
BPM	beats per minute
Brady	bradycardia
BCLS	Basic Cardiac Life Support
BM	bowel movement
BVM	bag valve mask
BSI	body substance isolation

C

c̄	with
CA	cancer
CABG	coronary artery bypass graft
cap	capsule
$CaCl_2$	calcium chloride
CAD	coronary artery disease
cc	cubic centimeter
C/C	chief complaint
CCU	coronary care unit
CHB	complete heart block

Cl	chloride
cm	centimeter
CMS	circulation, motion, sensation
CNS	central nervous system
c/o	complains of
CO	carbon monoxide
CO_2	carbon dioxide
cont	continuous
COPD	chronic obstructive pulmonary disease
CPR	cardiopulmonary resuscitation
CSF	cerebrospinal fluid
C-spine	cervical spine
CV	cardiovascular
CVA	cerebrovascular accident

D

D&C	dilation and curettage
D/C	discontinue
defib	defibrillation
disch	discharge
DKA	diabetic ketoacidosis
DLOC	decreased level of consciousness
DNR	do not resuscitate
DOA	dead on arrival
DOE	dyspnea on exertion
DOT	Department of Transportation
drsg	dressing
DTs	delirium tremens
DVT	deep venous thrombosis
D5W	5% dextrose in water
Dx	diagnosis

E

EBL	estimated blood loss
ECG	electrocardiogram
ED	emergency department
EDC	estimated date of confinement (due date)
EEG	electroencephalogram
EENT	eyes, ears, nose, throat
e.g.	for example
EKG	electrocardiogram
EMD	electromechanical dissociation
EMR	emergency medical responder
EMS	emergency medical services
EMT	emergency medical technician
EMT-A	advanced emergency medical technician

EMT-P	emergency medical technician, paramedic
emycin	erythromycin
ENT	ear, nose, and throat
EOMI	extraocular movements intact
epi	epinephrine
ER	emergency room
ET	endotracheal
ETA	estimated time of arrival
etc.	et cetera
EtOH	ethanol alcohol
ETT	endotracheal tube
exp	expiratory

F

Fr	French
fx	fracture
FD	fire department

G

GB	gall bladder
GCS	Glasgow coma scale
GI	gastrointestinal
gtt	drop
GU	genitourinary

H

HCTZ	hydrochlorothiazide
Hg	mercury
H_2O	water
HPI	history of present illness
hr	hour
HR	heart rate
hs	bedtime
HTN	hypertension
hx	history

I

ICU	intensive care unit
i.e.	that is
IM	intramuscular
IN	intranasal
incont	incontinent
invol	involuntary
IO	intraosseous

irreg	irregular
IU	international unit
IV	intravenous
IVP	IV push
IVPB	IV piggy back

J

J	Joule
JVD	jugular venous distension

K

K	potassium
KCl	potassium chloride
kg	kilogram

L

L	liter
Ⓛ	left
L spine	lumbar spine
L-S spine	lumbosacral spine
lac	laceration
lat	lateral
lb	pound
lg	large
liq	liquid
LLL	left lower lobe
LLQ	left lower quadrant
LMP	last menstrual period
LOC	loss of consciousness
LPM	liters per minute
LPN	licensed practical nurse
LR	lactated Ringer's
LUL	left upper lobe
LUQ	left upper quadrant

M

MAD	mucosal atomization device
MAE	moves all extremities
MAOI	monoamine oxidase inhibitor
mcg	microgram
MCI	multi-casualty or mass casualty event
mec	meconium
med	medication or medicated
mEq	milliequivalent
mg	milligram

MIR	medical incident report
ml	milliliter
mm	millimeter
mod	moderate
MOI	mechanism of injury
MPD	medical program director
MVA	motor vehicle accident
MVC	motor vehicle collision

N

N/A	not applicable
Na	sodium
NaCl	sodium chloride
$NaHCO_3$	sodium bicarbonate
NAD	no acute distress
NC	nasal cannula
neg	negative
neuro	neurological
NKA	no known allergies
NKDA	no known drug allergies
nl	normal
noc	at night
NPA	nasopharyngeal airway
NPO	nil per os, nothing by mouth
NS	normal saline
NSR	normal sinus rhythm
N/V	nausea and vomiting

O

O_2	oxygen
OB	obstetrical
OD	overdose, or right eye
OK	okay
OPA	oropharyngeal airway
OR	operating room
OS	left eye
OU	both eyes
oz	ounce

P

$\overline{p}$	after
PAC	premature atrial contraction
PAF	paroxysmal atrial fibrillation
palp	palpable, palpation

PAT	paroxysmal atrial tachycardia
pcn	penicillin
PE	physical exam
PEA	pulseless electrical activity
PERRL	pupils equal, round, reactive to light
PID	pelvic inflammatory disease
PJC	premature junctional contraction
pm	afternoon
PMD	private or primary medical doctor
po	per os, by mouth
PO, POCo	Pend Oreille County
POC	position of comfort
post	posterior
PR	P-R interval, measurement between P wave and R wave
primary	primary assessment
prn	pro re nata, as needed
PSVT	paroxysmal supraventricular tachycardia
pt	patient
PTA	prior to arrival
p/u	pick up
PUD	peptic ulcer disease
PVC	premature ventricular contraction

Q

q	every
qd	every day, daily
qh	every hour, hourly
qhs	every hour of sleep, bedtime
q4h	every 4 hours
q5m	every 5 minutes
QID	quarter in die, four times per day

R

Ⓡ	right
resp	respirations
rec'd	received
reg	regular
RLL	right lower lobe
RLQ	right lower quadrant
RN	registered nurse
r/o	rule out
RPM	respirations per minute
RR	respiratory rate
RSR	regular sinus rhythm
RUL	right upper lobe
RUQ	right upper quadrant

rx	prescription

S

s̄	without
SB	sinus bradycardia
sec	second
SIDS	sudden infant death syndrome
SL	sublingual
SLIV	saline lock IV
sm	small
SO	significant other, sheriff's office
SOB	short of breath
soln	solution
SQ	subcutaneous
s/p	status post
s/s	signs and symptoms
ST	sinus tachycardia
stat	immediately
STD	sexually transmitted disease
SVT	supraventricular tachycardia
sx	symptoms

T

tab	tablet
tach	tachycardia
TBI	traumatic brain injury
TCA	tricyclic antidepressant
TIA	transient ischemic attack
tid	ter in die, three times per day
TKO	to keep open
T spine	thoracic spine
T-L spine	thoracolumbar spine
TVI	total volume infused
tx	treatment

U

U	unit
URI	upper respiratory infection
UTI	urinary tract infection
unk	unknown

V

vent	ventilator

VF, V-fib	ventricular fibrillation
via	by way of
vs.	versus
VT, V-tach	ventricular tachycardia

W

WD/WN	well developed, well nourished
WNL	within normal limits
WPW	Wolff-Parkinson-White syndrome
WSP	Washington State Patrol

Y

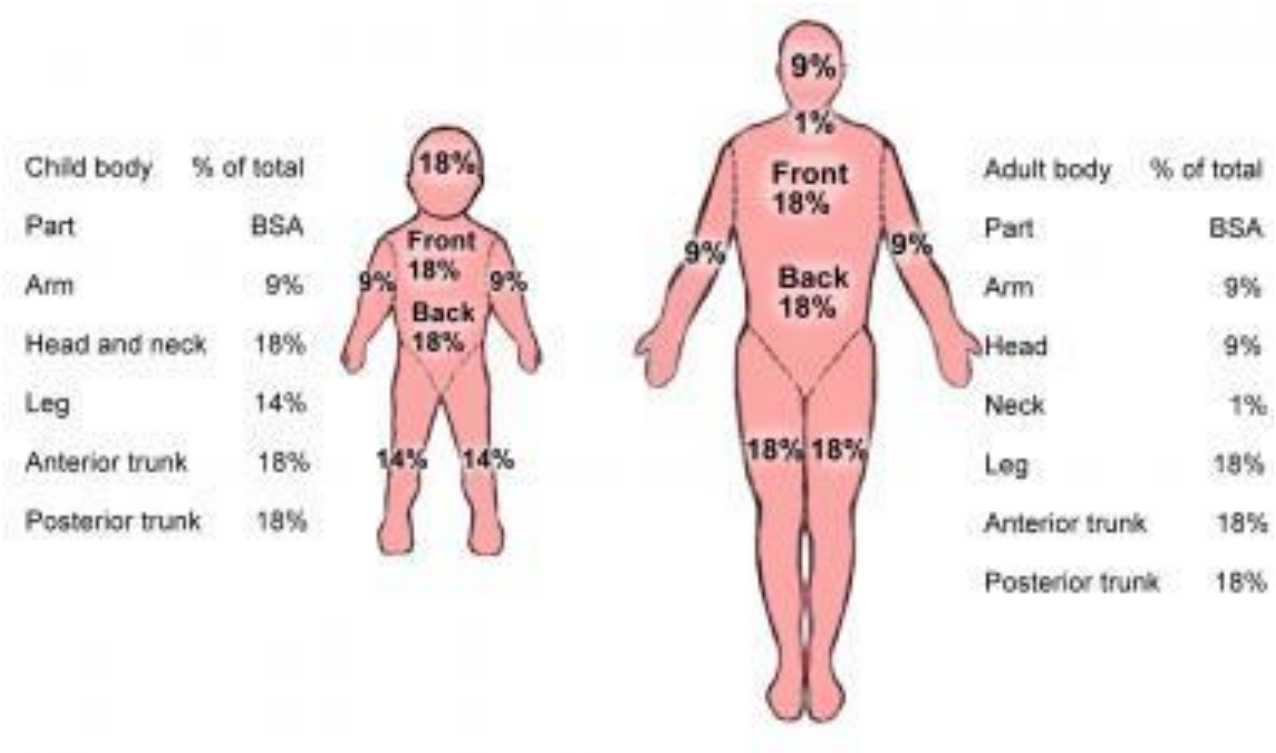
y, yrs	years
y/o	years old

Symbols

@	at
α	alpha
β	beta
⌀	none, not
♀	female
♂	male
>	greater than
<	less than
1°	first degree, or primary
2°	second degree, or secondary
3°	third degree, or tertiary

Burn Classification and Measurement

Degree	Depth	Cause	Appearance	Sensation
First	Superficial	Sun or flash	Red, dry, no blisters, devitalization of superficial epidermis only w/ dilation of dermal vessels	Painful, hyperesthetic
Second	Partial thickness	Flash or hot liquids	Mottled appearance, moist, blistered, varying loss of depth of epidermis, viable subcutaneous tissue	Painful, hyperesthetic
Third	Full thickness	Flame	Dry, hard, loss of dermis, viable subcutaneous tissue	Little pain, anesthetic
Fourth	Underlying	Flame or electric	Charred, cracked, loss of tissue to muscle or bone	Anesthetic



Conversions

1 ml = 60 mcgtts (micro tubing)
1 ml = 10-20 gtts (macro tubing)
1 L = 1000 ml
1 ml = 1 cc
1 g = 1000 mg
1 mg = 1000 mcg

1 tsp = 5 ml = 1/6 oz
1 Tbsp = 15 ml = ½ oz
2 Tbsp = 30 ml = 1 oz
1 cup = 240 ml = 8oz
1 pint = 500 ml = 16 oz
1 Quart = 1000 ml = 32 oz

1 oz = 30 g
1 kg = 2.2 lbs
1 kg = 1000 g
1 lb = 0.45 kg

(C° x 9/5) + 32° = F°
(F° - 32) x 5/9 = C°

C	F
0	32
30	86
32	98.6
35	95
36.5	97.7
37	98.6
37.5	99.5
38	100.4
38.5	101.3
39	102.2
40	104
41	105.8
42	107.6

Controlled Substances Management Guidelines

RELATED DOCUMENTS
Controlled Substance Act of 1970

GUIDELINE:
1. The Medical Service Officer (MSO) or supervisor for agencies with a paramedic will be responsible for securing and maintaining the required registration with the DEA. This will be done in conjunction with the Fire Chief or supervisor, and Medical Program Director (MPD).

2. Each agency with paramedic(s) will be responsible for the cost of controlled substances acquired.

3. Agencies obtaining controlled substances will comply with the Controlled Substance Act of 1970 as well as applicable state laws and regulations.

SECURITY:
1. All controlled substances will be in a substantially constructed locking cabinet with a minimum of one combination or key entry lock and a numbered tag for storage within the confines of the Paramedic response vehicle or the location designated by each district. Only Paramedics and the Fire Chief or his/her designee shall have access to the narcotics in the vehicle, and only the Fire Chief and the MSO shall have access to the narcotics in storage for restocking.

2. In the event of theft, loss or diversion of the controlled substances, the fire district shall notify local law enforcement. The fire district shall also submit a written report along with the complete form DEA-106 “Report of theft or loss” to the MPD who will forward the report and form to the DEA (DEA Office of Diversions Control, 400 S 2nd Ave West, Seattle WA 98119, 206-553-5990), and copy of each to the Board of Pharmacy and other agencies as required.

3. In the event of breakage or other contamination of a vial making it unusable, the paramedic will submit a written report to the MSO and/or Fire Chief and the MPD within 24 hours.

4. Outdated or unusable schedule II-V medications must be disposed of by transferring them to a registrant who is authorized to receive such materials. These registrants are referred to as “Reverse Distributors”, see additional pages for complete list. Schedule II controlled substances should be transferred via DEA form 41. Schedule III-V controlled substances can be transferred via invoice. The MPD should maintain copies of the records documenting the transfer and disposal of controlled substances for two years. This requirement does not include medications that were wasted after single patient use.

INVENTORY:
1. The maximum amount of controlled substances to be carried on any one emergency vehicle shall be:
- 300 mcg of Fentanyl
- 20 mg of Morphine Sulfate
- 6 mg of Ativan
- 20 mg of Midazolam
- 4 mg of Dilaudid

- 500 mg of Ketamine

2. The maximum amount of controlled substances to be kept in stock at the District Office shall be:
- 1,000 mcg: Fentanyl
- 200 mg: Morphine Sulfate
- 120 mg: Ativan
- 200 mg: Midazolam
- 80mg of Dilaudid
- 1000 mg of Ketamine

RECORD KEEPING:

1. Pend Oreille County EMS District will design and maintain a controlled substance administration log sheet which will be approved by the MPD before implementation. The Log sheet will contain the following information:
a. Date
b. Name of Patient
c. Name of Administering Paramedic
d. Name of Medication
e. Amount Administered
f. Amount Wasted
g. Signature of Witness
h. Incident Number
i. New Control Tag #

2. A perpetual audit of all controlled medications must be completed and the records must be kept for a minimum of two years. This inventory must be kept onsite and readily available. Inventories are used to monitor schedule II-V controlled medication. Inventory of schedule II medication must be done on a separate audit form. For example, fentanyl and morphine, both schedule II, on one inventory, and midazolam, lorazepam, diazepam, all schedule III-V substances, can be recorded on one inventory. The log/inventory sheet will document the following:
a. Date
b. Inventory type: shift, new stock, bi-annual, etc.
c. Name of medication
d. Amount on hand
e. How supplied (vial, Tubex, ampule)
f. Patient name
g. Attending physician (ED physician who receives the patient after transport)
h. Amount used
i. Amount wasted
j. Initials/signature of person administering controlled substance
k. Initials/signature of person witnessing usage or wastage
l. Initials of oncoming and off-going shift personnel.

3. In addition to daily inventory a formal complete inventory of controlled substances on hand must be done at least once every 2 years. This audit should specify that it is the bi-annual audit. Please note this is separate from the daily audit and should be kept in a secure area, available for examination at any time.

DEA Registered Reverse Distributors
August2015

This list of reverse distributors does not constitute an endorsement by the DEA of these companies or their products or services.

ARIZONA
Environmental Pharmaceuticals, LLC – (480) 659-9611

CALIFORNIA
EXP Pharmaceutical Services Corporation – (800) 350-0397 or (510) 476-0909
EXP Pharmaceutical SVCS Corp. – (510) 476-0909 or (800) 350-0397
Far West Returns – (530) 872-1758
Outdate Rx, LLC – (951) 264-5539

FLORIDA
ARX Returns, Inc.– (727) 919-2527
CAVU Medical Products & Services LLC– (813) 749-7113
Clean Harbors Florida LLC– (863) 519-6363
Pharmacy Returns Logistics – (386) 935-0876
PharmaLink– (800) 257-3527
RX Return Services– (727) 754-7848
Rx Reverse Distributors, Inc. – (772) 388-1212
Woodfield Distribution, LLC – (561) 998-3885

GEORGIA
Burke Horton, Inc. dba The Rx Exchange– (687) 306-1866
Danox Environmental Services Inc. – (404) 671-9163
MaximumRx Credit – (770) 985-2136
Return Logistics – (912) 748-5100
Stericycle, Inc.– (678) 684 1541

ILLINOIS
Pharma Logistics– (888) 729-7427 or (847) 837-1224
Pharmaceutical Returns Services – (800) 215-5878 or (630) 892-8740
Progressive Returns – (773)622-9584
Qualanex, LLC– (847) 775-7256or (800) 505-9291

INDIANA
Stericycle, Inc. – (317) 860-1200

IOWA
National Pharmaceutical Returns, Inc. – (800) 470-7725 or (515) 252-7722

MICHIGAN
Drug and Laboratory Disposal, Inc. – (800) 685-9824 or (269) 685-9824
EQ Detroit, Inc. – (313) 347-1350 or (313) 923-0080

Great Lakes Clean Water Org.– (989) 736-8179
Nortru LLC – (313) 824-5840
U S Industrial Technologies, Inc. – (734) 462-4100

MINNESOTA
EZ Pharmacy Returns, LLC – (800) 440-0613

NEW JERSEY
Advanced RX Returns – (201) 222-3800

NEW YORK
ARK Business Services Inc – (347) 590-2779
Devos Ltd. dba Guaranteed Returns – (800) 473-2138 or (631) 689-0191
Devos Ltd d/b/a Guaranteed Returns – (631) 689-0191 or (800) 473-2138

NORTH CAROLINA
ALMAC Clinical Services, Inc.– (919) 479-8850
Assured Waste Solutions, LLC – (704) 865-7550
Pharmaceutical Dimensions – (336) 664-5287

OHIO
Achieva Group Returns, Inc. – (513) 474-9900
Environmental Enterprises Inc. – (513) 541-1823
Heritage –WTI – (330) 385-7336

OKLAHOMA
Total Returns – (580) 276-3056

PENNSYLVANIA
Chesapeake Waste Solutions – (717) 653-8882
HDS Returns LLC – (724) 856-7049
Pharmareturns – (215) 653-7400
Prestigious RX Returns DBS PRX Returns – (570) 408-9260 or (855) 499-9260
Republic Environmental Systems (Pennsylvania), LLC – (215) 822-8995

SOUTH CAROLINA
Pharmaceutical Credit Company, LLC– (800) 624-5926

TENNESSEE
Medsafe Waste LLC – (615) 431-2966
Pharma-Mate Inc dba Returnco– (706) 250-4831
Pharmaceutical Credit Company, LLC– (615) 373-4262or (800) 487-4308
Quality RX Returns, LLC– (865) 223-5468
Reliable Pharmaceutical Returns, LLC – (615) 361-8856
Return Solutions – (865) 675-1355

TEXAS
Med-Turn, Inc. – (817) 868-5300
Philip Reclamation Services – (713) 679-2300
SharpsCompliance, Inc. – (903) 693-2525

UTAH
Clean Harbor Aragonite, LLC – (435) 884-8100
National Products Sales – (801) 972-4132

WASHINGTON
P.S. Industries, Inc. – (206) 749-0739

WISCONSIN
Capital Returns, Inc. DBA Genco Pharmaceutical Services – (800) 950-5479 or (414) 967-2800
Veolia ES Technical Solutions, LLC – (262) 255-6655

Drug reference

Dosage calculations

To calculate the amount of drug to be drawn up or administered, use the following formula:
WHAT (type and amount of drug ordered) multiplied by QUANTITY (volume of fluid in the container) divided by HAVE (amount of drug in the container) = the amount to be administered.

$$\frac{\text{WHAT x QUANTITY}}{\text{HAVE}} = \text{Amount to be administered}$$

IV Rate

To calculate an IV drip rate based on the volume of fluid to be administered over time. Make sure the unit measurement of the concentration and the dosage are the same (e.g., both in milligrams, milliliters, etc.):

$$\text{Drops per minute} = \frac{\text{VOLUME to be infused in ml x drop factor of IV set}}{\text{Time in minutes}}$$

To calculate an IV drip rate for a medication that is administered based on a specified dosage to be infused per minute:

$$\text{Drops per minute} = \frac{\text{Dosage per minute to be administered x drop factor of IV set}}{\text{Concentration of medication per ml}}$$

To calculate an IV drip rate for a medication that is administered based on a specified dosage per kilogram of body weight per minute:

$$\text{Drops per minute} = \frac{\text{Desired dose per minute x weight in kg x drop factor of IV set}}{\text{Concentration of medication per ml}}$$

Medical Spanish

Initial questioning

Is there someone with you who speaks English?
¿Hay alguien con usted que hable ingles?
Ah-ee ahl-gee-ehn hohn oss-tehd keh ah-bleh enn-glehs?

I speak a little Spanish. Please answer yes or no to the following questions.
Hablo un poco de español. Por favor conteste si o no a las siguientes preguntas.
Ah-bloh oon pohr-fah-borg kokn-tehs-the see oh noh ah lahs see-gee-ehn-tehs preh-goon tahs.

Speak slowly, please.
Hable despacia, por favor.
Ah-bleh dehs-pah-see-oh, pohr fah-bohr.

What is your name?
¿Cómo se llama?
Koh-moh she yah-mah?

When did the problem start?
¿Cuándo empezó el problema?
Kwahn-doh ehm-peh-soh ehl prog-bleh-mah?

How old are you?
¿Cuántos años tiene?
Kwahn-tohs ah-nyohs tee-eh-neh?

What medicine do you take?
¿Qué medicina torna?
Keh meh-dee-see-nah toh-mah?

Numbers

1. uno
2. dos
3. tres
4. cuatro
5. cinco
6. seis
7. siete
8. ocho
9. neueve
10. diez
11. once
12. doce
13. trece
14. catorce
15. quince
16. dieciséis
17. diecisiete
18. dieciocho
19. diecinueve
20. viente
21. vientiuno
22. vientidós
23. veintritrés
24. veinticuatro
25. veinticinco
26. veintiséis
27. veintisiete
28. veintiocho
29. veintineuve
30. treinta

Days of the week

Lunes: Monday
Martes: Tuesday
Miércoles: Wednesday
Jueves: Thursday
Viernes: Friday
Sábado: Saturday
Domingo: Sunday

How do you feel?
¿Cómo se siente?
Koh-moh she see-ehn-the?

What is the problem?
¿Cuál es el problema?
Kwahl ehs ehl proh-bleh-mah?

Have you had this problem before?
¿Ha tenido este problema antes?
Ah the-nee-doh ehs-the proh-bleh-mah ahn-tehs?

Do you have nausea or vomiting?
¿Tiene nausea o vómito?
Tee-eh-neh nah-oo-she-ah oh boh-meh-toh?

Don't move
No se meuva
Noh she mweh-bah

We are going to give you an IV
Vamos a ponerie suero intravenoso.
Bah-mohs ah poh-nehr-leg soo-eh-roh enn-trah-beh-noh-soh.

Do you have a fever?
¿Tiene fiebre?
Tee-eh-neh fee-eh-breh?

Calm down
Cálmese
Kahl-meh-sah

Where does it hurt?
¿Donde le duele?
Dohn-deh leh dweh-leh?

Show me Enséñeme
Ehn-she-nyeh-meh.

When?
¿Cuándo?
Kwahn-doh?

How?
¿Cómo?
Koh-moh?

For how long?
¿Por cuánto tiempo?
Pohr kwahn-toh tee-ehm-poh?

Why?
¿Por qué?
Pohr keh?

Relax, please
Por favor, relájese
Pohr fah-bohr, reh-lah-heh-she.

High Blood Pressure? Alta presion de la sangre?
Ahl-tah preh-see-ohn deh lah sahn-greh?

Diabetes? Diabetes?
Dee-ah-beh-tehs?

Asthma? Asma? *Ahs-mah?*

Epilepsy? Epilepsia?
Eh-pee-lep-see-ah?

Heart disease? Ehfermedad del corazón?
Ehn-fehr-meh-dad dehl koh-rah-sohn?

Stomach ulcers? Ulceras del estomago?
Ool-she-rahs dehl ehs-toh-mah-goh?

Do you take medicine?
¿Tomas usted medicina?
Toh-mah oos-tehd lah meh-dee-see-nah?

Pain

When did the pain start?
¿Cuándo empezó el dolor?
Kwahn-doh ehm-peh-soh ehl doh-lohr?

Where did the pain start?
¿Donde empezó el dolor?
Dohn-deh ehm-peh-soh ehl doh-lohr?

Does the pain travel to another place?
¿Le viaja el dolor a otro lugar?
Leh vee-ah-hah ehl doh-lohr ah oh-troh loo-gahr?

How long does the pain last?
¿Cuánto tiempo le dura el dolor?
Kwahn-toh tee-ehm-poh leg doo-rah ehl doh-lohr?

Is it severe?
¿Es severo?
Ehs she-beh-roh?

Does it ache?
¿Es adolorido?
Ehs ah-doh-loh-ree-doh?

Is it like pressure?
¿Es opresivo?
Ehs oh-preh-see-boh?

Is the pain the same since it started?
¿Es el dolor igual desde que empezó?
Ehs ehl doh-lor ee-gwahl dehs-deh keh ehm-peh-soh?

Chest Pain

Pain in the chest?
¿Dolor del Pecho?
Doh=lohr dehl peh-choh?

Point to where the pain is, please. Apunte dónde tiene el dolor, por favor.
Ah-poon-the dohn-deh tee-eh-neh ehl doh-lohr.

Does the pain travel to your left shoulder (arm)?
¿Le viaja el dolor al hombre (brazo) izquierdo? *Leh bee-ah-hah ehl doh-lohr ahl ohm-broh (brah- soh) ees-kee-her-doh?*

Is it piercing?
¿Es punzante?
Ehs poon-sahn-the?

OB / GYN

Are you having contractions?
¿Tiene contracciones?
Tee-eh-neh kohn-track-see-ohn-ehs?

(Don't) push.
(No) Empuje.
(Noh) Ehm-poo-heh

How many minutes do the contractions last?
¿Cuántos minutes le duran las contracciones?
Kwahn-tohs mee-noo-tohs leh doo-rahn lahs kohn-trahk-see-ohn-ehs?

Minimum Required Equipment

WAC 246-976-300
Ground ambulance and aid service—Equipment.
Ground ambulance and aid services must provide equipment listed in Table A of this section on each licensed vehicle, when available for service.

Note: "asst" means assortment TABLE A: EQUIPMENT	AMBULANCE	AID VEHICLE
AIRWAY MANAGEMENT		
Airway Adjuncts		
Oral airway adult and pediatric	asst	asst
Suction		
Portable	1	1
Vehicle mounted and powered, providing: Minimum of 30 L/min. & vacuum > 300 mm Hg	1	0
Tubing, suction	1	1
Bulb syringe, pediatric	1	1
Rigid suction tips	2	1
Catheters as required by local protocol		
Water-soluble lubricant	1	1
Oxygen delivery system built in	1	0
3000 L Oxygen supply, with regulator, 500 PSI minimum, or equivalent liquid oxygen system	1	0
300 L Oxygen supply, with regulator, 500 PSI minimum, or equivalent liquid oxygen system	2	1
Cannula, nasal, adult	4	2
O2 mask, nonrebreather, adult	4	2
O2 mask, nonrebreather, pediatric	2	1
BVM, with O2 reservoir		
Adult, pediatric, infant	1 ea	1 ea
PATIENT ASSESSMENT AND CARE		
Assessment		
Sphygmomanometer		
Adult, large	1	1
Adult, regular	1	1
Pediatric	1	1
Stethoscope, adult	1	1
Thermometer, per county protocol	1	0

Flashlight, w/spare or rechargeable batteries & bulb	1	1
Defibrillation capability appropriate to the level of personnel	1	1
Personal infection control and protective equipment as required by the department of labor and industries		
Length based tool for estimating pediatric medication and equipment sizes	1	1
TRAUMA EMERGENCIES		
Triage identification for 12 patients per county protocol	Yes	Yes
Wound care		
Dressing, sterile	asst	asst
Dressing, sterile, trauma	2	2
Roller gauze bandage	asst	asst
Medical tape	asst	asst
Self adhesive bandage strips	asst	asst
Cold packs	4	2
Occlusive dressings	2	2
Scissors, bandage	1	1
Irrigation solution	2	1
Splinting		
Backboard with straps	2	1
Head immobilization equipment	1	1
Pediatric immobilization device	1	1
Extrication collars, rigid		
Adult (small, medium, large)	asst	asst
Pediatric or functionally equivalent sizes	asst	asst
Immobilizer, cervical/thoracic, adult	1	0
Splint, traction, adult w/straps	1	0
Splint, traction, pediatric, w/straps	1	0
Splint, adult (arm and leg)	2 ea	1 ea
Splint, pediatric (arm and leg)	1 ea	1 ea
GENERAL		
Litter, wheeled, collapsible, with a functional restraint system per the manufacturer	1	0
Pillows, plastic covered or disposable	2	0
Pillow case, cloth or disposable	4	0
Sheets, cloth or disposable	4	2
Blankets	2	2
Towels, cloth or disposable 12" x 23" minimum	4	2

Emesis collection device	1	1
Urinal	1	0
Bed pan	1	0
OB kit	1	1
Epinephrine and supplies appropriate for level of certification per MPD protocols		
Adult	1	1
Pediatric	1	1
Storage and handling of pharmaceuticals in ambulances and aid vehicles must be in compliance with the manufacturers' recommendations		
Extrication plan: Agency must document how extrication will be provided when needed.		

[Statutory Authority: Chapters 18.71, 18.73, and 70.168 RCW. WSR 11-07-078, § 246-976-300, filed 3/22/11, effective 5/15/11; WSR 00-08-102, § 246-976-300, filed 4/5/00, effective 5/6/00. Statutory Authority: RCW 43.70.040 and chapters 18.71, 18.73 and 70.168 RCW. WSR 93-01-148 (Order 323), § 246-976-300, filed 12/23/92, effective 1/23/93.]

WAC 246-976-390

Trauma verification of prehospital EMS services.

(1) The secretary verifies prehospital EMS services. Verification is a higher form of licensure that requires twenty-four-hour, seven day a week compliance with the standards outlined in chapter 70.168 RCW and this chapter. Verification will expire with the prehospital EMS service's period of licensure.

(2) To qualify for trauma verification, an agency must be a licensed ambulance or aid service as specified in WAC 246-976-260.

(3) The following EMS services may be verified:

(a) Aid service: Basic, intermediate (AEMT), and advanced (paramedic) life support;

(b) Ground ambulance service: Basic, intermediate (AEMT), and advanced (paramedic) life support;

(c) Air ambulance service.

(4) Personnel requirements:

(a) Verified aid services must provide personnel on each trauma response including:

(i) Basic life support: At least one individual who is an EMR or above;

(ii) Intermediate life support: At least one AEMT;

(iii) Advanced life support - Pramedic: At least one paramedic;

(b) Verified ambulance services must provide personnel on each trauma response including:

(i) Basic life support: At least two certified individuals - one EMT plus one EMR;

(ii) Intermediate life support: One AEMT, plus one EMT;

(iii) Advanced life support - Paramedic: At least two certified individuals - One paramedic and one EMT;

(c) Verified air ambulance services must provide personnel as identified in WAC 246-976-320.

(5) Equipment requirements:

(a) Verified BLS vehicles must carry equipment identified in WAC 246-976-300, Table A;

(b) Verified ILS and paramedic vehicles must provide equipment identified in Table A of this section, in addition to meeting the requirements of WAC 246-976-300;

(c) Verified air ambulance services must meet patient care equipment requirements described in WAC 246-976-320.

TABLE A: EQUIPMENT FOR VERIFIED TRAUMA SERVICES (NOTE: "ASST" MEANS ASSORTMENTS. "X" INDICATES REQUIRED.)	AMBULANCE		AID VEHICLE	
	PAR	ILS	PAR	ILS
AIRWAY MANAGEMENT				
Airway adjuncts				
Adjunctive airways, assorted per protocol*	X	X	X	X
Laryngoscope handle, spare batteries	1	1	1	1
Adult blades, set	1	1	1	1
Pediatric blades, straight (0, 1, 2)	1 ea	1 ea	1 ea	1 ea
Pediatric blades, curved (2)	1 ea	1 ea	1 ea	1 ea
McGill forceps, adult & pediatric	1	1	1	1
ET tubes, adult and pediatric	asst	0	asst	0
Supraglottic airways per MPD protocol**	X	X	X	X
End-tidal CO2 detector	1 ea	1 ea	1 ea	1 ea
Oxygen saturation monitor	1 ea	1 ea	1 ea	1 ea
TRAUMA EMERGENCIES				
IV access				
Administration sets and intravenous fluids per protocol:				
Adult	4	4	2	2
Pediatric volume control device	2	2	1	1
Catheters, intravenous (14-24 ga)	asst	asst	asst	asst
Needles				
Hypodermic	asst	asst	asst	asst
Intraosseous, per protocol	2	2	1	1
Sharps container	1	1	1	1
Syringes	asst	asst	asst	asst
Glucose measuring supplies	Yes	Yes	Yes	Yes
Pressure infusion device	1	1		
Length based tool for estimating pediatric medication and equipment sizes	1	1	1	1
Medications according to local patient care protocols				

(6) Aid service response time requirements: Verified aid services must meet the following minimum agency response times as defined by the department and identified in the regional plan:
(a) To urban response areas: Eight minutes or less, eighty percent of the time;
(b) To suburban response areas: Fifteen minutes or less, eighty percent of the time;
(c) To rural response areas: Forty-five minutes or less, eighty percent of the time;
(d) To wilderness response areas: As soon as possible.

(7) Ground ambulance service response time requirements: Verified ground ambulance services must meet the following minimum agency response times for all EMS and trauma responses to response areas as defined by the department and identified in the regional plan:
(a) To urban response areas: Ten minutes or less, eighty percent of the time;
(b) To suburban response areas: Twenty minutes or less, eighty percent of the time;
(c) To rural response areas: Forty-five minutes or less, eighty percent of the time;
(d) To wilderness response areas: As soon as possible.
(8) Verified air ambulance services must meet minimum agency response times as identified in the state plan.
(9) Verified ambulance and aid services must comply with the approved prehospital trauma triage procedures defined in WAC **246-976-010**.
(10) The department will:
(a) Identify minimum and maximum numbers of prehospital services, based on:
(i) The approved regional EMS and trauma plans, including: Distribution and level of service identified for each response area; and
(ii) The Washington state EMS and trauma plan;
(b) With the advice of the steering committee, consider all available data in reviewing response time standards for verified prehospital trauma services at least biennially;
(c) Administer the BLS/ILS/ALS verification application and evaluation process;
(d) Approve an applicant to provide verified prehospital trauma care, based on satisfactory evaluations as described in this section;
(e) Obtain comments from the regional council as to whether the application(s) appears to be consistent with the approved regional plan;
(f) Provide written notification to the applicant(s) of the final decision in the verification award;
(g) Notify the regional council and the MPD in writing of the name, location, and level of verified services;
(h) Approve renewal of a verified service upon reapplication, if the service continues to meet standards established in this chapter and verification remains consistent with the regional plan.
(11) The department may:
(a) Conduct a preverification site visit; and
(b) Grant a provisional verification not to exceed one hundred twenty days. The secretary may withdraw the provisional verification status if provisions of the service's proposal are not implemented within the one hundred twenty-day period, or as otherwise provided in chapter **70.168** RCW and this chapter.

[Statutory Authority: Chapters **18.71**, 18.73, and **70.168** RCW. WSR 11-07-078, § 246-976-390, filed 3/22/11, effective 5/15/11. Statutory Authority: RCW **18.73.140**. WSR 00-22-124, § 246-976-390, filed 11/1/00, effective 12/2/00. Statutory Authority: Chapters **18.71**, 18.73, and **70.168** RCW. WSR 00-08-102, § 246-976-390, filed 4/5/00, effective 5/6/00. Statutory Authority: RCW **43.70.040** and chapters **18.71**, 18.73 and **70.168** RCW. WSR 93-01-148 (Order 323), § 246-976-390, filed 12/23/92, effective 1/23/93.]

*Airway adjuncts required- varying sizes, adult and pediatric, of oral and nasal airways on all ambulances and aid vehicles.

**Supraglottic airways- each department or company may choose which supraglottic airway(s) to carry. BLS units may stock one airway of their choosing. ILS and ALS units must have a minimum of two options

(esophageal tracheal airway [Combitube], iGel, King airway, laryngeal mask [LMA]), in addition to endotracheal intubation supplies.

Mnemonics

Patient Assessment:	Newborn Assessment:	Medical:
A: Airway	**A:** Appearance	**M:** Morphine
B: Breathing	**P:** Pulse Rate	**O:** Oxygen
C: Circulation	**G:** Grimace (facial actions)	**N:** Nitrates
D: Disability	**A:** Activity	**A:** Aspirin
E: Expose	**R:** Respirations	

History:	
S: Signs and symptoms	**P:** Progression of symptoms
A: Allergies	**A:** Associated chest pain
M: Medications	**S:** Sputum productions, speech, word sentences
P: Pertinent past medical history	**T:** Temperature, tiredness
L: Last oral intake	**M:** Medications the patient is currently taking
E: Events leading to injury or illness	**E:** Exercise/Exertion normally tolerated
	D: Diagnosis (previous)

Trauma Assessment:	Trauma:	
Scene safety	**V:** Vitals	**T:** Tracks, Tags, Tattoos
Spinal Stabilization	**O:** Oxygen	**I:** Instability
LOC	**M:** Monitor	**C:** Crepitus
Airway	**I:** IV/Information	**S:** Scars
Breathing	**T:** Transport decision	
Oxygen	**H:** History	
Circulation	**A:** Allergies	
Arterial Bleeds	**M:** Medications	
Bare the Body		

Trauma or Pain Questions:	Trauma:
O: Onset **P:** Provocation, progression **Q:** Quality, pain type? **R:** Radiation **S:** Severity **T:** Time, duration	**D:** Deformities **C:** Contusions **A:** Abrasions **P:** Punctures **B:** Burns **T:** Tenderness **L:** Lacerations **S:** Swelling

Causes of Pulseless Electrical Activity (PEA) – "5" H's and T's:	
H: Hypovolemia	**T:** Toxins
H: Hypoxia	**T:** Tamponade, cardiac
H: Hydrogen ion – acidosis	**T:** Tension Pneumothorax
H: Hypo-/Hyperkalemia	**T:** Thrombosis, (Coronary or Pulmonary)
H: Hypoglycemia	
H: Hypothermia	**T:** Trauma (hypovolemia, increased ICP)

Altered Mental Status (ALOC):	
A: Alcohol, Drugs	**T:** Trauma
E: Endocrine (glands)	**I:** Infection
I: Insulin, Infection	**P:** Psychiatric
O: Overdose	**S:** Shock
U: Uremia (2^0 kidney insufficiency)	

Triage:	Charting:
A: Alert	**S:** Subjective
P: Responsive to Verbal	**O:** Objective
V: Responsive to Pain	**A:** Assessment
U: Unresponsive	**P:** Plan

Paramedic Requirements for Practicing in Pend Oreille County

Categories:

1. Paramedic new to out Pend Oreille County EMS District.
2. Paramedic new to our county, but having previously practiced in Spokane County EMS System.
3. Paramedic having previously practiced in Pend Oreille County and has been absent for less than 1 year.
4. Paramedic having previously practiced in Pend Oreille County and has been absent for more than 1 year but less than 3 years.
5. Paramedic having previously practiced in Pend Oreille County and has been absent from our EMS District for 3 years or longer.

Category 1,5- Under paramedic supervision, ride as second paramedic for 24 patient-care hours with a county EMS agency and assuming all patient care and responsibility. May substitute county EMS agency hours with Spokane county agency hours for no more than 12 of the 24 hours to expedite training requirements with MPD approval from both counties.

Category 3- Under paramedic supervision, ride as second paramedic for 4 patient-care hours with a county EMS agency and assuming all patient care and responsibility.

Category 4- Under paramedic supervision, ride as second paramedic for 8 patient-care hours with a county EMS agency and assuming all patient care and responsibility.

Category 2- Provide letter from Spokane County MPD (Dr. Nania) that demonstrates paramedic has demonstrated satisfactory competency in paramedic level skills and knowledge including intubation, IV/IO therapy and other high risk low frequency skills and is current in continuing education requirements.

Category 1, 3, 4, 5- Evaluation (training checklist or letter) from supervising paramedic evaluating knowledge of Pend Oreille County EMS Protocols, Patient Care Procedures, and proficiency with invasive procedures.

Category 1-5- Successfully pass Pend Oreille EMS protocol exam with minimum score of 80%. Two retakes will be allowed to achieve a passing score. If the paramedic cannot pass the exam in three attempts, a period of mentoring and additional ride along time will be completed as determined by the MPD before additional attempts at testing will be allowed.

Physician Orders for Life Sustaining Treatment (POLST)

HIPAA PERMITS DISCLOSURE OF POLST TO OTHER HEALTH CARE PROVIDERS AS NECESSARY

Physician Orders for Life-Sustaining Treatment (POLST)

Last Name - First Name - Middle Name or Initial

Date of Birth ____ ____ ____ Last 4 #SSN (optional) ____ ____ ____ ____

FIRST follow these orders, **THEN** contact physician, nurse practitioner or PA-C. The POLST is a set of medical orders intended to guide medical treatment based on a person's current medical condition and goals. Any section not completed implies full treatment for that section. Completing a POLST form is always voluntary. Everyone shall be treated with dignity and respect.

Medical Conditions/Patient Goals:

Agency Info/Sticker

A Check One — **CARDIOPULMONARY RESUSCITATION (CPR):** Person has no pulse and is not breathing.

- ☐ **Attempt Resuscitation/CPR** — When not in cardiopulmonary arrest, go to part B.
- ☐ **Do Not Attempt Resuscitation/DNAR (Allow Natural Death)** — Choosing DNAR will include appropriate comfort measures.

B Check One — **MEDICAL INTERVENTIONS:** Person has pulse and/or is breathing.

- ☐ **FULL TREATMENT - primary goal of prolonging life by all medically effective means.** Includes care described below. Use intubation, advanced airway interventions, mechanical ventilation and cardioversion as indicated. **Transfer** *to hospital if indicated. Includes intensive care.*
- ☐ **SELECTIVE TREATMENT - goal of treating medical conditions while avoiding burdensome measures.** Includes care described below. Use medical treatment, IV fluids and cardiac monitor as indicated. Do not intubate. May use less invasive airway support (e.g. CPAP, BiPAP). **Transfer** *to hospital if indicated. Avoid intensive care if possible.*
- ☐ **COMFORT-FOCUSED TREATMENT - primary goal of maximizing comfort.** Relieve pain and suffering with medication by any route as needed. Use oxygen, oral suction and manual treatment of airway obstruction as needed for comfort. **Patient prefers no hospital transfer:** *EMS consider contacting medical control to determine if transport is indicated to provide adequate comfort.*

Additional Orders: (e.g. dialysis, etc.) _____

C — **SIGNATURES:** The signatures below verify that these orders are consistent with the patient's medical condition, known preferences and best known information. If signed by a surrogate, the patient must be decisionally incapacitated and the person signing is the legal surrogate.

Discussed with: ☐ Patient ☐ Parent of Minor ☐ Guardian with Health Care Authority ☐ Spouse/Other as authorized by RCW 7.70.065 ☐ Health Care Agent (DPOAHC)	PRINT — Physician/ARNP/PA-C Name	Phone Number
	✗ Physician/ARNP/PA-C Signature ***(mandatory)***	Date ***(mandatory)***
PRINT — Patient or Legal Surrogate Name		Phone Number
✗ Patient or Legal Surrogate Signature ***(mandatory)***		Date ***(mandatory)***

Person has: ☐ Health Care Directive (living will) ☐ Durable Power of Attorney for Health Care

Encourage all advance care planning documents to accompany POLST

SEND ORIGINAL FORM WITH PERSON WHENEVER TRANSFERRED OR DISCHARGED

Revised 8/2017

Photocopies and faxes of signed POLST forms are legal and valid. May make copies for records.
For more information on POLST visit www.wsma.org/polst.

WASHINGTON | WSMA Washington State Medical Association — Physician Driven Patient Focused | Washington State Department of Health

See back of form for non-emergency preferences ▶

HIPAA PERMITS DISCLOSURE OF POLST TO OTHER HEALTH CARE PROVIDERS AS NECESSARY

Patient and Additional Contact Information (if any)

Patient Name (last, first, middle)	Date of Birth	Phone Number
Name of Guardian, Surrogate or other Contact Person	Relationship	Phone Number

D NON-EMERGENCY MEDICAL TREATMENT PREFERENCES

ANTIBIOTICS:

☐ Use antibiotics for prolongation of life.
☐ Do not use antibiotics except when needed for symptom management.

MEDICALLY ASSISTED NUTRITION:
Always offer food and liquids by mouth if feasible.

☐ Trial period of medically assisted nutrition by tube. (Goal: _____)
☐ No medically assisted nutrition by tube.
☐ Long-term medically assisted nutrition by tube.

ADDITIONAL ORDERS: (e.g. dialysis, blood products, implanted cardiac devices, etc. Attach additional orders if necessary.)

X Physician/ARNP/PA-C Signature	Date
X Patient or Legal Surrogate Signature	Date

DIRECTIONS FOR HEALTH CARE PROFESSIONALS

NOTE: A person with capacity may always consent to or refuse medical care or interventions, regardless of information represented on any document, including this one.

Completing POLST

- Completing a POLST form is always voluntary.
- Treatment choices documented on this form should be the result of shared decision-making by an individual or their surrogate and medical provider based on the person's preferences and medical condition.
- POLST must be signed by a physician/ARNP/PA-C and patient, or their surrogate, to be valid. Verbal orders are acceptable with follow-up signature by physician/ARNP/PA-C in accordance with facility/community policy.

Using POLST

Any incomplete section of POLST implies full treatment for that section.

This POLST is valid in all care settings including hospitals until replaced by new physician's orders.

The POLST is a set of medical orders. The most recent POLST replaces all previous orders.

The POLST does not replace an advance directive. An advance directive is encouraged for all competent adults regardless of their health status. An advance directive allows a person to document in detail his/her future health care instructions and/or name a surrogate decision maker to speak on his/her behalf. When available, all documents should be reviewed to ensure consistency, and the forms updated appropriately to resolve any conflicts.

SECTIONS A AND B:

- No defibrillator should be used on a person who has chosen "Do Not Attempt Resuscitation."
- When comfort cannot be achieved in the current setting, the person should be transferred to a setting able to provide comfort (e.g., treatment of a hip fracture).
- An IV medication to enhance comfort may be appropriate for a person who has chosen "Comfort-Focused Treatment."
- Treatment of dehydration is a measure which may prolong life. A person who desires IV fluids should indicate "Selective" or "Full Treatment."

SECTION D:

- Oral fluids and nutrition must always be offered if medically feasible.

Reviewing POLST

This POLST should be reviewed periodically whenever:
(1) The person is transferred from one care setting or care level to another, or
(2) There is a substantial change in the person's health status, or
(3) The person's treatment preferences change.

To void this form, draw line through "Physician Orders" and write "VOID" in large letters. Any changes require a new POLST.

Review of this POLST Form

Review Date	Reviewer	Location of Review	Review Outcome
			☐ No Change ☐ Form Voided ☐ New form completed
			☐ No Change ☐ Form Voided ☐ New form completed

SEND ORIGINAL FORM WITH PERSON WHENEVER TRANSFERRED OR DISCHARGED

Photocopies and faxes of signed POLST forms are legal and valid. May make copies for records.
For more information on POLST visit www.wsma.org/polst.

OVER ▶

Required Medications

The following list is a minimum of medications that must be kept on ALS vehicles in the county. Medications that must be kept on BLS units are noted with an (*).

acetaminophen
activated charcoal
adenosine
albuterol
amiodarone
*aspirin (all vehicles)
atropine
calcium chloride AND/OR calcium gluconate
dextrose
diazepam AND/OR lorazepam
diphenhydramine
*epinepherine (for anaphylaxis; autoinjector or syringe and needle with Washington DOH-approved training)
etomidate
fentanyl
furosemide
glucagon
*glucose (oral, all vehicles)
ipratropium- individual OR as a component of DuoNeb
lidocaine
magnesium sulfate
morphine
*naloxone (mucosal atomization device or needle and syringe with Washington DOH-approved training)
*nitroglycerin (sublingual in all vehicles)
norepinephrine
ondansetron AND/OR promethazine
oxymetazoline
rocuronium AND/OR vecuronium
sodium bicarbonate
succinylcholine

Thank You for Your Assistance

Please be advised that this EMS team is operating under the authority of Washington State Law and protocols that were developed and approved by me as Medical Program Director. The EMS team performs their functions at the scene under the guidance of EMS Medical Control. If you, as a physician at the scene, decide you must intervene in the patient's care, then you are responsible for any and all care given, and must accompany the patient to the hospital in the ambulance and sign the medical incident report.

Sara Ragsdale, DO
Medical Program Director
Pend Oreille County, Washington

Triage Sieve for Mass Casualty/Active Shooter Incident

The "triage sieve" is a faster method of triaging developed by the military to determine the best use of resources in a mass casualty incident. The Committee for Tactical Emergency Casualty Care (TECC) was developed in in 1996 and includes physicians, paramedics, EMTs, law enforcement officers and fire fighters. They developed guidelines using the military battlefield guidelines of Tactical Combat Casualty Care and adapted them into civilian specific medical guidelines. The following is a very brief overview of the guidelines and the quick triage tool they developed. For full guidelines, go to http://www.c-tecc.org/guidelines.

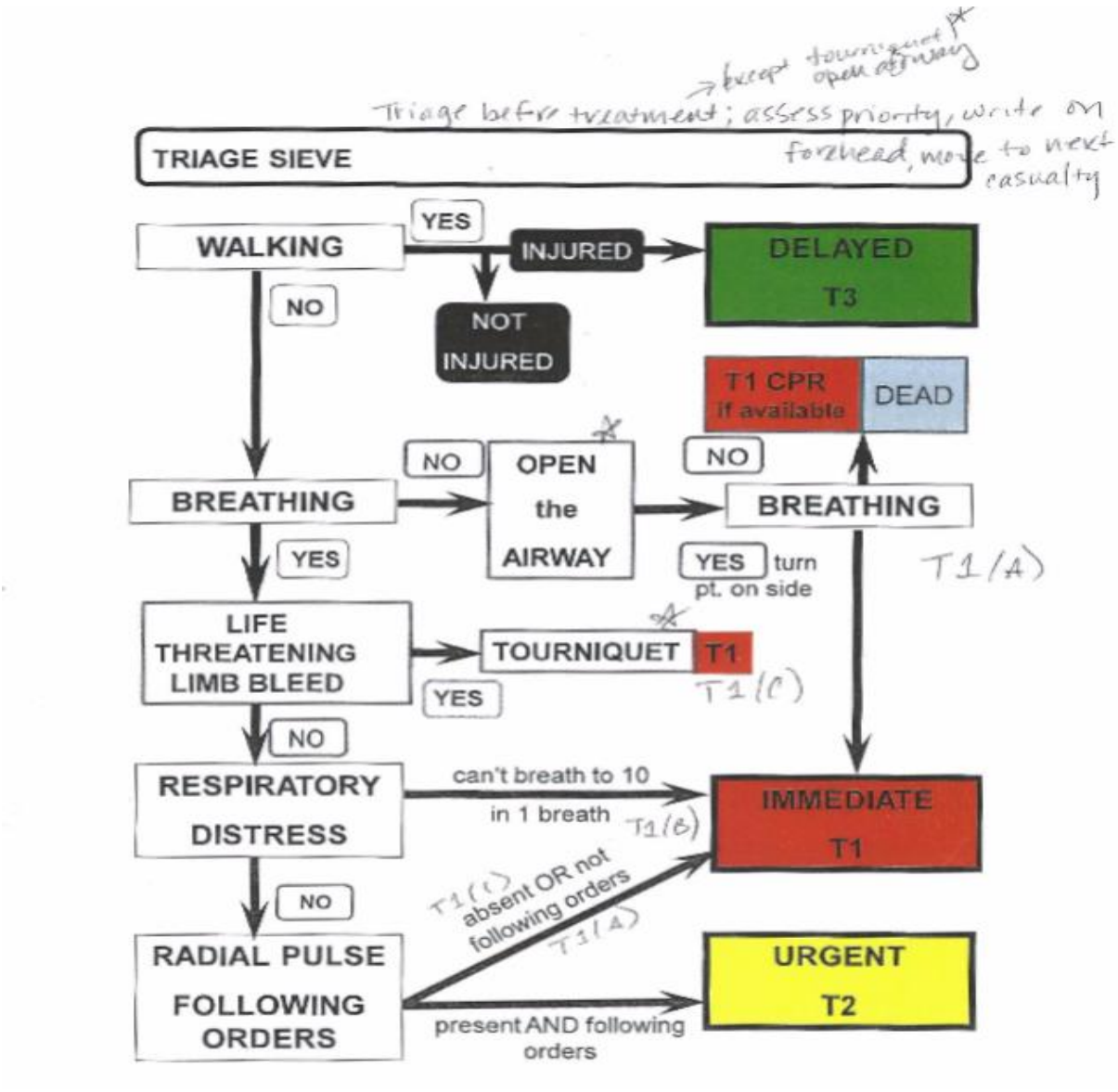
The definition of a "mass casualty incident" is different for every location, department, and even time of day. The hospital that can quickly call in staff and physicians from offices Monday through Friday from 8a-5p may be overwhelmed by the same number of patients that come in at 2am on Saturday morning. The very definition is that the available resources are overwhelmed.

- TECC breaks down the incident into three "zones":
  - Direct threat care ("hot zone"):
    - As EMS providers, our goal is not to become additional casualties. It is becoming more common for terrorists to plan a second threat to occur once aid workers respond to the scene.
    - You **must not** enter the scene until it is completely cleared by law enforcement.
      - Depending on the number of deputies available at the time of the incident, this can take some time.
      - Use this time to mobilize other EMS responders, launch Life Flight, and notify the hospital of what information you have so they may plan accordingly.
    - Direct threat care is limited to returning fire, clearing the scene.
    - Law enforcement may place an unconscious patient in the recovery position or apply a tourniquet to someone with massive hemorrhage but securing the scene takes precedence over patient care in this area.
  - Indirect threat care ("warm zone"):
    - Indirect threat care focus on triage and immediate tactical field care.
    - Triage is simplified into three categories.
    - The only treatments performed during triage are opening the airway and applying tourniquet to life-threatening hemorrhage.
    - See following page for Triage Sieve, a simplified way to triage large numbers of patients very rapidly.
      - Write the triage level on the forehead with permanent marker so that all other responders will know in which order patients need to be evaluated.
    - All of the patients must be triaged before moving on to a brief tactical rapid primary survey (TRaPS) and immediate lifesaving measures.
    - The tactical rapid primary survey follows the <c>ABCDE assessment as follows:
      1. <c>- Catastrophic hemorrhage- application of a tourniquet, pressure dressing or hemostatic dressing.
      2. A- Airway- clear any obstruction, maintain airway with oropharyngeal or nasopharyngeal airway

3. B- Breathing- ask patient to count to 10 in one breath, cover open chest wound with occlusive dressing and decompress any possible tension pneumothorax
4. C- Cardiovascular- stop any other bleeding, assess for shock, insert IV or IO if there are enough responders to do so without impairing the assessment of other patients.
5. D- Disability/neuro- very brief neuro exam (AVPU, move hands and feet), if neuro is intact and there is no penetrating injury to the spine or neck, no C collar is needed. If neuro signs are positive, or if there is significant blunt or any penetrating traum to the neck, apply collar if it does not impair assessment of injury or airway.
6. E- Exposure/extremity- avoid hypothermia, splint obvious deformities.

- evacuation zone:
  - Evacuation care is determining in which order patients will be transported and by what means.
    - Can the walking wounded go in law enforcement vehicles, private vehicles, busses?
    - Who will go by LifeFlight to trauma hospital and who will be transported by EMS locally?
    - How many people can be transported in each ambulance (1 critical, two walking wounded in front seat and jump seat)?
  - These determinations are based on your initial triage and how the patient looks right now, not what complication could potentially arise.

- The hospital will eventually act as command/control center and communications, as well as assessment, triage, treatment and transport or disposition. Our local hospital has limited staff availability. Talk with them early and often to mobilize staff response and to help you determine transport of patients.


except tourniquet open airway
Triage befor treatment; assess priority, write on forehead, move to next casualty
TRIAGE SIEVE
WALKING
YES
INJURED
DELAYED
T3
NO
NOT INJURED
T1 CPR if available
DEAD
NO
OPEN the AIRWAY
NO
BREATHING
BREATHING
YES
YES turn pt. on side
T1(A)
LIFE THREATENING LIMB BLEED
TOURNIQUET
T1
T1(C)
YES
NO
RESPIRATORY DISTRESS
can't breath to 10 in 1 breath
T1(B)
IMMEDIATE
T1
NO
T1(C) absent OR not following orders
T1(A)
RADIAL PULSE FOLLOWING ORDERS
URGENT
T2
present AND following orders