

Davis County Emergency Medical Services System

Emergency Medical Services Reference Guidelines



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ATTACHMENTS

- | | |
|---|------------|
| 1) State of Utah Trauma Triage Protocol | (Hardcopy) |
| 2) Davis County Medical Incident Response Plan | (Hardcopy) |
| 3) Advance directive documentation / currently state law | (Hardcopy) |
| 4) State approved "Life with Dignity" documentation | (Hardcopy) |
| 5) Utah EMS DNR Rule R426-100 | (Hardcopy) |

1. MISSION STATEMENT

The Emergency Medical Service Council exists to plan and coordinate quality emergency medical services for Davis County.

Quality is further defined as:

1. Rapid access, county-wide 911 availability.
2. Appropriate EMS dispatch.
3. Basic life support response in less than four minutes.
4. Advanced life support in less than eight minutes.
5. Emergency medical transportation.
6. Appropriately staffed and maintained hospital emergency rooms.

Vision Statements

We will ensure that all people of Davis County have access to efficient and effective emergency medical services, regardless of where the need arises. To achieve this vision:

- ❖ We will consistently include all communities and service providers as we actively plan for growth and prepare for future emergency medical service needs.
- ❖ We will base our decisions on meaningful and accurate data.
- ❖ We will foster partnership with all emergency medical service in Davis County, to optimize the use of resources and the delivery of patient care.
- ❖ We will provide guidelines to communities with the expectation of community adherence in order to ensure cohesive emergency medical service in Davis County.
- ❖ We will promote community awareness through prevention services and education.
- ❖ We will standardize patient care protocols.
- ❖ We will communicate effectively through the routine and efficient distribution of information to all members of the emergency medical service system.

Values Statements

- ❖ Community Responsibility – We ensure excellence in the delivery of emergency medical services by fostering teamwork, mutual support and cooperation among all providers.
- ❖ Fiscal Responsibility – We provide planning and coordinating services and perform operating activities according to established budgets and available resources.
- ❖ Organizational Responsibility – We are committed to our mission and to strive toward achieving our vision through honest and open communication without repercussions.
- ❖ Professional Responsibility – We will foster professional excellence through training and education.

2. DEFINITION OF AN EMS SERVICE

(by the American College of Emergency Physicians)

An emergency medical services system is a comprehensive, coordinated arrangement of health and safety resources that serves to provide timely and effective care to victims of sudden illness and injury. The components of the system include:

- ❖ staffing/training
- ❖ communications
- ❖ transportation
- ❖ health care facilities
- ❖ system organization and management (includes planning and funding)
- ❖ data collection, evaluation, and research
- ❖ public information, education, and prevention
- ❖ disaster medical services
- ❖ quality assurance/improvement and medical direction within the entire continuum of emergency care.

3. OPERATIONAL GUIDELINES

INTRODUCTION

The Davis County EMS Council is advisory to the Davis County Board of Health.

PURPOSE

The purpose of this advisory council is the planning, development, and coordination of a functional and comprehensive EMS system. The system consists of all personnel, equipment and facilities necessary for the response to the emergency ill or injured patient, according to the state lead agency standards.

In its advisory capacity the EMS Council shall:

1. Assist the Board of Health in identifying achievable Emergency Medical Services goals and objectives.
2. Support the Board of Health in the acquisition of federal, state and local funds to assist in the development and implementation of the County Emergency Medical Services System.
3. Recommend program priorities considering social, institutional, geographical and funding constraints.
4. Provide a forum for the integration and coordination of all components necessary for the provision of excellent emergency care within Davis County.
5. Consider the following as components of the Davis County EMS System: (1) Manpower, (2) Training, (3) Communications, (4) Transportation, (5) Facilities, (6) Critical Care Units, (7) Public Safety Agencies, (8) Consumer Participation, (9) Accessibility to Care, (10) Transfer of Patients, (11) Standard Medical Record Keeping, (12) Public Information and Education, (13) Evaluation, (14) Disaster Linkage, (15) Mutual Aid Agreements.
6. Develop long-range Emergency Medical Plans.

DEFINITIONS

Davis County EMS System: The integration of all emergency medical service components necessary for the provision of excellent emergency care in Davis County.

Davis County EMS Council: A broadly based group of persons including but not limited to representatives from the following: local elected officials, provider institutions, Davis County Medical Society, ambulance associations/companies, Davis County Sheriff's Office, Davis County Health Department, local and/or County Fire Chiefs, local Police Chiefs, Highway Patrol, interested citizens, and consumers.

Medical Director: Physician consultants employed by Davis County EMS agencies, as required by the State of Utah EMS rules and regulations, who provide medical leadership and advice for emergency medical care within the County.

EMS COUNCIL RESPONSIBILITIES

1. The Council will develop for recommendation a master plan for the Davis County EMS System which should include a system of medical audit and system effectiveness and be compatible with state laws, county and city policies and protocols.
2. In addition, the Council will review and formulate recommendations with regard to the following:
 - a. EMS system administration
 - b. Medical direction
 - c. Pre-hospital transport
 - d. Inter-facility transport
 - e. Dispatch
 - f. Communications
 - g. Protocols
 1. Triage
 2. Treatment
 3. Transport
 4. Transfer
 - h. Training
 - i. Financing
 - j. Audit and quality insurance
 - k. Mass casualty
 - l. Public information and education
3. The Council will study and identify the agencies that can function in the system and at what level of EMS service they could operate, i.e.: certification level, communication resources, facilities.

MEMBERSHIP

Council membership will follow the guidelines of the Resolution by the County Commissioners. Each individual on the Council will have one vote.

COUNCIL STRUCTURE

Direction of the Council is vested in a chairman, or, in his absence, a chairman-elect. The Chairman shall serve for two years. Election of the chairman-elect, who will assume the office January 1st of the succeeding year will be accomplished biennially in November by vote of the Council as a whole. In the event of a vacancy in the office of chairman, the chairman-elect will ascend to the office of chairman, and a new chairman-elect will be elected. The office of executive secretary to the Emergency Services Council will be held by the Director of Health.

In addition to the EMS Council, additional groups may be designated as necessary in the form of ad hoc task forces to address specific problems.

EMS COUNCIL MEETINGS

The Council will meet quarterly or more often as determined by Council members. Meetings should be conducted in a parliamentary fashion. All agenda items requiring action by the Council must be mailed to EMS Council members, along with all supporting relevant information to the issue, at least one week prior to the EMS Council meeting. In order for agenda items to be acted upon a quorum must be present and the item must pass with a majority vote of those present. The quorum is defined as one more than half of the members. Meetings may be cancelled due to lack of agenda items or a quorum.

Standing agenda items:

- ❖ QI
 - Access to EMS
 - EMD
 - EMR
 - BLS
 - ALS
 - Air Ambulance
 - Hospital E.R.'s
 - Disaster preparedness
 - Problem areas
- ❖ State EMS report
- ❖ Task Force updates

Agenda items for discussion may be added to the agenda at any time.

ADMINISTRATIVE SUPPORT

The Davis County Health Department will provide administrative support to the Council and any committees. Such support will include, as requested, the providing of program information, the preparation of agendas, taking minutes at Council meetings and managing correspondence on behalf of the Council.

COUNCIL OFFICER RESPONSIBILITIES

Chairman and Vice-Chairman: The Chairman will preside at all Council meetings but may at his discretion assign this responsibility to the Chairman-Elect. In the event the Chairman is absent from a Council meeting, the Chairman-Elect will preside.

Task Forces as needed. (Example: QI, Planning, EMS Manual update, Communication, Disaster Preparedness)

To ensure communication to all EMS providers, minutes from the EMS council meetings will be sent to all Davis County provider agencies for dissemination to their staff members.

4. COUNCIL MEMBERS

Chief Dave Olsen
Clinton City Fire Department

Chief Mark Becraft
North Davis Fire District

Chief Jeff Bassett
South Davis Metro Fire Agency

Chief Eric Froerer
Syracuse City Fire Department

Chief Breen Lowman
Sunset Fire Department

Capt. Arnold Butcher
Davis County Sheriff's Office

Chief Tom Graydon
South Weber Fire Department

Chief Guido Smith
Farmington City Fire Department

Chief Kevin Ward
Layton City Fire Department

Chief Brett Larkin
Kaysville City Fire Department

Sheriff Todd Richardson
Davis County Sheriff's Office

EMS Medical Directors

Dr. Dennis Wyman, Medical Director
Davis County Sheriff's Office

Dr. Blake Yerman, Medical Director
Kaysville City Fire Department

Dr. Bill Swiler, Medical Director
South Davis Metro Fire

Dr. Robert Grow, Medical Director
Syracuse City Fire Department

Dr. Shay Holley, Medical Director
North Davis Fire District

Dr. Mark Oraskovich, Medical Director
Layton City Fire Department

Dr. Matthew Feil, Medical Director
Clinton City Fire Department

Dr. Scott Fredricksen, Medical Director
Farmington City Fire Department

Dr. Kevin Gardner, Medical Director
Sunset City Fire Department

At-Large Non-Voting Attendees

Commissioner Jim Smith
Davis County Commission

Tami Goodin
State EMS Bureau

Lakeview Hospital Representative

Davis Hospital Representative

Brian Hatch, Director
Davis County Health Department

Scott Zigich, Risk/Safety Compliance Mgr
Davis School District

McKay-Dee Hospital Representative

5. SELECTION OF INITIAL HOSPITAL/PATIENT TRIAGE

Upon arrival at the scene, paramedics and EMT's should make rapid assessment of the patient to determine if he or she falls into one of the following categories.

PRIORITY 1: Patient's condition is critical and unstable and will probably require rapid transport. These patients will include:

- a. severe head-spinal cord injuries,
- b. major trauma or hemorrhage (shock),
- c. acute respiratory failure,
- d. cardiac arrest.
- e. stroke
- f. acute coronary syndrome
- g. any patient being of critical nature

PRIORITY 2: Patient's condition is of a less critical nature, is easily stabilized, and transport to the nearest or specialty facility is not a factor.

PRIORITY 3: Informational calls (death protocol cases, radio checks, etc.).

Protocol for Priority 1 Patients:

1. Initiate priority treatment, and, as outlined in Protocol No. 5A-3, "Immediate Transport, MAST (optional), and IV Insertion," begin transport in the case of trauma.
2. Call the closest base station hospital at first opportunity. In trauma, the process of calling the hospital shall in no way add time to the treatment/transport time, or supersede any initial treatment of the patient. This may mean calling the hospital after the transport has begun in some cases.
3. The ED physician should then:
 - a. Give orders to assist in further patient stabilization.
 - b. Determine if his or her facility can adequately care for the patient as per this protocol.
 - c. Determine if transport to another facility would be in order, as per this protocol.
 - d. If the ED physician decides to transport the patient to another facility, (s)he, or an appointed Nurse (RN), is obliged to call the receiving facility and inform the ED physician of the patient.
4. Transfer the patient to the hospital that the ED physician directs. Paramedics or EMT's will contact the receiving hospital by radio, if possible.

Protocol for Priority 2 Patients

Call the agency's base station hospital for telemetry instructions regarding triage.

Special Situations

1. GENERAL FIELD TRAUMA TRIAGE

Purpose: To move patients to the appropriate trauma facility in the most expeditious manner as safely as possible.

- a. Paramedics and EMT's who have responded to a Priority 1 trauma situation will establish radio contact with the nearest medical control facility and report the blood pressure, capillary refill status, respiratory pattern and rate, status of the abdomen and thorax, and the motor and speech response for the establishment of a Revised Trauma score.
- b. All patients with a Revised Trauma score of ten or less will be transported directly to an appropriate trauma center in the most expeditious manner possible (ground or helicopter) unless it is determined by the field and emergency department personnel that it would be in the best interest of the patient to pass through the nearest medical facility for rapid basic life saving procedures prior to secondary transport to the level I trauma center via ground or helicopter.
- c. When there are multiple victims with serious injuries, the field triage officer will use multiple hospitals, triaging patients to appropriate level I, II, and III trauma facilities in the best interest of the patients and to avoid overloading any single facility.
- d. All patients with Revised Trauma scores of eleven or greater will be handled according to the present district protocols.
- e. Obviously dead patients will be handled according to the present district protocols.
- f. A victim with a Revised Trauma score of ten or less is considered to be so critically injured as to have given implied consent to be treated as per this protocol. Therefore, family or patient choice requests as to treatment facility may be disregarded by scene or emergency department personnel as not being in the best interest of the victim.

2. NEURO TRAUMA

Patients with isolated head injuries that have a Revised Trauma score of ten or less or Glasgow coma score of 8 or less should be transported to the trauma center.

3. HYPOTHERMIA

Patients in cardiac arrest from hypothermia should be transported to the trauma center.

6. TRIAGE OF TRAUMA PATIENTS

Please refer to the State of Utah Trauma Triage protocol. (ATTACHMENT 1)

7. SCENE RELEASE OF PATIENTS

The following procedure is established to prevent unnecessary harm or mortality to patients who, by their own or the emergency team's decision, are not transported. It is also initiated to obtain an informed release when services are refused. Following are listed the circumstances in which the patient may be left at the scene.

1. The patient is a legal adult and refuses transport. The patient must also be of sound mind and capable of making appropriate decisions.
 - a. Retarded or mentally deficient patients are not included in the above provision.
 - b. Patients who are intoxicated and conscious are considered incapable of making their own decisions.
 - c. Seizure victims with a clear history of seizures may, if in an improving postictal state and in control of their airway, be left with responsible relatives, if requested, provided that all parties agree that it would be in the best interest of the patient. A district approved release form should be signed. All febrile seizures and first seizure victims should be encouraged to accept treatment and transport.
 - d. The patient or responsible person must understand the risks of non-transport and alternate care options.
2. The patient is a child or individual not of legal age having mother, father, or legal guardian at the scene who refuses care or transportation of the minor.
 - a. Brothers, sisters, or grandparents, unless appointed legal guardians, cannot deny treatment for the minor.
3. If, in the judgment of the emergency department, the paramedics, EMT's, and the patient, there is no need for emergency ambulance transportation, the information should be properly recorded on the agency's medical care form filled out. Upon completion, the patient may be released. In this case, the "Release from Medical Responsibility" form is not appropriate, since the patient is not refusing care. The patient may then, at his own discretion via private vehicle, seek medical care of his own choosing.
4. If, in the judgment of the emergency department physician, the victim does not require emergency ambulance transportation and treatment information is recorded on the agency's "Refusal of Medical Care" form, the patient may refuse transportation by the ambulance personnel, after being informed of the risks and possible adverse outcomes of his decision. In this case, the "Release from Medical Responsibility" form should be signed. The patient may then, at his own discretion via private vehicle, seek medical care of his own choosing.

5. Only one release form is required from any single patient. When multiple agencies respond on a patient who subsequently refuses care, one form will be signed, and the other agency personnel will record that it was signed on their individual refusal of medical care form.
6. The release form requires a signature from all patients eighteen years, or older, indicating patients wish to refuse care. In these cases of a minor, a legal parent or guardian must sign the release before the patient is released.
7. The following patients will always be transported:
 - a. unconscious adults,
 - b. unconscious minors or those with critical injuries or conditions, if no parent/guardian can be contacted.
 - c. unconscious adult or critically injured patients incapable of making an informed decision.

8. RESUSCITATE / DO NOT RESUSCITATE PROTOCOL

1. EMS personnel shall comply with DNR instructions providing the following criteria are met:
 - a. Do Not Resuscitate (DNR) identification and/or documentation are present with the patient. This may be in the form of a document and/or bracelet worn by the patient.
 - b. The document and/or bracelet is current and belongs to the patient in question.
 - c. No alternative treatment is being requested by the patient, family members, or persons who hold legal power of attorney of the patient.

2. Any variances to the above shall require the following actions:
 - a. Identify variable(s): Examples
 - Family members request resuscitation regardless of presence of DNR.
 - Conflict between family members on resuscitation efforts to be performed.
 - Uncertain of obvious death findings.
 - EMS providers are not sure what to do.
 - b. Initiate immediate resuscitation efforts **as if indicated**.
 - c. Contact on-line medical control ASAP and advise of situation encountered and request medical direction.
 - d. Continue or discontinue resuscitation efforts as directed by on-line medical control.

3. EMS providers shall make a reasonable effort to authenticate the documentation and the identification of the patient. This process should not delay immediate resuscitation efforts if indicated.

An attempt should be made to communicate with family members (if present) the need for resuscitation efforts being performed or being discontinued.

4. EMS providers shall recognize and be familiar with the following:
 - a. Advance directive documentation / currently state law. See Attached
 - b. State approved "Life with Dignity" documentation. See Attached
 - c. Utah EMS DNR Rule R426-100. See Attached

9. DEATH PROTOCOL

The purpose of this protocol is designed to establish guidelines to aid ALS providers in the determination of death of a patient in the pre-hospital setting. In those occasions when BLS or ILS provider arrived on scene prior to ALS, they are to immediately contact ALS en-route or the nearest medical control hospital for directives.

1. Patients encountered by ALS personnel in Davis County that appear to have expired will not be resuscitated or transported to a hospital if any of the following obvious signs of death are present:
 - a. Body decomposition
 - b. Decapitation
 - c. Transection of thorax
 - d. Incineration
 - e. Massive blunt, open or penetrating trauma to the head, neck or chest with obvious organ destruction.
 - f. Any injury to the body that is obviously incompatible with life.
 - g. A valid Do-Not-Resuscitate (DNR) order is on scene.

2. OR, if **ALL** four (4) presumptive signs of death are present **AND** at least one (1) conclusive sign of death are identified>

The four (4) presumptive signs of death that MUST be present are:

1. Unconscious/Unresponsive
2. Apnea
3. Pulselessness
4. Fixed and dilated pupils
5. Asystole in 2 Leads

The Conclusive signs of death include:

1. Dependent lividity of any degree
2. Rigor mortis
3. Persistent asystole in 2 leads after ALS resuscitation

3. If there is any question regarding patient viability, to include potential hypothermia, resuscitation, resuscitation will be initiated.

4. Once it has been determined that the patient has expired and resuscitation will not be attempted, care should be taken in securing the scene. Request local law enforcement and secure the scene.

Treat all scenes as a potential crime scene. If the body is in an isolated area from public view, Do Not cover the body. If the body cannot be isolated from public view, only cover the body with a clean sheet from an EMS vehicle.

5. Do not leave the body unattended. It is the responsibility of the highest ranking emergency medical provider to maintain the security of the scene until the arrival of law enforcement or a representative of the state medical examiner's office, or the county or city attorney's office.

10. PSYCHIATRIC PATIENTS

The purpose of this suggested policy is to establish procedures that law enforcement officers, ambulance workers, mental health workers, and hospital personnel can follow in the initial investigation, transportation, and handling of mentally ill persons in Davis County. For the purposes of this protocol, the definition of a mentally ill person will be one who is dangerous to himself or others.

1. LAW ENFORCEMENT RESPONSE. When a law enforcement officer comes in contact with a mentally ill person in Davis County, he should consider the following.

a. Have any criminal laws been violated?

1) Adult

If the subject has violated a criminal law, and is also suspected of being mentally ill the officer should transport the person to Davis County Jail. While at the jail, the person will be evaluated by a Davis County Mental Health therapist.

The arresting officer should contact mental health as soon as possible to expedite the evaluation process at the jail. If possible, the arresting officer should cause the activation of the emergency mental health call by telephoning either 773-7060 or 298-3446 prior to arrival at the jail. If an adult offender is evaluated and recommended for involuntary admission to a mental health facility, the sheriff's office will provide transportation.

2) Juvenile

If the person is a juvenile, under age 18, and has committed a felony offense, they should be transported to a Juvenile Detention Center. If the juvenile has committed any other criminal offense and they are suspected of being mentally ill, the juvenile should be transported to either the police station, hospital, or mental health facility for an evaluation by mental health.

In the case of juvenile offenders who are evaluated and involuntarily admitted to a mental health facility, the agency having jurisdiction will provide transportation of the juvenile to the mental health facility. Juveniles who are violent and out-of-control will be transported in the same manner that is outlined in the remainder of this policy.

b. If no criminal laws have been violated, and probable cause exists that the person is mentally ill, the officer should contact Davis County Mental Health for an evaluation of the person for possible involuntary admission to a hospital or mental health facility (see UCA62a-12-232).

2. MENTAL HEALTH AND AMBULANCE RESPONSE TO MENTALLY ILL PERSONS

Davis County Mental Health, in cooperation with North Davis Medical Center and Lakeview Hospital, has established two sites to facilitate more expedient evaluations of mentally ill persons for possible involuntary admission to a hospital or mental health facility.

Davis County Mental Health will provide an expedient evaluation of persons when the law enforcement officer deems there is probable cause to believe the person is mentally ill and requires involuntary commitment at a hospital or mental health facility.

- a. All law enforcement agencies in Kaysville and north should transport their mentally ill persons for evaluation to Davis North Medical Center, telephone 773-7060.
- b. All law enforcement agencies in Farmington and south should transport their mentally ill persons for evaluation to Lakeview Hospital in Bountiful, telephone 298-3446.
- c. Call Out of Mental Health Workers. A law enforcement officer having probable cause to believe the person is mentally ill should request that a mental health worker respond to one of the evaluation sites mentioned above. This can be accomplished by telephone.
- d. Law Enforcement Officers Responsibilities. Law enforcement officers who come in contact with persons who are possibly mentally ill and, in the opinion of the officer require an evaluation by Davis County Mental Health, will stay with the person until the mental health worker releases the officer or the subject person is involuntarily admitted to a hospital or mental health facility. The law enforcement officer will fill out DMH Form 34-2, "Emergency Application for Involuntary Commitment Without Certification." The law enforcement officer will transport or follow the ambulance to the facility where an evaluation will be conducted by Davis County Mental Health Personnel. In the case of ambulance transport of mental subjects, the law enforcement officer will provide a copy of the DMH 34-2 form to the ambulance personnel for their records.
- e. Transportation of Mentally Ill Persons. Mentally ill persons can be transported in police vehicles at the discretion of the law enforcement officer who has jurisdiction.
 - 1) Ambulance response. Ambulance personnel may transport non-violent mental subjects at the request of family members, public safety organizations, hospitals, or mental health workers. The ambulance personnel will request jurisdictional police assistance if the person becomes violent or makes threats of violence. At all times, the individual being transported is expected to pay for services.
 - 2) Violent, out-of-control mentally ill persons. A police officer may request an ambulance to assist with transportation of a violent, out-of-control mental subject. It will be the responsibility of the requesting police agency to provide protection and assistance to the ambulance personnel and their equipment while the mental subject is being transported by the ambulance to the hospital or mental health facility.

- 3) Violent, out-of-control mentally ill persons who require restraints. If, in the opinion of the police officer who has determined that the patient is mentally ill, violent, and needs involuntary admission according to UCA 62a-12-232(2) and that this person is violent to the extent that he may be harmful to himself, police officers, or EMS personnel in attendance, it will be deemed appropriate to restrain the mentally ill, violent patient as follows.
 - i) Mechanical restraints. Mechanical restraints should be attempted as a first means to control a violent patient. These may include handcuffs, soft leather restraints, and other EMS splinting devices. If the patient is able to be adequately controlled with these mechanical restraints, no further restraints will be used.
 - ii) Chemical restraints. In instances where mentally ill, violent patients are unable to be adequately constrained using the above mechanical restraints, it may be appropriate to use chemical restraints. If, in the judgment of the police officer and EMS personnel, the patient may be of further harm to himself or exposes EMS personnel and police officers to risk, i.e. through blunt trauma by kicking or hitting, through biting, or through exposing EMS personnel and police officers to bodily fluids that could possibly cause disease transmission, it will be appropriate for the paramedics in Davis County to respond to the scene for the purpose of administering a sedative drug to chemically restrain the patient. Prior to administering, paramedics will follow their usual evaluation process in communication with their base hospital physician for authority to give the medication. Once chemical sedation has been given to the patient, the paramedics will be required to place and maintain an intravenous line and accompany the patient to the hospital.
- f. Law Enforcement Protection Requested at the Hospitals. It has been requested that the police officer who has jurisdiction over a mental subject that is being evaluated for involuntary admission to a hospital or mental health facility stand by and provide public safety duties until the mental health worker or the emergency room doctor releases the officer. Every effort will be made by mental health workers and hospital staff to expedite the admitting process so that the jurisdictional police officer may return to his respective service area and duties.
- g. Condition/Fitness/Health/Welfare Status Checks. Law enforcement officers will continue to provide condition/fitness/health/welfare status checks in appropriate jurisdictions, as needed, following a Davis County Mental Health status evaluation.
- h. Other Transportation Requests by Mental Health. Transportation of patients from Davis Mental Health facilities to Lakeview Hospital or visa versa, other than emergency situations, will be provided by the Davis County Sheriff's Office. Mentally ill subjects that have been involuntarily ordered into custody by a court

will be handled by the Davis County Sheriff's Office, including transportation of the mental subject. The sheriff's office may request the assistance of the police agency having jurisdiction where the court order will be served.

3. TRANSPORTATION AFTER EVALUATION

If, in the opinion of a mental health worker, the mentally ill person does not meet the standards for involuntary commitment to a mental health facility and the person needs to be transported back to his/her home, the following will occur.

- a. A family member or friend will be requested to transport the person back home.
- b. A taxi may be called in the north end of the county (P.M. Cab, 774-9887).
- c. The mental health worker may transport the person if the person does not fit the standards for involuntary commitment.
- d. The originating law enforcement agency may be requested to provide the transportation of the person back to their home.

11. MEDICAL INCIDENT RESPONSE PLAN

Please refer to the Davis County Sherriff's office Medical Incident Response plan.
(ATTACHMENT 2)

Plan will follow the National Incident Management System (NIMS) command structure. The plan is divided into three areas or protocols: 1) On-Scene, 2) Casualty Collection Points (CCP), and 3) Mass Casualty Trailers (MCI Trailers).

GENERAL GUIDELINES

- A. Remember: Courtesy to the patient, the patient's family and other emergency care personnel is of utmost importance.
- B. A BEMS approved EMS incident report form must be completed on all patients and a copy left with the patient at the hospital. Specific pre-hospital care information must also be recorded on all patient contacts as part of the System data collection program.
- C. The specific conditions listed for treatment in this document, although frequently stated as medical diagnoses, are operational diagnoses to guide the paramedic in initiating appropriate treatment. This document is to be used as consultative material in striving for optimal patient care. It is recognized that specific procedures or treatments may be modified depending on the circumstances of a particular case. Also, a medical control physician, when consulted, will either concur or further evaluate the paramedic's clinical findings and suggest an alternate diagnosis and treatment.
- D. In all circumstances, physicians have latitude in the care they give and may deviate from these Medical Protocols if it is felt such deviation is in the best interest of the patient. Nothing in these protocols shall be interpreted as to limit the range of treatment modalities available to medical control physicians to utilize, other than the modalities and the medications used must be consistent with the paramedic's training.
- E. All patient interaction and communications between responders, agencies, and hospitals is considered protected health information and shall be guarded as outlined in the Health Insurance Portability and Accountability Act of 1996 (HIPPA).

PART I: CARDIAC PATIENT CARE GUIDELINES

These guidelines were created to provide direction for each level of certified provider in caring for cardiac patients. The Online Medical Consulting/Consultation (OLMC) physician will always be the final word on treatment in the field. If there are ever any discrepancies between the guidelines and the OLMC physician these should be documented and brought to the attention of the physician at the receiving hospital or the agency Medical Director for review.

General Approach to Medical Patient Care Guidelines

- Assess your patient prior to initiating a guideline.
- Pediatric reference tape-based dosing is preferred over calculated doses for infants and children.
- More than one guideline may apply.
- If conflicts arise between treatment guidelines contact OLMC for clarification.
- Providers may provide treatment up to the level of their certification only.
- Air Medical Transport Service personnel function under their own clinical guidelines.
- Contact your receiving hospitals and OLMC as soon as clinically possible for each patient.
- OLMC physician may change your treatment plan.
- Any variations to a guideline by the OLMC or physician should be clarified to ensure that the provider has properly characterized the situation.
- The OLMC physician has the final word on treatment once contact is made.
- The OLMC physician must approve usage of dosages in excess of the guidelines.

Key to Symbols used in Guidelines

 This symbol and yellow highlighted instructions precedes any treatment that requires OLMC prior to initiating the treatment unless otherwise specified.

BRADYCARDIA (Symptomatic)

ALL PROVIDERS

- ❑ Focused history and physical exam
 - Assess for signs of poor perfusion, hypotension, altered mental status, signs of shock, chest pain, or acute heart failure.
 - Obtain a blood glucose level.
- ❑ Continuous ECG, ETCO₂, and Pulse Oximetry monitoring when available
- ❑ **Treatment Plan**
 - Only treat bradycardia if the patient is symptomatic (hypotension, altered mental status, chest pain, etc.)
 - If patient is less than 1 year old, follow the *Newborn Resuscitation Guideline*.
 - Attempt to identify and treat the underlying causes of bradycardia:
 - **H's** - Hypovolemia, Hypoxia, Hydrogen ion (Acidosis), Hyper/Hypokalemia, Hypothermia, Hypoglycemia
 - **T's** – Toxins (Overdose), Tamponade (Cardiac), Tension Pneumothorax, Thrombosis (ACS or Pulmonary), Trauma
 - Maintain airway; assist with breathing as necessary, provide oxygen
 - Pediatric patient (<8 year old)
 - Aggressive oxygenation with high flow oxygen and assisted ventilations with a BVM as indicated.
 - Begin chest compressions if persistent heart rate <60/min and signs of poor perfusion following aggressive oxygenation and ventilation
 - Ensure patient warmth.
- ❑ **Key Considerations**
 - In pregnant patients of >20 weeks gestation: Place wedge-shaped cushion or multiple pillows under patient's right hip in order to transport in left lateral decubitus position.
 - Current nationally established certification programs (ACLS, PALS, NRP etc.) may be used in lieu of these resuscitation guidelines. Any such variances in care should be documented in the patient care record.
 - Pediatric lowest acceptable systolic blood pressures are birth to 1 month = 60mmHg, 1 month to 1 year = 70mmHg, 1 year to 10 years is = 70mmHg + (age x 2) and over 10 years = 90mmHg.

ADULT

PEDIATRIC (<15 years of Age)

NOTE: Pediatric weight based dosing should not exceed Adult dosing.

EMT

AEMT

- ❑ Supportive care of airway, vascular access and fluid therapy *per IV-IO Access and Fluid Therapy guidelines*
- ❑ **Atropine 0.5 mg IV/IO**
Repeat as needed every 3 minutes until pulse or BP improved
Maximum total dose of 3mg

EMT

AEMT

- ❑ Supportive care of airway, vascular access and fluid therapy *per IV-IO Access and Fluid Therapy guidelines*
- ❑ **Atropine 0.02 mg/kg IV/IO**
 - Minimum single dose of 0.1 mg
 - Maximum single dose of 0.5mg
 - Repeat Atropine every 3-5 minutes until pulse or BP improved or until Max 1mg for child and 2mg for adolescents.

SYMPTOMATIC BRADYCARDIA

- ❑ **Transcutaneous pacing (TCP)** at an initial rate of 80 beats per minute if the patient does not respond to medications

Consider Sedation for TCP:

- ❑ Choose **ONE** benzodiazepine for treatment and maximize dosing. Contact OLMC before changing to a different medication.
- ❑ **Midazolam (Versed)**
 - Dosage is cut in half if the patient has received narcotics or alcohol
 - **IV/IO - 2-4mg** every 5 minutes to the desired effect or max dose of 10mg
 - **Intranasal or oral- 0.2 mg/kg** to a maximum of 10mg as a one-time dose
- ❑ **Diazepam (Valium)** – May be used as an alternative. Follow the same safety parameters as with midazolam
 - **IV/IO – 5-10mg** every 5 min to the desired effect or max dose of 30mg
 - **Rectally** – Same dosage
- ❑ **Lorazepam (Ativan)** – May be used as an alternative. Follow the same safety parameters as with midazolam
 - **IV/IO – 1-2mg** every 5 min. to the desired effect or max dose of 4mg

① **Contact OLMC for dosages above those provided or use of medication NOT fitting the guideline parameters.**

① **Epinephrine (1:1000) 2–10 mcg/min IV/IO** infusion for hypoperfusion. Titrate to maintain a SBP >100 mmHg.
And/or

① **Dopamine 2-20 mcg/kg/min IV/IO** infusion for hypoperfusion. Titrate to maintain a SBP >100 mmHg. *(Goal is to maintain a mean arterial pressure (MAP) >70 mmHg)*

IF BRADYCARDIA IS SEVERE with SIGNS OF POOR PERFUSION

- ❑ **Transcutaneous pacing (TCP)** at an initial rate of 100 beats per minute if the patient does not respond to medications

Consider Sedation for TCP:

- ❑ Choose **ONE** benzodiazepine for treatment and maximize dosing. Contact OLMC before changing to a different medication.
- ❑ **Midazolam (Versed)**
 - Dosage is cut in half if the patient has received narcotics or alcohol
 - **IV/IO - 0.1 mg/kg, max dose of 4mg**
 - Do NOT exceed adult dosing
 - **Intranasal or oral- 0.2 mg/kg, max 10mg as a one-time dose**
- ❑ **Diazepam (Valium)** – May be used as an alternative. Follow the same safety parameters as with midazolam
 - **IV/IO - 0.1 mg/kg, max dose of 10mg**
 - Do not exceed adult dosing
 - **Rectally – 0.3 mg/kg PR**
- ❑ **Lorazepam (Ativan)** – May be used as an alternative. Follow the same safety parameters as with midazolam
 - **IV/IO – 0.1mg/kg, max dose of 4mg.**
 - Do NOT exceed adult dosing.

① **Contact OLMC for dosages above those provided or use of medication NOT fitting the guideline parameters.**

① **Epinephrine (1:1000) 0.1–2 mcg/kg/min IV/IO** infusion for hypoperfusion. Titrate to maintain a SBP >70 + (age in years x 2) mmHg.
And/or

① **Dopamine 2-20 mcg/kg/min IV/IO** infusion for hypoperfusion. Titrate to maintain a SBP >70 + (age in years x 2) mmHg

CARDIAC CHEST PAIN (ACUTE CORONARY SYNDROME)

ALL PROVIDERS

- Focused history and physical exam
 - Assess for signs or symptoms suggestive of ischemia or infarction.
 - Ask patient to describe the pain utilizing the O-P-Q-R-S-T mnemonic.
 - Onset of the event, Provocation or Palliation, Quality of the pain, Region and Radiation, Severity, Time (history)
 - Determine whether the patient (male or female) has taken erectile dysfunction medications such as Viagra, Levitra or Cialis within the last 24 hours.
- Continuous ECG, ETCO₂, and Pulse Oximetry monitoring when available.
- Treatment Plan** - All chest pain patients should receive oxygen therapy. Maintain O₂ saturations 90 – 94%.
- Key Considerations**
 - Treatment protocols from current nationally established cardiac care certification programs (ACLS, PALS, etc.) may be used in lieu of these resuscitation guidelines.
 - In pregnant patients of >20 weeks gestation: Place wedge-shaped cushion or multiple pillows under patient's right hip in order to transport in left lateral decubitus position
 - Assess blood glucose level.

ADULT

PEDIATRIC (<15 years of Age)

NOTE: Pediatric weight based dosing should not exceed Adult dosing.

EMT

EMT

- 324 mg aspirin**, preferably chewed, if patient is >18 years old and no reported allergies to aspirin
 - Administer even if patient takes a daily aspirin dose
- Assist patient with prescribed nitroglycerin: 1 pill SL every 5 minutes, up to 3 doses, as long as symptoms persist and SBP >100 mmHg
 - Do not administer nitroglycerin if patient (male or female) has taken erectile dysfunction medications within 24 hours

AEMT

AEMT

- Advanced airway, vascular access and fluid therapy per **IV-IO Access and Fluid Therapy Guidelines**
 - IV access prior to nitrates is preferred, if possible
 - Obtain 12 Lead EKG (If available)
 - All EKG's suggestive of acute MI should be immediately transmitted to a STEMI/PCI Receiving Center, if available, or to nearest ED
 - If the patient has a STEMI, then transport to the closest available STEMI/PCI receiving center, if available.
 - If STEMI/PCI receiving center not available, transport to closest available emergency department
 - Confirm destination choice with online medical control, if needed
- Chest pain with cardiac origin is a rare in children, consider other causes;
 - Asthma
 - Foreign body
 - Infection
 - Trauma

- ❑ **Normal saline 250–1000 mL** IV bolus if patient is hypotensive, use caution with a history or evidence of congestive heart failure
- ❑ **Nitroglycerin 0.4 mg (every 5 minutes) (max of 3 doses)** SL as long as symptoms persist and SBP >100 mmHg
 - **Administer with caution in patients with known inferior ST-Elevation MI**
- ❑ **If hypotension occurs following nitroglycerin administration, administer 500 mL bolus of NS and withhold further nitroglycerine**
- ❑ Pain medications per *Pain and Anxiety Management Guideline*

PARAMEDIC

No Additional Paramedic Level Interventions

PARAMEDIC

No Additional Paramedic Level Interventions

CONGESTIVE HEART FAILURE/PULMONARY EDEMA

ALL PROVIDERS

- Focused history and physical exam
 - Assess blood glucose level.
- Continuous ECG, ETCO₂, and Pulse Oximetry monitoring when available
- Treatment Plan** - Maintain airway; assist with breathing as necessary, provide oxygen
- Key Considerations**
 - Do not use nitroglycerin if the patient has taken erectile dysfunction medications in the last 24 hours.
 - In pregnant patients of >20 weeks gestation: Place wedge-shaped cushion or multiple pillows under patient's right hip in order to transport in left lateral decubitus position
 - Treatment protocols from current nationally established cardiac care certification programs (ACLS, PALS, etc.) may be used in lieu of these resuscitation guidelines.
 - Pediatric lowest acceptable systolic blood pressures are birth to 1 month = 60mmHg, 1 month to 1 year = 70mmHg, 1 year to 10 years is = 70mmHg + (age x 2) and over 10 years = 90mmHg.

ADULT

PEDIATRIC (<15 years of Age)

NOTE: Pediatric weight based dosing should not exceed Adult dosing.

EMT

- Assist patient with prescribed nitroglycerin SL every 5 minutes, up to 3 doses, as long as symptoms persist and SBP >100 mmHg
 - Do not administer nitroglycerin if the patient (male or female) has taken erectile dysfunction medications within the last 24 hours

EMT

- Contact On-Line Medical Consultation

AEMT

- Advanced airway, vascular access and fluid per *IV-IO Access and Fluid Therapy guidelines*
 - IV access prior to nitrates is preferred if possible
 - Limit fluid bolus to 250–500 mL NS
- Nitroglycerin 0.4 mg (every 5 minutes) (max of 3 doses)** SL if symptoms persist and SBP >100 mmHg. Maximize Nitroglycerin before considering Morphine
- CPAP** –
 - Explain the procedure to the patient
 - Apply the mask and begin the CPAP
 - **CPAP** - Provide CPAP of 5 cm H₂O to begin. May increase to 10 mm H₂O if needed. **Further increase only with OLMC consultation.**

AEMT

- Advanced airway, vascular access and fluid per *IV-IO Access and Fluid Therapy guidelines*
- Contact On-Line Medical Consultation
- CPAP** – **ONLY** use when the patient is on the machine at home. Maintain home settings and bring machine with the patient. If unable to adequately ventilate return to BVM or advance to intubation

- Contact OLMC to discuss further settings and treatment above the initial setup**

PARAMEDIC

- ① **Furosemide** – Give 40 mg IV to the patient if they do not take it by prescription and if SBP >100 mmHg
OR
 - Give IV two (2) times patient's prescribed oral dose up to maximum of 120 mg if SBP >100 mmHg
- ① **Epinephrine (1:1000) 2–10 mcg/min** IV/IO infusion for hypoperfusion. Titrate to maintain a SBP >100 mmHg.
And/or
- ① **Dopamine 2-20 mcg/kg/min** IV/IO infusion for hypoperfusion. Titrate to maintain a SBP >100 mmHg. (*Goal is to maintain a mean arterial pressure (MAP) >70 mmHg*)
- ① Contact OLMC to discuss further settings and treatment above the initial setup

PARAMEDIC

- ① Contact On-Line Medical Consultation
- ① **Epinephrine (1:1000) 0.1–2 mcg/kg/min** IV/IO infusion for hypoperfusion. Titrate to maintain a SBP >70 + (age in years x 2) mmHg.
And/or
- ① **Dopamine 2-20 mcg/kg/min** IV/IO infusion for hypoperfusion. Titrate to maintain a SBP >70 + (age in years x 2) mmHg

EKG INSTRUCTIONS

ALL PROVIDERS

- ❑ Focused history and physical exam
 - Assess for signs or symptoms suggestive of cardiac ischemia or infarction.
 - Determine the need for a 12 Lead EKG.
- ❑ Continuous ECG, ETCO₂, and Pulse Oximetry monitoring when available

ADULT

PEDIATRIC (<15 years of Age)

NOTE: Pediatric weight based dosing should not exceed Adult dosing.

EMT
AEMT

EMT
AEMT

- ❑ 12 Lead EKG (If available) on the following patients:
 - Pain in chest or upper abdomen
 - Cardiac dysrhythmia
 - Syncope or near syncope
 - Acute general weakness
 - Acute dyspnea
 - Post arrest if spontaneous circulation returns
 - Concern for ACS presentation
- ❑ Acquire and transmit EKG
- ❑ All EKG's suggestive of acute MI should be immediately transmitted to a STEMI/PCI Receiving Center, if available, or to nearest ED
- ❑ If the patient has a STEMI, then transport to the closest available STEMI/PCI receiving center, if available.
- ❑ If STEMI/PCI receiving center not available, transport to closest available emergency department

- ❑ 12 Lead EKG (If available) on the following patients:
 - Pain in chest or upper abdomen
 - Cardiac dysrhythmia
 - Syncope or near syncope
 - Acute general weakness
 - Acute dyspnea
 - Post arrest if spontaneous circulation returns
 - Concern for ACS presentation

📞 Confirm with OLMC if there are any questions

PARAMEDIC

No Additional Paramedic Level Interventions

PARAMEDIC

No Additional Paramedic Level Interventions

LEFT VENTRICULAR ASSIST DEVICE (LVAD)

ALL PROVIDERS

- Focused history and physical exam
 - Assess for evidence that resuscitation should not be attempted per the *Death Determination Guideline*.
 - Evaluate for Medical Alert Bracelet with instructions. Follow instructions as able.
 - The LVAD consists of an implanted, continuous flow pump attached to the left ventricle, an external control device, and power supply secured by a harness
 - Every patient should have a backup equipment bag for his or her LVAD.
 - Patients and families are usually well educated on the power supply of their LVAD and the use of the emergency hand pump. Utilize them and follow their directions on scene.
 - Rhythm analysis, blood pressure, and oxygen saturation assessment.
 - Patients with non-pulsatile assist devices will not have a palpable pulse. Assess for signs of adequate perfusion using skin signs and blood pressure.
- Continuous ECG, ETCO₂, and pulse oximetry monitoring when available.
- Treatment Plan**
 - Check to see if the patient is responsive.
 - Check if the LVAD is functioning by listening for a HUM.
 - Check the patient's rhythm.
 - Check for alarm lights and sounds – Continuous tone is URGENT.
 - Check cable connections.
 - Check power source.
 - Change controller if needed.
 - NO chest compressions unless you are unable to restart the pump.
 - Follow ACLS guidelines as needed.
- Key Considerations**
 - Determine Type of Device – Heart Mate II, Jarvik 2000, or Heartware
 - Transport to the specialty center that implanted the device is preferable, if stable and transport times are reasonable.
 - Patients or their families should have a phone number to their LVAD coordinator. This person should be used as online medical consultation (OLMC). If the number is not available, contact the LVAD Coordinator at the University Medical Center (801-581-2121) for assistance.
 - Patients with implanted LVADs have a low intrinsic cardiac function/reserve that is, without mechanical assistance, incompatible with long-term survival.

ADULT

EMT

- BLS airway support as needed
- EVEN WHEN ACLS RESUSCITATION IS UNDERTAKEN, DO NOT PERFORM CPR IN THESE PATIENTS UNLESS A HAND PUMP FOR THE DEVICE DOES NOT EXIST. RUPTURE OF THE VENTRICULAR WALL MAY OCCUR.** If the device has a hand pump, this may be undertaken at a rate of 60-90 beats per minute

AEMT

- Supportive care of airway, vascular access and fluid therapy per *IV/IO Access and Fluid Therapy Guidelines*
LVADs are preload dependent and a fluid bolus may improve perfusion

PARAMEDIC

- ACLS medications as indicated

NEWBORN RESUSCITATION

ALL PROVIDERS

- ❑ Focused history and physical exam
 - Glucose assessment via heel stick - Oral glucose is **not** indicated in the newborn
- ❑ Continuous ECG, ETCO₂, and pulse oximetry monitoring when available
- ❑ **Treatment Plan**
 - If the newborn is apneic, slow to respond, has slow or gasping respirations, or persistent central cyanosis
 - Suction (bulb syringe) mouth, then nose.
 - Warm and stimulate
 - Evaluate respirations, heart rate, and activity
 - If apneic, cyanotic, lethargic, HR<100
 - Perform manual airway maneuvers and provide BVM at rate of 30-40bpm with 100% oxygen
 - Assist ventilations with supplemental oxygen for at least 30 seconds
 - If no improvement or HR is <60 bpm, begin chest compressions
 - Compression/ventilation ratio of 3:1 and a rate of 120 events per minute
- ❑ **Key Considerations**
 - Treatment protocols from current national neonatal resuscitation certification programs (e.g. NALS, NRP) may be used in lieu of these guidelines

EMT AEMT

- ❑ Advanced airway placement may be indicated when:
 - BVM has been ineffective
 - Chest compressions are performed
- ❑ IV or IO NS at a keep open (approx. 10ml/hr.) rate to avoid volume overload
 - Only when required for fluid resuscitation or parenteral medication
 - IO access is only indicated when life-threatening conditions are present
- ❑ **Epinephrine**
 - **0.01-0.03 mg/kg = 0.1-0.3 ml/kg (1:10,000)** IV or IO
 - Repeat every 3-5 minutes until spontaneous heart rate remains > 60 bpm
- ❑ **Naloxone (Narcan) 0.1mg/kg** repeated every 2-3 min as needed for babies of suspected narcotic addicted mothers

EVIDENCE OF HYPOPERFUSION OR HYPOVOLEMIA

- ❑ NS (IV or IO) @ 10 mL/kg syringe bolus over 5-10 min
 - ① Additional boluses require physician approval

PARAMEDIC

- ❑ Endotracheal intubation may be indicated when:
 - BVM has been ineffective
 - Meconium aspiration with depressed respirations, decreased muscle tone, or heart rate <100 bpm
 - Chest compressions are performed
 - Insert a gastric tube in all intubated patients
- ❑ **Dextrose 10%** per *Glucose Emergencies - Hypoglycemia/Hyperglycemia Guidelines*

OPTIONAL ORDERS BY MEDICAL CONSULTATION ONLY

- ① **Sodium bicarbonate 1-2 mEq/kg** IV or IO

**POST CARDIAC ARREST MANAGEMENT / THERAPEUTIC HYPOTHERMIA
RETURN OF SPONTANEOUS CIRCULATION (ROSC)**

ALL PROVIDERS

- ❑ Focused history and physical exam
 - Blood glucose assessment
- ❑ Continuous ECG, ETCO₂, and pulse oximetry monitoring when available
- ❑ **Treatment Plan**
 - Preferential transport to a STEMI/PCI receiving center, if available.
 - Consider initiation of **Therapeutic Hypothermia**

Inclusion Criteria:

 - Cardiac arrest with ROSC
 - >14 years of age
 - GCS <9 (comatose)
 - Supraglottic Airway/Endotracheal Intubation with confirmed placement of airway

Contraindications:

 - DNR order
 - Coma unrelated to cardiac arrest (e.g. Intoxication, sepsis, trauma, CVA, status epilepticus)
 - Uncontrolled bleeding or known coagulopathy
 - Pregnancy
 - Recent major surgery
 - Patient is awake and alert
 - Unable to establish an advanced airway

ADULT

PEDIATRIC (<15 years of Age)

NOTE: Pediatric weight based dosing should not exceed Adult dosing.

**EMT
AEMT**

- ❑ Advanced airway, vascular access and fluid therapy per *IV-IO Access and Fluid Therapy Guidelines*
- ❑ **Therapeutic Cooling Procedure** for eligible patients:
 - Establish bilateral large bore IV/IO access
 - If available, monitor and insure ETCO₂ at >20mmHg. The target is 35-40mmHg. Do not hyperventilate
 - Obtain a 12-lead ECG, if able, and transmit to OLMC
 - Rapidly infuse cold (4 degree Celsius) NS at 30ml/kg bolus not to exceed 2 liters
 - Narcotics may be required for control of shivering. Follow the *Pain and Anxiety Management Guideline*.
 - Remove outer clothing while maintaining modesty
 - Apply ice packs to the patient's groin and axilla
 - Closely monitor the patient, keeping the temperature as close to 36C° as possible. (96.8 F°)
 - Discontinue cooling if patient awakens, develops an unstable arrhythmia, sustained SBP<80 or severe bleeding

**EMT
AEMT**

- ❑ Advanced airway, vascular access and fluid therapy per *IV-IO Access and Fluid Therapy guidelines*
- ❑ **Monitor closely for hypotensive shock.** Consult with OLMC for direction if blood pressure is less than pediatric lowest acceptable systolic blood pressures
 - Birth to 1 month = 60mmHg, 1 month to 1 year = 70mmHg, 1 year to 10 years is = 70mmHg + (age x 2) and over 10 years = 90mmHg.
- ① **Discuss Therapeutic Cooling with OLMC, it is often contraindicated in patients less than 15 years old**

① Without previous antiarrhythmic therapy during arrest consider

- Lidocaine 0.5-1.5 mg/kg IV push, (if not given Lidocaine during the arrest), followed by continuous infusion per Chart in Appendix of 2-4 mg/min

PARAMEDIC

- Vecuronium (optional) – Patient MUST be intubated to use.
 - 0.1mg/kg to a max of 10mg IV.
 - This should be reserved for individuals with shivering, may be used in lieu of narcotics
- With previous lidocaine or amiodarone therapy during cardiac arrest resuscitation consider:
 - Lidocaine, begin continuous infusion 2-4 mg/min
 - Amiodarone, begin infusion at 1mg/min

① Maintain SBP >80 mmHg, utilizing pressors, if necessary

① Epinephrine (1:1000) 2–10 mcg/min IV/IO infusion for hypoperfusion. Titrate to maintain a SBP >100 mmHg.
And/or

① Dopamine 2-20 mcg/kg/min IV/IO infusion for hypoperfusion. Titrate to maintain a SBP >100 mmHg. (Goal is to maintain a mean arterial pressure (MAP) >70 mmHg)

PARAMEDIC

PULSELESS ARREST – NON-SHOCKABLE RHYTHM

ALL PROVIDERS

- ❑ Focused history and physical exam
 - Assess for evidence that resuscitation should not be attempted per the *Death Determination Guideline*.
 - Assess for presence or absence of a pulse.
 - Determine rhythm – asystole, pulseless electrical activity, etc.
 - Assess blood glucose level.
- ❑ Continuous ECG, ET/CO₂, and pulse oximetry monitoring when available
- ❑ **Treatment Plan**
 - Begin CPR
 - Consider Underlying Causes and Treat
 - **H's** - Hypovolemia, Hypoxia, Hydrogen ion (Acidosis), Hyper-/hypokalemia, Hypothermia, Hypoglycemia
 - **T's** – Toxins (Overdose), Tamponade (Cardiac), Tension Pneumothorax, Thrombosis (ACS or Pulmonary), Trauma
- ❑ **Key Considerations**
 - Pregnancy >20 weeks gestation - Place wedge-shaped cushion or multiple pillows under patient's right hip (L lateral decubitus position)
 - Treatment protocols from current nationally established cardiac care certification programs (e.g. ACLS, PALS) may be used in lieu of these resuscitation guidelines.
 - Pediatric lowest acceptable systolic blood pressures are birth to 1 month = 60mmHg, 1 month to 1 year = 70mmHg, 1 year to 10 years is = 70mmHg + (age x 2) and over 10 years = 90mmHg.

ADULT

PEDIATRIC (<15 years of Age)

NOTE: Pediatric weight based dosing should not exceed Adult dosing.

EMT

- ❑ Begin CPR and apply AED

AEMT

- ❑ Advanced airway, vascular access and fluid therapy per the *IV/IO Access and Fluid Therapy Guidelines*
- ❑ **Epinephrine**
 - **1 mg (1:10,000) IV/IO push**
 - Consider 3-5 mg if arrest is from beta blocker overdose or anaphylaxis
 - Repeat every 3-5 minutes as long as patient remains pulseless
- ❑ Begin IV NS Bolus

📞 **Contact OLMC before terminating efforts in the field**

PARAMEDIC

📞 **Establish OLMC for further orders or therapies**

EMT

- ❑ Begin CPR and apply AED

AEMT

- ❑ Advanced airway, vascular access and fluid therapy per the *IV/IO Access and Fluid Therapy Guidelines*
- ❑ **Epinephrine**
 - **0.01 mg/kg = 0.1 ml/kg (1:10,000) IV/IO push**
 - Repeat every 3-5 minutes as long as patient remains pulseless
 - May repeat initial dose
- ❑ Begin 20ml/kg bolus of NS, reassess and repeat if needed to a max of 60cc/kg

📞 **Contact OLMC before terminating efforts in the field**

PARAMEDIC

📞 **Establish OLMC for further orders or therapies**

PULSELESS ARREST: SHOCKABLE (VENTRICULAR FIBRILLATION or PULSELESS VENTRICULAR TACHYCARDIA)

ALL PROVIDERS

- ❑ Focused history and physical exam
 - Assess for presence or absence of a pulse.
 - Determine probable rhythm – ventricular fibrillation or pulseless ventricular tachycardia
 - Assess blood glucose level.
- ❑ Continuous ECG, ETCO₂, and pulse oximetry monitoring when available
- ❑ **Treatment Plan**
 - Begin CPR
 - Assume cardiac origins for all adult arrests unless evidence to the contrary. Consider underlying causes and treat when possible.
 - **H's** - Hypovolemia, Hypoxia, Hydrogen ion (Acidosis), Hyper/hypokalemia, Hypothermia, Hypoglycemia
 - **T's** – Toxins (Overdose), Tamponade (Cardiac), Tension Pneumothorax, Thrombosis (ACS or Pulmonary), Trauma
- ❑ **Key Considerations**
 - Assess for evidence that resuscitation should not be attempted.
 - Pregnancy >20 weeks gestation - Place wedge-shaped cushion or multiple pillows under patient's right hip (L lateral decubitus position)
 - Transport these patients to the nearest emergency department without delay while attempting to provide continuous compressions and defibrillation, as there is a potential to perform emergency cesarean section.
 - Treatment protocols from current nationally established cardiac care certification programs (e.g. ACLS, PALS) may be used in lieu of these resuscitation guidelines.
 - AED is only to be used > 1 year of age. Use a pediatric system, if available, for ages 1 to 8 years old.
 - Pediatric lowest acceptable systolic blood pressures are birth to 1 month = 60mmHg, 1 month to 1 year = 70mmHg, 1 year to 10 years is = 70mmHg + (age x 2) and over 10 years = 90mmHg.

ADULT

PEDIATRIC (<15 years of Age)

NOTE: Pediatric weight based dosing should not exceed Adult dosing.

EMT

- ❑ If arrest is **witnessed**
 - Defibrillate immediately if AED or manual defibrillator is available.
- ❑ If **un-witnessed** or defibrillator is not immediately available.
 - Begin high quality CPR (100 compressions per minute with minimal interruptions, 2 minute cycles)
 - When AED arrives, attach to patient and defibrillate if a shock is advised
- ❑ Resume CPR immediately after each shock and continue for 2 minutes or until asked to hold by the AED
- ❑ Check pulse and assess rhythm / shock if advised after each 2 minutes cycle of compressions
- ❑ Place an NP or OP airway(s) and a non-rebreather mask with high-flow oxygen during the first 2-3 cycles of CPR/defibrillation. After 2-3 cycles apply asynchronous BVM breaths at a rate of 1 breath every 6-8 seconds

EMT

- ❑ If arrest is **witnessed**
 - Defibrillate immediately if AED or manual defibrillator is available. **2 J/kg** for the first attempt
- ❑ If **un-witnessed** or defibrillator is not immediately available.
 - Begin high quality CPR
 - When AED arrives, attach to patient and defibrillate if a shock is advised
- ❑ Resume CPR immediately after each shock and continue for 2 minutes (5 cycles) or until asked to hold by the AED
- ❑ Check pulse and assess rhythm / shock if advised after each 2 minutes cycle of compressions
- ❑ Place an NP or OP airway(s) and apply asynchronous BVM breaths at a rate of 1 breath every 4-6 seconds

AEMT

- ❑ Vascular access and fluid therapy per *IV-IO Access and Fluid Therapy Guidelines*
- ❑ Airway management as above with use of a supraglottic airway device instead of BVM, if available
- ❑ **Defibrillation: 360J** for a monophasic defibrillator or **200J** for a biphasic
- ❑ Resume CPR (2 minute cycle) immediately following shock delivery, then perform rhythm analysis

PERSISTENT OR RECURRENT VF/VT PRESENT

- ❑ **Epinephrine**
 - **1 mg (1:10,000) IV push**
 - Repeat every 3-5 minutes

ANTIARRHYTHMICS

- ❑ May use any **ONE** antiarrhythmic available, either amiodarone or lidocaine
- ❑ **Amiodarone**
 - **300mg IV/IO** for refractory VF/pulseless Vtach
 - Second dose is 150mg IV/IO
- ❑ **Lidocaine**
 - **1-1.5 mg/kg IV/IO push** or one time dose of 1.5 mg/kg
 - May repeat every 3-5 min up to 3 mg/kg

PARAMEDIC

- ❑ Consider endotracheal intubation
- ❑ **Vasopressin**
 - Give 40 units IV/IO in place of the 1st or 2nd dose of epinephrine.
 - May be more effective than epinephrine in cases of beta blocker overdose
- ❑ **Magnesium** - Give 1-2gm IV over 2 minutes for Torsades de Pointes

AEMT

- ❑ Advanced airway, vascular access and fluid therapy per *IV-IO Access and Fluid Therapy Guidelines*
- ❑ **Defibrillation: 2 J/kg** for the first shock with either a monophasic or biphasic defibrillator. Second shock at **4J/Kg** and subsequent shocks at $\geq 4J/Kg$ to a maximum of 10J/Kg or the adult dose
- ❑ Resume CPR (2 minute cycle) immediately following shock delivery, then perform rhythm analysis

PERSISTENT OR RECURRENT VF/VT PRESENT

- ❑ **Epinephrine**
 - **0.01 mg/kg = 0.1 ml/kg (1:10,000) IV or IO push**
 - Repeat every 3-5 minutes
 - May repeat initial dose

ANTIARRHYTHMICS

- ❑ May use any **ONE** antiarrhythmic available, either amiodarone or lidocaine
- ❑ **Amiodarone**
 - **5mg/kg IV/IO**
 - May repeat up to 2 times for refractory VF/pulseless VT
 - Do not exceed 300mg for VFib/Pulseless Vtach
- ❑ **Lidocaine**
 - **1 mg/kg IV/IO**
 - May repeat every 3-5 minutes up to 3 mg/kg

PARAMEDIC

- ❑ Consider Endotracheal Intubation
- ❑ **Vasopressin** - Not Recommended.
- ❑ **Magnesium** - Give 25-50mg/kg IV/IO for Torsades de Pointes. Maximum 2grams

TACHYCARDIA (With a Pulse)

ALL PROVIDERS

- ❑ Focused history and physical exam
 - Assess blood glucose level
 - Determine probable rhythm – sinus tachycardia, supraventricular tachycardia, ventricular tachycardia, etc.
- ❑ Continuous ECG, ETCO₂, and pulse oximetry monitoring when available
- ❑ Perform a 12 EKG if possible.
- ❑ **Treatment Plan**
 - Identify and treat the underlying cause (e.g. hypotension, pain, medication, heart failure, etc.)
- ❑ **Key Considerations**
 - Pregnancy >20 weeks gestation - Place wedge-shaped cushion or multiple pillows under patient's right hip (L lateral decubitus position)
 - Treatment protocols from current nationally established cardiac care certification programs (e.g. ACLS, PALS, etc.) may be used in lieu of these resuscitation guidelines.
 - Pediatric lowest acceptable systolic blood pressures are birth to 1 month = 60mmHg, 1 month to 1 year = 70mmHg, 1 year to 10 years is = 70mmHg + (age x 2) and over 10 years = 90mmHg.

ADULT

PEDIATRIC (<15 years of Age)

NOTE: Pediatric weight based dosing should not exceed Adult dosing.

EMT

EMT

AEMT

AEMT

- ❑ Vascular access and fluid therapy per *IV-IO Access and Fluid Therapy Guidelines*

- ❑ Vascular access and fluid therapy per *IV-IO Access and Fluid Therapy Guidelines*

SUPRAVENTRICULAR TACHYCARDIA

SUPRAVENTRICULAR TACHYCARDIA

- ❑ In stable patients, obtain a 12 Lead EKG, if possible, to establish a baseline
- ❑ In stable patients, may perform maneuvers to increase vagal tone (Valsalva, ice pack to face, Trendelenburg position, etc.)

- ❑ In stable patients obtain a 12 Lead EKG, if possible, to establish a baseline
 - Infants: SVT rate usually greater than 220 bpm with no variation
 - Children: SVT rate usually greater than 180 bpm with no variation
- ❑ In stable patients, may perform maneuvers to increase vagal tone (Valsalva, ice pack to face, Trendelenburg position, etc.)

PARAMEDIC

- ❑ **Adenosine**
 - May be given for narrow complex tachycardia if regular and monomorphic
 - 6mg IV/IO initially
 - If no conversion, repeat with 12mg IV/IO
 - May repeat ever 3 minutes to max 3 doses

Stable Wide Complex (QRS > 120 msec) Tachycardia

- ① **If stable, consult with OLMC prior to medication administration**

Antiarrhythmic medications:

- ❑ May use any **ONE** antiarrhythmic available
- ❑ **Amiodarone**
 - Give 150mg IV/IO over 10 minutes
 - Second dose is 150mg IV/IO over 10 minutes if needed
- ❑ **Lidocaine**
 - 1-1.5 mg/kg IV
 - May repeat every 3-5 min up to 3 mg/kg
- ❑ **Procainamide**
 - Give 15mg/kg to max 1000mg IV/IO over 60 minutes.
 - Stop infusion for:
 - Conversion of rhythm
 - Complete the infusion
 - Drop of SBP<100 mmHg
 - QRS width increases by >50%
 - Severe Bradycardia or AV block

Unstable Tachycardia – Synchronized Cardioversion

If no response to previous interventions and the patient has “Serious Signs or Symptoms” such as:

- Acute Cardiac Chest Pain
 - Active Congestive Heart Failure/Pulmonary Edema
 - Altered Mental Status
 - SBP < 90 mm Hg
 - Signs of Shock:
 - Cool, clammy, or pale skin
 - Weak or thready pulse
- ❑ **Synchronized Cardioversion**
 - Indicated immediately in the unstable patient
 - **Initial energy doses:**
 - Narrow Regular: **50-100J** (mono- or bi-phasic)
 - Narrow Irregular: **120-200J** biphasic and **200J** monophasic

PARAMEDIC

- ❑ **Adenosine**
 - May be given for narrow or wide complex tachycardia if regular and monomorphic.
 - **0.1mg/kg IV/IO to max 6mg**
 - If no conversion, repeat with 0.2mg/kg IV/IO to max. 12mg
 - May repeat every 3 minutes up to max 3 doses

Stable Wide Complex (QRS > 120 msec) Tachycardia

- ① **If stable, consult with OLMC prior to medication administration**

Antiarrhythmic medications:

- ❑ May use any **ONE** antiarrhythmic available
- ❑ **Amiodarone**
 - Give 5mg/kg IV/IO over 20-60 minutes
 - May repeat up to 2 times for refractory VF/pulseless VT
 - Do not exceed 300mg for VFib/Pulseless Vtach
- ❑ **Lidocaine**
 - 1 mg/kg IV/IO
 - May repeat every 3-5 minutes up to 3 mg/kg
- ❑ **Procainamide**
 - Give 15mg/kg to max 1000mg IV/IO over 30-60 minutes.
 - Stop infusion for:
 - Conversion of rhythm
 - Complete the infusion
 - Drop of SBP<70 + 2x age
 - QRS width increases by >50%
 - Severe Bradycardia or AV block

Unstable Tachycardia – Synchronized Cardioversion

If no response to previous interventions and the patient has “Serious Signs or Symptoms” such as:

- Active Congestive Heart Failure/Pulmonary Edema
 - Altered Mental Status
 - Lowest acceptable systolic blood pressures are birth to 1 month = 60mmHg, 1 month to 1 year = 70mmHg, 1 year to 10 years is = 70mmHg + (age x 2) and over 10 years = 90mmHg.
 - Signs of Shock:
 - Cool, clammy, or pale skin
 - Weak or thready pulse
- ❑ **Synchronized Cardioversion**
 - Indicated immediately in the unstable patient
 - Initial energy dose is **0.5-1 J/kg**
 - If no response double energy dose to **2 J/kg**

- Wide Regular: **100J** (mono- or bi-phasic)
- Wide Irregular: defibrillate without synchronization
- If no response, may increase energy dose to maximum: 360 J (monophasic) or 200 J (biphasic)

Sedation prior to Cardioversion

- ❑ Choose **ONE** benzodiazepine for treatment and maximize dosing. Contact OLMC before changing to a different medication.
- ❑ **Midazolam**
 - Dosage is cut in half if the patient has received narcotics or alcohol.
 - Consider the size of the patient for dosing.
 - **IV/IO - 2-4mg** every 5 minutes to the desired effect or max dose of 10mg.
 - **Intranasal or oral - 0.2 mg/kg** to a maximum of 10mg as a one-time dose
- ❑ **Diazepam** – May be used as an alternative. Follow the same safety parameters as with midazolam
 - **IV/IO – 5-10mg** every 5 min to the desired effect or max dose of 30mg
- ❑ **Lorazepam** – May be used as an alternative. Follow the same safety parameters as with Midazolam.
 - **IV/IO – 1-2mg** every 5 min. to the desired effect or max dose of 4mg

① **Contact OLMC for dosages above those provided or use of medication NOT fitting the guideline parameters.**

Sedation prior to Cardioversion

- ❑ Choose **ONE** benzodiazepine for treatment and maximize dosing. Contact OLMC before changing to a different medication.
- ❑ **Midazolam**
 - Dosage is cut in half if the patient has received narcotics or alcohol.
 - Consider the size of the patient for dosing.
 - **IV/IO - 0.1 mg/kg, max dose of 4mg.**
 - Do NOT exceed adult dosing.
 - **Intranasal or oral- 0.2 mg/kg** to a maximum of 10mg as a one-time dose.
- ❑ **Diazepam** – May be used as an alternative. Follow the same safety parameters as with Midazolam.
 - **IV/IO - 0.1 mg/kg, max dose of 10mg.**
 - Do NOT exceed adult dosing.
 - **Rectally – 0.3 mg/kg PR.**
- ❑ **Lorazepam** – May be used as an alternative. Follow the same safety parameters as with Midazolam.
 - **IV/IO – 0.1mg/kg, max dose of 4mg.**
 - Do NOT exceed adult dosing.

① **Contact OLMC for dosages above those provided or use of medication NOT fitting the guideline parameters.**

PART II. GENERAL PATIENT CARE GUIDELINES

These guidelines were created to provide direction for each level of certified provider in caring for all types of patients. The Online Medical Consulting/Consultation (OLMC) physician will always be the final word on treatment in the field. If there are ever any discrepancies between the guidelines and the OLMC physician these should be documented and brought to the attention of the physician at the receiving hospital or the agency Medical Director for review.

General Approach to General Patient Care Guidelines

- Assess your patient prior to initiating a guideline.
- Pediatric reference tape-based dosing is preferred over calculated dosages for infants and children.
- More than one guideline may apply.
- When conflicts arise between treatment guidelines contact OLMC for clarification.
- Providers may provide treatment up to the level of their certification only.
- Air Medical Transport Service personnel function under their own clinical guidelines.
- Contact your receiving hospitals and OLMC as soon as clinically possible for each patient.
- OLMC physician may change your treatment plan.
- Any variations to a guideline by the OLMC or physician should be clarified to insure that the provider has properly characterized the situation.
- The OLMC Physician has the final word on treatment once contact is made.
- OLMC physician must approve dosing over the guideline amounts.

Key to Symbols used in Guidelines

 This symbol and yellow highlighted instructions precedes any treatment that requires OLMC prior to initiating the treatment unless otherwise specified.

AIRWAY AND TRACHEOSTOMY MANAGEMENT

ALL PROVIDERS

- ❑ Focused history and physical exam
 - Assess ABC's for evidence of apnea, airway reflex compromise or difficulty in ventilatory effort.
 - Assess medical conditions, burns or traumatic injuries that have the potential to compromise the airway.
- ❑ Continuous ECG, ETCO₂, and Pulse Oximetry monitoring when available.
- ❑ **Treatment Plan**
 - Provide basic airway maneuvers to all compromised airways, i.e. oxygen, jaw-thrust, and positioning.
 - Identify and treat underlying reversible medical conditions (narcotic overdose, hypoglycemia, etc.).
 - In general, maintain an oxygen saturation 90 - 94% and ETCO₂ of 35-45 mmHg
 - Always insure proper care of the C-Spine during Airway treatment per the *Selective Spinal Immobilization Guideline*.
 - Keep the patient NPO. Stop any tube feedings and do not use feeding tube during resuscitation.
 - Infants and young children are primary nose breathers. Suction oral and nasal passages as needed to keep clear.
 - Tracheostomy/Home Ventilator
 - Primary caretakers and families are the best resource for understanding the equipment they are using.
 - Disconnect the ventilator and assist ventilations with BVM if the patient is apneic, unresponsive, or has severe respiratory distress or depression.
 - If unable to ventilate, suction the tracheostomy, then reattempt ventilatory efforts.
 - If still unable to ventilate, attempt traditional BVM (i.e. place a gloved finger over the trach to occlude during the delivery of a breath).

ADULT

PEDIATRIC (<15 years of Age)

NOTE: Pediatric weight based dosing should not exceed Adult dosing.

EMT

- ❑ Provide 100% oxygen to the patient
- ❑ Ventilate with BVM when apneic or exhibiting respiratory distress. Consider a nasal or oral airway.
- ❑ Maintain a ventilatory rate of 10-12 breaths per minute
- ❑ Do not hyperventilate the patient

EMT

- ❑ Provide 100% oxygen to the patient
- ❑ Ventilate with BVM when apneic or exhibiting respiratory distress. Consider a nasal or oral airway.
- ❑ Recommended pediatric ventilatory rates:
 - Infant (0-12 month): 25 breaths per minute
 - 1-3 yrs.: 20 breaths per minute
 - 4-6 yrs.: 15 breaths per minute
 - >6 years: 12 (Same as adult)
- ❑ Do not hyperventilate the patient

AEMT

- ❑ Consider an appropriately sized supraglottic airway device if unable to ventilate with BVM
- ❑ **CPAP** – Consider when the patient is awake but needs assistance with oxygenation and ventilation such as in a CHF/Pulmonary Edema patient or COPD patient
- ❑ **CPAP** - Provide CPAP of 5 cm H₂O to begin. May increase to 10 mm H₂O if needed. **Further increase only with OLMC consultation**
 - **BIPAP** – Provide 10 L/min oxygen and IPAP at 15 cm H₂O with EPAP at about 5 cm H₂O

🕒 **Contact OLMC to discuss further settings and treatment after the initial setup**

AEMT

- ❑ Consider an appropriately sized supraglottic airway device if unable to ventilate with BVM
- ❑ **CPAP** – **ONLY** use when the patient is on the machine at home. Maintain home settings and bring machine with the patient. If unable to adequately ventilate return to BVM and consideration insertion of supraglottic airway and bag ventilation.

PARAMEDIC

- ❑ **INTUBATION** - Consider orotracheal intubation using an endotracheal tube when indicated
 - Document TWO confirmation methods to verify endotracheal placement of ET tube (e.g. EtCO₂, CO₂ Detection Device or Esophageal Intubation Detector)
 - Consider sedation after intubation (benzodiazepine)

PARAMEDIC

- ❑ **INTUBATION** - Consider orotracheal intubation using an endotracheal tube when indicated
 - Document TWO confirmation methods to verify endotracheal placement of ET tube (e.g. EtCO₂, CO₂ Detection Device or Esophageal Intubation Detector)
 - Consider sedation after intubation (benzodiazepine)

- After 3 unsuccessful attempts at endotracheal intubation use a supraglottic airway device or BVM with appropriate oral/nasal airway.

🕒 Nasotracheal Intubation requires prior OLMC.

- ❑ **Surgical Airway - Cricothyrotomy**
 - Consider only when all other methods of oxygenation, ventilation and securing the airway have failed
 - Insert a 6.0 cuffed endotracheal tube and secure
- ❑ **Tracheostomy Assistance**
 - Provide supplemental oxygen
 - Suction the patient appropriately
 - Replace Tracheostomy tube if needed
 - IF unable to ventilate, pass an appropriately sized ETT through the stoma 1-2 inches
 - If unable to pass a tracheostomy tube or endotracheal tube, use BVM, supraglottic airway device, or orotracheal intubation to ventilate patient

🕒 Contact OLMC for further instructions

- ❑ **Ventilator Management**
 - Work with the family to troubleshoot the machine
 - Address tracheostomy as above
 - If you need to disconnect for transport provide adequate BVM ventilations similar to home respiratory rate settings

🕒 Contact OLMC for further instructions as needed.

- After 3 unsuccessful attempts at endotracheal intubation use a supraglottic airway device or BVM with appropriate oral/nasal airway.

- **No nasotracheal intubation**

- ❑ **Surgical Airway - Cricothyrotomy**
 - Consider only when all other methods of oxygenation, ventilation and securing the airway have failed
 - Insert an appropriately sized endotracheal tube and secure
- ❑ **Tracheostomy Assistance**
 - Provide supplement oxygen
 - Suction the patient appropriately
 - Replace Tracheostomy tube if needed
 - IF unable to ventilate, pass an appropriately sized ETT through the stoma 1-2 inches
 - If unable to pass a tracheostomy tube or endotracheal tube, use BVM, supraglottic airway device, or orotracheal intubation to ventilate patient

🕒 Contact OLMC for further instructions.

- ❑ **Ventilator Management**
 - Work with the family to troubleshoot the machine
 - Address tracheostomy as above
 - If you need to disconnect for transport provide adequate BVM ventilations similar to home respiratory rate settings

🕒 Contact OLMC for further instructions as needed.

ALTERED MENTAL STATUS

ALL PROVIDERS

- ❑ Focused history and physical exam
 - Blood glucose, oxygen saturation and temperature assessment.
- ❑ Continuous ECG, ETCO₂, and Pulse Oximetry monitoring when available.
- ❑ **Treatment Plan**
 - Assess for trauma.
 - Assess for stroke and score per the *Stroke and Neuro Deficits Guideline*.
 - Assess for possible overdose, substance abuse or other potential toxin. Evaluate the scene for supportive evidence.
 - Obtain a 12 lead EKG if available.
 - Treat any underlying environmental or toxin exposures with the appropriate guideline.
 - Gather and collect any evidence on scene that may assist in the treatment of the patient.
- ❑ **Key Considerations**
 - Consider non-accidental trauma especially in pediatric and elderly patients.
 - Consider hypoglycemia, especially in pediatric patients.
 - Pediatric lowest acceptable systolic blood pressures are birth to 1 month = 60mmHg, 1 month to 1 year = 70mmHg, 1 year to 10 years is = 70mmHg + (age x 2) and over 10 years = 90mmHg.
 - If poisoning suspected, contact Utah Poison Control Center (1-800-222-1222), as well as OLMC, for guidance.
 - AEIOUTIPPS: Possible causes of Altered Mental Status

A - Alcohol	T - Trauma/temp
E - Electrolytes	I - Infection
I - Insulin	P - Psychogenic
O - Opiates	P - Poison
U - Uremia	S - Shock/Seizure

ADULT

PEDIATRIC (<15 years of Age)

NOTE: Pediatric weight based dosing should not exceed Adult dosing.

EMT

- ❑ Apply 100% oxygen to the patient
- ❑ Consider physical restraints as needed to protect the patient and/or personnel
- ❑ **Naloxone 0.4–2 mg (per dose) IN** (intranasal) for suspected narcotic overdose. May repeat once
- ❑ If blood glucose is less than 60 mg/dl, and the patient is sufficiently alert to swallow and protect airway, give oral glucose, orange juice, or other sugared drink

EMT

- ❑ Apply 100% oxygen to the patient
- ❑ Consider physical restraints as needed to protect the patient and/or personnel
- ❑ **Naloxone 0.1 mg/kg (max 2mg per dose) IN** (intranasal) for suspected narcotic overdose. May repeat once
- ❑ If blood glucose is less than 60 mg/dl, and the patient is sufficiently alert to swallow and protect airway, give oral glucose, orange juice, or other sugared drink

AEMT

- ❑ Advanced airway, vascular access and fluid therapy per *IV-IO Access and Fluid Therapy Guideline*
- ❑ If evidence of poor perfusion, give **NS IV bolus**
- ❑ Consider Chemical Restraints as needed to protect the patient and/or personnel per the **Violent Patient/ Chemical Sedation Guideline**
- ❑ **Naloxone 0.4–2 mg (per dose) IV/IM/IO/IN** for suspected narcotic overdose. May repeat once.
- ❑ If blood glucose is less than 60 mg/dl, administer D50 25 grams IV/IO

AEMT

- ❑ Advanced airway, vascular access and fluid therapy per *IV-IO Access and Fluid Therapy Guideline*
- ❑ If evidence of poor perfusion, give **NS 20 ml/kg IV**
- ❑ Consider Chemical Restraints as needed to protect the patient and/or personnel **Violent Patient/ Chemical Sedation Guideline**
- ❑ **Naloxone 0.1 mg/kg (max 2mg per dose) IV/IM/IO/IN** for suspected narcotic overdose. May repeat once

- If blood glucose is less than 60 mg/dl
 - Give **D10W 2 ml/kg (200mg/kg)** for neonates <30days
 - Infants up to 1 year **Dextrose 10% (D10NS) 5 mL/kg** IV/IO - D10 = 10 mL D50 in 40 mL of **NS**
 - Children greater than 1 year **Dextrose 25% (D25W) 2 mL/kg** IV/IO - D25 = 25 mL D50 in 25 mL **NS or Sterile Water**

PARAMEDIC

No Additional Paramedic Level Interventions

PARAMEDIC

No Additional Paramedic Level Interventions

DEATH DETERMINATION AND PRONOUNCEMENT PROCESS

ALL PROVIDERS

- ❑ **General Crime Scene Management Principles** as appropriate.
- ❑ **Treatment Plan**
 - CPR should **NOT** be started in a pulseless, apneic patient in the presence of:
 - Obvious death, decomposition, and/or rigor mortis.
 - Obvious fatal wounds without signs of life
 - A verbal order pronouncing the patient dead by a licensed physician in the State of Utah who is present on scene.
 - An order by the OLMC physician.
 - A Do Not Resuscitate (DNR) written order, bracelet, or necklace from any U.S. State.
 - A signed Physician Order for Life-Sustaining Treatment (POLST form) from any U.S. State indicating that the patient does not desire resuscitative efforts.
 - **Termination** of CPR may be done in the following circumstances:
 - A valid DNR or POLST form is discovered after resuscitative efforts were initiated.
 - Resuscitation efforts initiated when criteria to **not** resuscitate were present.
 - A verbal order pronouncing the patient dead by a licensed physician in the State of Utah who is present on scene.
 - Order by the OLMC physician.
- ❑ Following determination of obvious death or termination of resuscitative efforts:
 - ❑ Call dispatch to reduce any responding transport(s) to Non-Emergent.
 - ❑ Document time of death and circumstances according to system and agency guidelines.
 - ❑ Turn the body over to the appropriate law enforcement agency.
 - ❑ Evaluate for, document, and report any indication of non-accidental trauma per the *Non-Accidental Trauma/Abuse Guideline*.
 - ❑ Contact the closest patient receiving facility and make them aware of the actions taken, declare a time of death and explain the disposition of the patient.

ADULT

EMT
AEMT
PARAMEDIC

PEDIATRIC (<15 years of Age)

NOTE: Pediatric weight based dosing should not exceed Adult dosing.

EMT
AEMT
PARAMEDIC

KEY POINTS/CONSIDERATIONS

- ① There will always be patients and circumstances that deserve special consideration (pediatric drowning or pregnant patients, for instance). OLMC should be consulted if there are ever any questions. Always be sensitive to the patient's desires, family concerns, and on-scene environment to insure an understanding by all who observe your actions that everything that should have been done to resuscitate the patient was done.

FAMILY CENTERED CARE

ALL PROVIDERS

- ❑ Family Centered Care is a mutually collaborative health care effort between family, patient and provider and has proven to be the gold standard in dealing patient and their families. This is especially important when dealing with pediatric patients, patients unable to make decisions for themselves or patients that have legal guardians.
- ❑ Demonstration of Family Centered Care is in one’s actions and behaviors when caring for patients.
- ❑ Family Centered Care is demonstrated in practice, not just policy development.
 - Collaboration with Families: Empower the patient and the family by involving them in the care as well as the decision making process.
 - Family Centered Care is a skill requiring competency and caring. Like any other fine-tuned skill it requires practice.
 - Gather staff and develop language on how to describe the situation so information is consistent.
 - Cultural Competency: Respect, sensitivity, and an understanding of the unique cultural and religious considerations.
 - Be aware of any language barriers.
 - If at all possible engage an interpreter that is able to understand some of the emotional issues as well as medical terminology associated with the condition.
 - An understanding of the hierarchy of the family is key to a positive outcome.
 - Developmental Competency: Use appropriate language for the age.
 - When in pain or hurt, children often regress to more infantile responses. They may still need attachment items late in life.
 - Describe what you will be doing.
 - Use eye contact and touch when appropriate.
 - Be respectful at all times. In children there are some special considerations:
 - Infants: General calming measures (Soft voices, gentle pats, pacifiers or rocking), allow parents to stay close and bonded with the child and help them to anticipate the situation if possible.
 - Toddlers: Use toys, teddy bear, blanket, etc. for comfort. Parents or family members are often a great source of comfort and nurturing, allow them to be present.
 - School Age: Attachment objects (e.g. “blankies”), honesty about procedures, imaginary thinking (I made the car crash, I told a lie and that is why mom is hurt) Refrain from conversations about a child’s treatment unless you are including them.
 - Adolescents: Physician and provider honesty is key as well as paying attention to pain. Help them to participate in their own care and take their views seriously. Focus on giving them some sense of control. Pain management is key. Adolescents as well as adults are afraid of pain. The anticipation of pain can be worse than the pain itself. Some transitional objects/toys/stuffed animals can also be useful. Respect their privacy and modesty as much as possible. Allow them to discuss what is happening both with and without caregivers around.
- ❑ **Key Considerations**
 - Family Centered Care = compassion
 - Include family members in resuscitation and care decision making as they desire and are capable. If possible, designate a crewmember to be a liaison to the family in order to facilitate communication and continuity.

ADULT

PEDIATRIC (<15 years of Age)

NOTE: Pediatric weight based dosing should not exceed Adult dosing.

EMT
AEMT
PARAMEDIC

EMT
AEMT
PARAMEDIC

IV-IO ACCESS

ALL PROVIDERS

- ❑ Focused history and physical exam
 - Vital sign assessment, blood glucose, oxygen and temperature assessment.
 - Consider IV/IO placement for fluid therapy or medications as needed.
- ❑ Continuous ECG, ETCO₂, and Pulse Oximetry monitoring when available.

ADULT

PEDIATRIC (<15 years of Age)

NOTE: Pediatric weight based dosing should not exceed Adult dosing.

EMT
AEMT

EMT
AEMT

- ❑ **IV – Peripheral**
 - Preferred site is usually the hand or forearm except in resuscitation when antecubital is preferred
 - Place the largest gauge catheter possible
 - If unsuccessful in the arm, consider veins in the feet or legs
- ❑ **IO - Interosseous**
 - If during the resuscitation of a critical patient you are unable to obtain an IV after 2 attempts or 90 seconds, then an IO is indicated
 - Place the IO in the tibia, humeral head, or femur
 - Avoid fractured bones, infection sites, excessive edema or excessive tissue over the site
 - After IO placement, a pressure bag may be required for rapid infusion
 - **NOTE:** in conscious patients **20-50mg of 2% Lidocaine** should be given **SLOWLY** through the IO before a fluid bolus
- ❑ **IV Fluid Therapy**
 - All IV's are set at KVO/TKO unless giving a bolus of fluid
 - Bolus with NS or LR
 - Refer to the *Shock and Fluid Therapy Guideline* for fluid management

- ❑ **IV – Peripheral**
 - Preferred site is usually the hand or forearm except in resuscitation when antecubital is preferred
 - Place the largest gauge catheter possible
 - If unsuccessful in the arm, consider veins in the feet or legs
- ❑ **IO - Interosseous**
 - If during the resuscitation of a critical patient you are unable to obtain an IV after 2 attempts or 90 seconds, then an IO is indicated
 - Insert the appropriate sized needle for age and weight
 - The approved sites in children are the tibia, femur, and proximal humerus
 - Avoid fractured bones, infection sites, excessive edema or excessive tissue over the site
 - After IO placement, a pressure bag may be required for rapid infusion
 - **NOTE:** in conscious patients **0.5ml/kg of 2% Lidocaine** should be given **SLOWLY** through the IO before a fluid bolus
- ❑ **IV Fluid Therapy**
 - All IV's are set at KVO/TKO unless giving a bolus of fluid
 - Bolus with NS or LR, 20mg/kg then reassess
 - Refer to the *Shock and Fluid Therapy Guideline* for further fluid management

PARAMEDIC

PARAMEDIC

No Additional Paramedic Level Interventions

No Additional Paramedic Level Interventions

NAUSEA / VOMITING

ALL PROVIDERS

- ❑ Focused history and physical exam
 - Blood glucose, temperature and oxygen saturation assessment.
 - Continuous ECG, ETCO₂, and Pulse Oximetry monitoring when available.
- ❑ **Treatment Plan**
 - Nothing by mouth (NPO).
 - Place the patient in an upright or lateral recumbent position.
 - Consider a 12 lead EKG if available
 - Greater than 40 years old
 - Associated with chest or abdominal pain
- ❑ Pediatric lowest acceptable systolic blood pressures are birth to 1 month = 60mmHg, 1 month to 1 year = 70mmHg, 1 year to 10 years is = 70mmHg + (age x 2) and over 10 years = 90mmHg.

ADULT

PEDIATRIC (<15 years of Age)

NOTE: Pediatric weight based dosing should not exceed Adult dosing.

EMT
AEMT

- ❑ Vascular access and fluid therapy per *IV-IO Access and Fluid Therapy Guideline*
- ❑ Document Level of Consciousness before and after giving medication
- ❑ **Ondansetron (Zofran) – 4mg to 8mg** IV/IM/PO/SL
- ❑ **Promethazine (Phenergan) - 12.5–25 mg** IV if SBP >100
 - Dilute with 10 mL of NS and administer slowly over 60 seconds with a wide open IV running to dilute it as it is administered
 - **Promethazine (Phenergan) 25 mg** IM if no vascular access
- Ⓜ If the patient experiences extreme anxiety, abnormal muscular contractions or an allergic reaction contact OLMC and be prepared to administer Benadryl as a treatment.

PARAMEDIC

No Additional Paramedic Level Interventions

EMT
AEMT

- ❑ Vascular access and fluid therapy per *IV-IO Access and Fluid Therapy Guideline*
- ❑ Document Level of Consciousness before and after giving medication.
- ❑ **Ondansetron (Zofran) - 0.1mg/kg** IV/IM/PO/SL to a Maximum of 4mg
- Ⓜ **Promethazine (Phenergan) – NOT recommended, requires OLMC contact.**
- ❑ If blood glucose is less than 60 mg/dl
 - Give **D10W 2 ml/kg (200mg/kg)** for neonates <30days
 - **Infants up to 1 year Dextrose 10% (D10NS) 5 mL/kg** IV/IO - D10 = 10 mL D50 in 40 mL of **NS**
 - **Children greater than 1 year Dextrose 25% (D25W) 2 mL/kg** IV/IO - D25 = 25 mL D50 in 25 mL **NS or Sterile Water**

PARAMEDIC

No Additional Paramedic Level Interventions

PAIN & ANXIETY MANAGEMENT

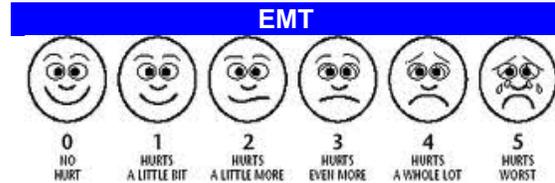
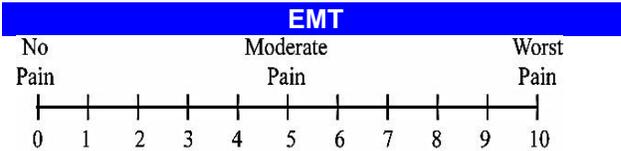
ALL PROVIDERS

- ❑ Focused history and physical exam
 - Assess the patient's pain using verbal and non-verbal cues and appropriate pain scale.
- ❑ Continuous ECG, ETCO₂, and Pulse Oximetry monitoring when available.
- ❑ Implement appropriate treatment guideline for the chief complaint.
- ❑ **Treatment Plan**
 - Implement non-pharmaceutical/family centered comfort measures as indicated, refer to the *Family Centered Care Guideline*.
 - Immobilize any obvious injuries and place patient in a position of comfort.
 - Implement pharmaceutical measures.
 - Monitor patient vital signs every 5 minutes as this guideline is implemented.
 - Have Naloxone available if needed for respiratory suppression.
 - Avoid giving medications if SBP <100mmHg in adults, SBP <70 + (age in years x 2) mmHg for pediatrics, SaO₂ < 90%, or GCS <14
 - Stop pain medication when the patient has relief, pain score <5 for adults (<3 on Wong-Baker Faces scale for children 3-8 years old, less than 2 on FLACC scale for infants), adult SBP <100mmHg, peds SBP <70 + (age in years x 2) mmHg, SaO₂ <90%, or GCS <14.
- ❑ **Key Considerations**
 - An age-appropriate pain scale should be utilized and documented before and after each pain medication dose
 - Use Wong-Baker Faces scale for pain assessment in patients 3-8 years old.
 - A FLACC scale can be used to assess pain in infants. (Total range from 0-10)

ADULT

PEDIATRIC (<15 years of Age)

NOTE: Pediatric weight based dosing should not exceed Adult dosing.



CATEGORIES	FLACC SCORING FOR INFANTS		
	0	1	2
FACE	NO PARTICULAR EXPRESSION OR SMILE	OCCASIONAL GRIMACE OR FROWN, WITHDRAWN, DISINTERESTED	FREQUENT TO CONSTANT FROWN, CLENCHED JAW, QUIVERING CHIN
LEGS	NORMAL POSITION OR RELAXED	UNEASY, RESTLESS, TENSE	KICKING, OR LEGS DRAWN UP
ACTIVITY	LYING QUIETLY, NORMAL POSITION, MOVES EASILY	SQUIRMING, SHIFTING BACK AND FORTH, TENSE	ARCHED, RIGID, OR JERKING
CRY	NO CRY (AWAKE OR	MOANS OR WHIMPERS,	CRYING STEADILY,

	ASLEEP)	OCCASIONAL COMPLAINT	SCREAMS OR SOBS, FREQUENT COMPLAINTS
CONSOLABILITY	CONTENT, RELAXED	REASSURED BY OCCASIONAL TOUCHING, HUGGING OR TALKING TO, DISTRACTIBLE	DIFFICULT TO CONSOLE OR COMFORT

AEMT

- Vascular access and fluid therapy *per IV-IO Access and Fluid Therapy guideline*

Pain Control

- Morphine Sulfate 4-10mg q10 minutes IV/IO/IM** titrated to effect – **OR**
- Fentanyl 50-100 mcg q10 minutes IV/IO/IM/IN**
- Nalbuphine 10 mg q 10 minutes IV/IO/IM**

Anxiety Control

- Choose ONE benzodiazepine for treatment and maximize dosing. Contact OLMC before changing to a different medication
- Midazolam (Versed)**
 - Dosage is cut in half if the patient has received narcotics or alcohol
 - Consider the size of the patient for dosing
 - **IV/IO - 2-4mg** every 5 minutes to the desired effect or max dose of 10mg
 - **Intranasal or oral - 0.2 mg/kg** to a maximum of 10mg as a one-time dose
- Diazepam (Valium)** – May be used as an alternative. Follow the same safety parameters as with Midazolam
 - **IV/IO – 5-10mg** every 5 min to the desired effect or max dose of 30mg
 - **Rectally** – Same dosage
- Lorazepam (Ativan)** – May be used as an alternative. Follow the same safety parameters as with Midazolam
 - **IV/IO – 1-2mg** every 5 min. to the desired effect or max dose of 4mg.

📞 **Contact OLMC for dosages above those provided or use of medication NOT fitting the guideline parameters.**

PARAMEDIC

No Additional Paramedic Level Interventions

AEMT

- Vascular access and fluid therapy *per IV-IO Access and Fluid Therapy guideline*

Pain Control

- Morphine Sulfate 0.1 mg/kg (max of 4mg per dose)** IV/IM/IO titrated to effect – **OR**
- Fentanyl 1 mcg/kg (max 75mcg per dose)** IV/IM/IO. Use **2mcg/kg for (max 100mcg per dose)** IN (Intranasal)
- For additional doses, contact OLMC

Anxiety Control

- Choose ONE benzodiazepine for treatment and maximize dosing. Contact OLMC before changing to a different medication
- Midazolam (Versed)**
 - Dosage is cut in half if the patient has received narcotics or alcohol
 - Consider the size of the patient for dosing
 - **IV/IO - 0.1 mg/kg (max dose of 4mg per dose)**
 - Do NOT exceed adult dosing
 - **Intranasal or oral - 0.2 mg/kg (max dose 10mg per dose)**
 - Contact OLMC for additional doses
- Diazepam (Valium)** – May be used as an alternative. Follow the same safety parameters as with Midazolam
 - **IV/IO - 0.1 mg/kg (max dose of 10mg)**
 - Do NOT exceed adult dosing
 - **Rectally – 0.3 mg/kg PR**
- Lorazepam (Ativan)** – May be used as an alternative. Follow the same safety parameters as with Midazolam
 - **IV/IO – 0.1mg/kg (max dose of 4mg)**
 - Do NOT exceed adult dosing

📞 **Contact OLMC for dosages above those provided or use of medication NOT fitting the guideline parameters.**

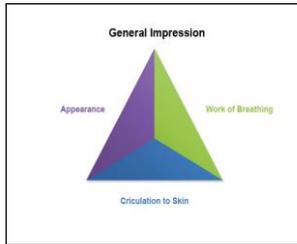
PARAMEDIC

No Additional Paramedic Level Interventions

PEDIATRIC ASSESSMENT

ALL PROVIDERS

- ❑ The pediatric assessment should be modified for the developmental level of each patient.
- ❑ Continuous ECG, ETCO₂, and Pulse Oximetry monitoring when available.
- ❑ **Treatment Plan** (develop and implement plan based on assessment findings, resources, and training)
 - Use the Pediatric Assessment Triangle (defined by the AAP) to form a general impression of the child.



- Appearance: Evaluate tone, interactiveness, consolability, gaze, and speech or cry
- Breathing: Evaluate abnormal airway sounds, abnormal positioning, retractions, and nasal flaring.
- Circulation/Skin Color: Evaluate for pallor, mottling, and cyanosis

- If the patient looks ill, start CPR when the heart rate is less than:
 - 80bpm for infants (up to 1 year of age)
 - 60bpm for children (1 year to 8 years)
- Look on scene for a CHIRP red bag. It contains current medical information on the child with **special healthcare needs**.
- Perform the pediatric assessment with guidance from the **Family Centered Care Guideline**.
- Pay careful attention to the wide variety of normal vital signs. Do not assume that the pediatric patient is fine when they have vitals meeting the normal adult parameters.

Age of Patient	HR		RR		Systolic BP	Temp	
0 days - < 1 mon	<80	>205	<30	>60	<60	<36	>38
≥ 1mo - < 3 mons	<80	>205	<30	>60	<70	<36	>38
≥ 3 mons - < 1 yr	<75	>190	<30	>60	<70	<36	>38.5
≥ 1 yr - < 2 yrs	<75	>190	<24	>40	<70+ (age x 2)	<36	>38.5
≥ 2 yrs - < 4 yrs	<60	>140	<24	>40	<70+ (age x 2)	<36	>38.5
≥ 4 yrs - < 6 yrs	<60	>140	<22	>34	<70+ (age x 2)	<36	>38.5
≥ 6 yrs - < 10 yrs	<60	>140	<18	>30	<70+ (age x 2)	<36	>38.5
≥ 10 yrs - < 13 yrs	<60	>100	<18	>30	<90	<36	>38.5
≥ 13 yrs - < 18 yrs	<60	>100	<12	>16	<90	<36	>38.5

- ❑ **Key Considerations**
 - Obtaining a full set of vital signs **including** blood pressures should be a priority.
 - Parents are often the best resource for a baseline understanding of their child, especially in the case of the child with special healthcare needs.

ADULT

PEDIATRIC (<15 years of Age)

NOTE: Pediatric weight based dosing should not exceed Adult dosing.

EMT
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AEMT
PARAMEDIC

SELECTIVE SPINAL IMMOBILIZATION

ALL PROVIDERS

- ❑ Focused history and physical exam
 - Blood glucose, Oxygen and Temperature assessment.
 - Evaluate the mechanism of injury.
 - Assess exposure to drugs, alcohol or other toxins including environmental toxins.
 - Assess history of arthritis, cancer, or other possible spine/bone diseases.
 - Assess environment, location of patient, and need for extrication.
 - As appropriate, determine if pregnant and place in left lateral decubitus position if >20 weeks gestation.
- ❑ Continuous ECG, ETCO₂, and Pulse Oximetry monitoring when available.
- ❑ **Treatment Plan:** If spinal immobilization is to be applied:
 - Explain the need for spinal immobilization to the patient.
 - Apply appropriate cervical immobilization.
 - Apply appropriate backboard and security straps.
 - PEDS – use a pediatric specific backboard for those <8 years old OR use a towel or pad to raise the child’s body (not their head) to insure appropriate spinal alignment on an adult board. Age <2 should be immobilized in a car seat or age appropriate papoose device.
 - Assess neurological function before, during, and after application of spinal immobilization

Key Considerations

- Spinal immobilization should be considered a treatment or preventive 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
- Ambulatory patients who are alert and cooperative may be safely immobilized on a gurney with cervical collar and straps and will not generally require a spine board
- Long spine board should be reserved for patients with thoracic or lumbar spinal pain or tenderness, or non-ambulatory patients who meet immobilization criteria

ADULT

PEDIATRIC (<15 years of Age)

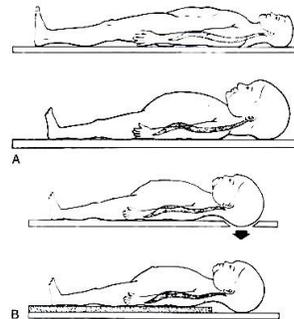
NOTE: Pediatric weight based dosing should not exceed Adult dosing.

EMT

EMT

- ❑ Spinal Immobilization criteria – Immobilize patient with cervical collar and spine board if there is a traumatic mechanism of injury and **any** of the below criteria are met:
 - Age <8 or >65
 - Patient complains of neck or spine pain
 - There is any neck or spinal tenderness
 - There is any abnormal mental status or GCS <15
 - There is any evidence of alcohol or drug intoxication
 - There are other severely painful or distracting injuries present
 - Any patient that the medic feels should be immobilized, based on clinical judgment of patient or situation

- ❑ Children who are <5 years old should be immobilized until evaluation at the hospital if the mechanism is suspicious
- ❑ Children under 8 years old cannot have their C-spine cleared in the field
- ❑ Children <2 years should be immobilized in a car seat or an approved infant papoose device.



📞 **Contact OLMC for further instructions if the patient refuses immobilization despite the provider’s assessment for the need for spinal immobilization.**

**AEMT
PARAMEDIC**

**AEMT
PARAMEDIC**

SHOCK and FLUID THERAPY

ALL PROVIDERS

- ❑ Focused history and physical exam
 - Blood glucose, Oxygen Saturation and Temperature assessment.
 - Consider Shock in patients with one or more the following:
 - Vital Signs: HR >100, SBP of <90mmHg for adults, SBP <70 + (age in years x 2) mmHg for peds, or RR >20 BPM.
 - Skin signs: cold clammy skin, febrile, or flash or delayed capillary refill.
 - Mental Status: altered, lethargic, or irritable (esp. in infants).
 - Evaluate for the source including infection, bleeding/trauma, neurologic or cardiac.
- ❑ Continuous ECG, ETCO2, and Pulse Oximetry monitoring when available
- ❑ **Treatment Plan**
 - Administer 10-15 lpm of oxygen.
 - C-spine immobilization, if indicated per *Selective Spinal Immobilization Guideline*
 - Ensure patient warmth, resuscitate with warm IV fluids when available.
 - 12 Lead EKG if available.
 - Consider needle decompression for tension pneumothorax if indicated (shock with chest trauma)
 - Address the underlying cause of the shock.
 - Pregnancy >20 weeks gestation – Transport in partial L lateral decubitus position. Place wedge-shaped cushion or multiple pillows under patient’s right hip and shoulders to elevate R side 45 degrees
 - Pediatric lowest acceptable systolic blood pressures are birth to 1 month = 60mmHg, 1 month to 1 year = 70mmHg, 1 year to 10 years is = 70mmHg + (age x 2) and over 10 years = 90mmHg.

ADULT

PEDIATRIC (<15 years of Age)

NOTE: Pediatric weight based dosing should not exceed Adult dosing.

EMT
AEMT

EMT
AEMT

- ❑ Vascular access *per IV-IO Access Guideline*
- ❑ Use 2 large bore IV’s
- ❑ **TRAUMATIC SHOCK** – Give fluid bolus 500mL at a time, reassess and repeat as needed to:
 - Maintain SBP to 80-90 mmHg (**without** closed head injury)
 - Maintain SBP to 110-120 mmHg (**with** closed head injury)
 - If above BP minimums are met, patient should have saline lock (or TKO IV) begun and should NOT be given IV fluid boluses, unless BP falls below these limits
- ❑ **NON-TRAUMATIC SHOCK** - Provide 500mL boluses up to a maximum of 2-liters and reassess for reversal of the signs of shock
 - If the patient remains hypotensive after 2 liters, call OLMC
- ⊞ **CARDIOGENIC SHOCK** - In patients with CHF, pulmonary edema, cardiogenic shock or kidney failure (i.e. dialysis patients), provide 500mL fluid boluses up to a maximum of 1 liter and reassess for reversal of the signs of shock.

📞 Call OLMC if shock has not been reversed.

PARAMEDIC

- 📞 Epinephrine (1:1000) 2–10 mcg/min IV/IO infusion for hypoperfusion. Titrate to maintain a SBP >100 mmHg.
And/or
- 📞 Dopamine 2-20 mcg/kg/min IV/IO infusion for

- ❑ Vascular access *per IV-IO Access Guideline*
- ❑ Use 2 large bore IV’s
- ❑ **TRAUMATIC SHOCK** – Give fluid bolus of NS 20 mL/kg at a time, reassess and repeat to up to a maximum of 60 mL/kg total. Reassess for reversal of the signs of shock
 - If the patient remains hypotensive after the 60 mL/kg call OLMC
- ❑ **NON-TRAUMATIC SHOCK** - Provide 20 ml/kg boluses up to a maximum of 60mL/kg and reassess for reversal of the signs of shock
 - If the patient remains hypotensive after administering 60 ml/kg NS, call OLMC
- ⊞ **CARDIOGENIC SHOCK** - In patients with CHF, pulmonary edema, cardiogenic shock or kidney failure (i.e. dialysis patients), provide 10 mL/kg fluid boluses up to a maximum of 20 ml/kg and reassess for reversal of the signs of shock

📞 Call OLMC if shock has not been reversed.

PARAMEDIC

- 📞 Epinephrine (1:1000) 0.1–1 mcg/kg/min IV/IO infusion for hypoperfusion. Titrate to maintain a SBP >70 + (age in years x 2) mmHg.
- OR
- 📞 Dopamine 2-20 mcg/kg/min IV/IO infusion for

hypoperfusion. Titrate to maintain a SBP >100 mmHg. (Goal is to maintain a mean arterial pressure (MAP) >70 mmHg)

hypoperfusion. Titrate to maintain a SBP >70 + (age in years x 2) mmHg

PART III. MEDICAL PATIENT CARE GUIDELINES

These guidelines were created to provide direction for each level of certified provider in caring for medical patients. The Online Medical Consulting/Consultation (OLMC) physician will always be the final word on treatment in the field. If there are ever any discrepancies between the guidelines and the OLMC physician these should be documented and brought to the attention of the physician at the receiving hospital or the agency Medical Director for review.

General Approach to Medical Patient Care Guidelines

- Assess your patient prior to initiating a guideline.
- Pediatric reference tape-based dosing is preferred over calculated dosages for infants and children.
- More than one guideline may apply.
- When conflicts arise between treatment guidelines contact OLMC for clarification.
- Providers may provide treatment up to the level of their certification only.
- Air Medical Transport Service personnel function under their own clinical guidelines.
- OLMC with a physician may change your treatment plan.
- Any variations to a guideline by the OLMC or physician should be clarified to insure that the provider has properly characterized the situation.
- The OLMC Physician has the final word on treatment once contact is made.
- The OLMC Physician must authorized any dosages of medications exceeding those in the guidelines.

Key to Symbols used in Guidelines

① This symbol and yellow highlighted instructions precedes any treatment that requires OLMC prior to initiating the treatment unless otherwise specified.

ALLERGIC REACTION/ANAPHYLAXIS

ALL PROVIDERS

- ❑ Focused history and physical exam.
- ❑ Continuous ECG, ETCO₂, and pulse oximetry monitoring, when available.
- ❑ **Treatment Plan**
 - Safely and rapidly eliminate the source of exposure, as able.
 - Maintain airway.
 - Apply cold pack to bite or sting site.
 - If the patient is stable and is >50 years old, has a history of CAD, or if the patient is tachycardic obtain a 12 lead EKG prior to administering epinephrine.
 - Monitor closely for hypotension.
- ❑ **Key Considerations**
 - If the patient has any respiratory distress and is conscious, allow them to achieve a position of comfort, including leaving a child in their parent's lap.
 - Give IM epinephrine as soon as the diagnosis of anaphylaxis has been established.
 - Establish IV access as soon as possible.
 - Epinephrine has a relatively short effect for allergic reactions. These patients should be transported to a medical facility for observation.

ADULT

PEDIATRIC (<15 years of Age)

NOTE: Pediatric weight based dosing should not exceed Adult dosing.

EMT

- ❑ Give or assist patient with **Epipen (0.3 mg)** IM for respiratory distress and/or shock from anaphylaxis
- ❑ Assist patient with own Albuterol inhaler according to the prescription on the inhaler
- ❑ O₂ as needed to maintain SaO₂ above 90%.

EMT

- ❑ Give or assist patient with **Epipen Jr. (0.15 mg)** IM for respiratory distress and/or shock from anaphylaxis. If >25kg then give Adult dose
- ❑ Assist patient with own Albuterol inhaler according to the prescription on the inhaler
- ❑ O₂ as needed to maintain SaO₂ above 90%.

AEMT

- ❑ Advanced airway, vascular access and fluid therapy per *IV-IO Access and Fluid Therapy Guideline*
- ❑ **Epinephrine (1:1000) 0.3 mg** IM for patient with more than mild symptoms
 - If symptoms persist, may repeat every 10 minutes to max total of 1.2 mg
- ❑ **Diphenhydramine (Benadryl) 50 mg** IV/IO/IM for moderate to severe allergic reaction
- ❑ If significant WHEEZING is present:
 - **Albuterol 2.5 mg every 10 minutes** via nebulization for bronchospasm/whoezing until symptoms subside
- ❑ If STRIDOR is present:
 - **Epinephrine (1:1000) 2mL** mixed with 3mL of NS via nebulize

AEMT

- ❑ Advanced airway, vascular access and fluid therapy per *IV-IO Access and Fluid Therapy Guideline*
- ❑ **Epinephrine (1:1000) 0.01 mg/kg to max 0.3mg** per dose IM for patient with more than mild symptoms
 - If symptoms persist, may repeat every 5-10 minutes to max total of 1.2 mg
- ❑ **Diphenhydramine (Benadryl) 1 mg/kg to max of 50mg/single dose** IV/IO/IM for moderate to severe allergic reaction
- ❑ If significant WHEEZING is present:
 - **Albuterol 2.5 mg every 10 minutes** via nebulization until symptoms subside. Start with **1.25 mg if patient is <1 yr in age.**
- ❑ If STRIDOR is present:
 - **Epinephrine (1:1000) 2mL** mixed with 3mL of NS via nebulizer

PARAMEDIC

- ① **Epinephrine (1:1000) 2–10 mcg/min** IV/IO infusion for hypoperfusion. Titrate to maintain a SBP >100 mmHg.
And/or
- ① **Dopamine 2-20 mcg/kg/min** IV/IO infusion for hypoperfusion. Titrate to maintain a SBP >100 mmHg. (*Goal is to maintain a mean arterial pressure (MAP) >70 mmHg*)

PARAMEDIC

- ① **Epinephrine (1:1000) 0.1–2 mcg/kg/min** IV/IO infusion for hypoperfusion. Titrate to maintain a SBP >70 + (age in years x 2) mmHg.
And/or
- ① **Dopamine 2-20 mcg/kg/min** IV/IO infusion for hypoperfusion. Titrate to maintain a SBP >70 + (age in years x 2) mmHg

CHILDREN WITH SPECIAL HEALTHCARE NEEDS

ALL PROVIDERS

- ❑ Focused history and physical exam
 - Blood glucose, core body temperature and oxygen saturation assessment.
 - Look for an EMSC Red Pack with a health information vial or a Life with Dignity (POLST/DNR) Order for instructions on care.
- ❑ Continuous ECG, ETCO₂, and pulse oximetry monitoring when available.
- ❑ **Treatment Plan**
 - Treat with consideration for the family per the *Family Centered Care Guideline*.
 - Do not become overwhelmed by equipment, focus on ABC's, ask parents and caregivers for guidance with equipment.
 - Common equipment issues for children with special healthcare needs:
 - Feeding Tube (NG/NJ and G-Tube)
 - Most common EMS complaints include; tube has come out, falling apart, leaking, blocked or skin site has unusual drainage or bleeding.
 - If draining or bleeding, apply sterile dressing and use pressure, transport.
 - If tube is malfunctioning or displaced assess for dehydration and treat per *Shock and Fluid Therapy Guideline*. Do not try to replace or remove the tube.
 - Keep patient NPO and nothing per feeding tube.
 - If a percutaneous (through the skin) G-tube has come out, place suction tubing in the stoma 2-3 inches to prevent full site closure.
 - Tracheostomy and Ventilator/BiPAP
 - For Tracheostomy care refer to the *Airway Management and Tracheostomy Guideline*
 - Assess ventilations
 - If the ventilator is working properly and patient needs transport for non-respiratory medical evaluation; keep on ventilator/BiPAP for transport.
 - If ventilator is not working or child is in respiratory distress for any reason; remove from ventilator and assist ventilations with BVM and 100% oxygen.
 - Oral and nasal suctioning for copious secretions as needed.
 - External Central IV Line (Broviac/PICC, etc.)
 - Do NOT use the central line for administration of anything.
 - Most common EMS complaint includes; tube has come out, broken, leaking, blocked or skin site has unusual drainage or bleeding.
 - This is a direct line to the central venous system, if the tube is leaking or broken, clamp line above the damaged point, cover the opening with a sterile gauze and transport.
 - If the tube has come out completely or the site is draining or bleeding, cover with a sterile gauze and apply pressure.
- ❑ **Key Considerations**
 - Family members are many times the best resource for equipment questions and patient care.
 - Interventions may vary according to patient age, size, and medical condition.

DROWNING OR SUBMERSION

ALL PROVIDERS

- ❑ Focused history and physical exam
 - Blood glucose, core body temperature and oxygen saturation assessment.
 - Assess the scene for other environmental issues or possible toxins.
- ❑ Continuous ECG, ETCO₂, and pulse oximetry monitoring when available.
- ❑ **Treatment Plan**
 - Safely remove patient from the water.
 - Place patient supine
 - Remove wet clothing
 - Ensure patient warmth
 - Spinal motion restriction per *Spinal Immobilization and Clearance Guideline*. Particular care to cervical spine immobilization should be given to patients with the possibility of a diving injury or drowning in shallow water.
 - Scuba divers “Dive Computer” or Dive Log Book should be transported with the patient.
- ❑ **Key Considerations**
 - Airway maintenance is the primary consideration.
 - There can be co-existing conditions depending on the type of submersion injury including trauma, hypothermia, and intoxication.
 - Hypotension is associated with a worse outcome, monitor closely and treat / prevent per the *Shock and Fluid Therapy Guideline* as needed.
 - Submersion in cold water will often cause severe hypothermia, notify receiving hospital so that appropriate resources and warming equipment can be mobilized.
 - CPR and other resuscitative efforts should be continued until arrival at the hospital as drowning patients may sometimes recover after prolonged resuscitative efforts.

ADULT

PEDIATRIC (<15 years of Age)

NOTE: Pediatric weight based dosing should not exceed Adult dosing.

EMT

- ❑ Begin CPR if patient pulseless and apneic
- ❑ If breathing spontaneously apply oxygen at 15 LPM via non-rebreather mask to maintain oxygen saturations >95%
- ❑ Ventilate with BVM when apneic or exhibiting respiratory distress. Consider a nasopharyngeal or oropharyngeal airway.

AEMT

- ❑ Advanced airway, vascular access and fluid therapy per *IV-IO Access and Fluid Therapy Guideline*
 - **Albuterol 2.5 every 10 minutes** via nebulization for bronchospasm/wheezing until symptoms subside
 - Reassess patient after each dose to determine need for additional dosing

PARAMEDIC

- ① **Epinephrine (1:1000) 2–10 mcg/min IV/IO** infusion for hypoperfusion. Titrate to maintain a SBP >100 mmHg **And/or**
- ① **Dopamine 2-20 mcg/kg/min IV/IO** infusion for hypoperfusion. Titrate to maintain a SBP >100 mmHg. *(Goal is to maintain a mean arterial pressure (MAP) >70 mmHg)*

EMT

- ❑ Begin CPR if patient pulseless and apneic
- ❑ If breathing spontaneously apply oxygen at 15 LPM via non-rebreather mask to maintain oxygen saturations >95%
- ❑ Ventilate with BVM when apneic or exhibiting respiratory distress. Consider a nasopharyngeal or oropharyngeal airway.

AEMT

- ❑ Advanced airway, vascular access and fluid therapy per *IV-IO Access and Fluid Therapy Guideline*
 - **Albuterol 2.5 every 10 minutes** via nebulization for bronchospasm/wheezing until symptoms subside. Start with **1.25 mg if age <1yr**
 - Reassess patient after each dose to determine need for additional dosing

PARAMEDIC

- ① **Epinephrine (1:1000) 0.1–2 mcg/kg/min IV/IO** infusion for hypoperfusion. Titrate to maintain a SBP >70 + (age in years x 2) mmHg **And/or**
- ① **Dopamine 2-20 mcg/kg/min IV/IO** infusion for hypoperfusion. Titrate to maintain a SBP >70 + (age in years x 2) mmHg

FEVER MANAGEMENT

ALL PROVIDERS

- ❑ Focused history and physical exam
- ❑ Assess temperature.
- ❑ Continuous ECG, ETCO₂, and pulse oximetry monitoring when available.
- ❑ **Treatment Plan**
 - If temperature is >100.4°F (>38.0°C) and the patient does NOT have any contraindications, consider antipyretic medications.
 - Contraindications include abdominal pain, allergy to medications, vomiting, active bleeding or concern from parents.
 - Avoid acetaminophen in patients with liver problems.
 - Ibuprofen is contraindicated in children <6 months old.
 - Ibuprofen is contraindicated in the immune-compromised patient (on chemotherapy, with autoimmune disorders, etc.)
 - For temperatures greater than 103°F or 39.5°C
 - Begin passive cooling techniques including removing excess clothing.
 - For temperatures greater than 106°F or 41°C
 - Refer to the *Temperature and Environmental Emergencies Guideline*.

ADULT

PEDIATRIC (<15 years of Age)

NOTE: Pediatric weight based dosing should not exceed Adult dosing.

EMT

- ❑ **Acetaminophen (Tylenol) 1000 mg** by mouth
- ❑ **Ibuprofen (Motrin) 800 mg** by mouth

EMT

- ❑ **Acetaminophen (Tylenol) 15mg/kg by mouth or rectum** – Recognize that Acetaminophen comes in various concentrations:
 - Children’s Liquid: 160mg/5mL
 - Chewable Tablets: 80mg or 160mg
 - Junior Strength caplets: 160mg
 - Rectal Suppositories: 80mg, 120mg and 325mg (these may be cut to an estimated dose)
- ❑ **Ibuprofen (Motrin) 10mg/kg by mouth** – Ibuprofen comes in various concentrations and is **contraindicated in children under 6 months old**
 - Children’s Liquid: 100mg/5mL
 - Chewable Tablets: 50mg or 100mg
 - Junior Strength Caplets: 100mg

AEMT

- ❑ *Advanced Airway, IV/IO Access, and Fluid Therapy Guidelines* as needed

AEMT

- ❑ *Advanced Airway, IV/IO Access, and Fluid Therapy Guidelines* as needed

PARAMEDIC

No Additional Paramedic Level Interventions

PARAMEDIC

No Additional Paramedic Level Interventions

GLUCOSE EMERGENCIES HYPOGLYCEMIA/HYPERGLYCEMIA

ALL PROVIDERS

- ❑ Focused history and physical exam
 - Blood glucose assessment (heel stick is preferred in newborns or infants).
 - Hypoglycemia is defined as blood glucose level <50 mg/dl for adults, <60 mg/dl for children, and <40 mg/dl for the term neonate (<30days of age) with any degree of altered mentation.
- ❑ **Treatment Plan**
 - Hypoglycemic patient with altered mentation **and** insulin pump in place
 - Care is directed at treating hypoglycemia first, then stopping administration of insulin.
 - Turn off insulin pump if able
 - If no one familiar with the device is available to assist, disconnect pump from patient by either:
 - Using quick-release where the tubing enters the dressing on patient's skin.
 - OR-
 - Completely remove the dressing, thereby removing the subcutaneous needle and catheter from under patient's skin.
 - When mental status returns to normal, patient should be strongly encouraged to eat.
 - Criteria for scene release of hypoglycemic patient:
 - Return to normal mental status following treatment.
 - Patient is able to take oral glucose, food and liquids
 - Patient does not want to be transported.
 - No oral diabetic medications have been taken.
 - No suicidal ideations or attempt at self-harm involved.
 - There is at least one responsible person that can assist the patient and is comfortable with monitoring the patient.
 - OLMC has been contacted and agrees to the release.
 - Children should be transported to the ED regardless of improvement in the field.
- ❑ **Key Considerations**
 - Do NOT attempt to give oral glucose to those who cannot swallow and protect their airway
 - Transport any patient who is at risk for prolonged or recurrent hypoglycemia, such as long-acting insulin or oral hypoglycemic overdose.
 - For severe hypoglycemia (<40 mg/dl) or hypoglycemic seizure, recheck blood glucose every 15 minutes to check for recurrent low blood sugar that may need treatment.

ADULT

PEDIATRIC (<15 years of Age)

NOTE: Pediatric weight based dosing should not exceed Adult dosing.

EMT

- ❑ **Dextrose Oral glucose 15 grams** if patient is able to swallow and protect airway
 - Repeat in 15 minutes as needed

EMT

- ❑ **Dextrose Oral glucose 7.5 grams** if patient is able to swallow and protect airway
 - Repeat in 15 minutes as needed

AEMT

- ❑ Vascular access and fluid therapy per *IV-IO Access and Fluid Therapy Guideline*

AEMT

- ❑ Vascular access and fluid therapy per *IV-IO Access and Fluid Therapy Guideline*

HYPOGLYCEMIA

- ❑ **Dextrose 50% 25 grams** IV/IO titrate to effect for hypoglycemia. May repeat as necessary
- ❑ **Glucagon 1 mg** IM if no IV/IO access

HYPOGLYCEMIA

- ❑ If blood glucose is less than 60 mg/dl
 - Give **D10W 2 ml/kg (200mg/kg)** for neonates <30days
 - Infants up to 1 year **Dextrose 10% (D10NS) 5 mL/kg** IV/IO - D10 = 10 mL D50 in 40 mL of **NS**

HYPERGLYCEMIA

Normal Saline 1000 mL IV/IO over 30–60 minutes (BS >300 mg/dL)

- Children greater than 1 year **Dextrose 25% (D25W) 2 mL/kg** IV/IO - D25 = 25 mL D50 in 25 mL **NS or Sterile Water**

- ❑ **Glucagon 0.1 mg/kg (max dose of 1 mg)** IM if no IV/IO access

HYPERGLYCEMIA

- ❑ **Normal Saline 20 mL/kg** IV/IO over 30–60 minutes for hyperglycemic patient (BS >300 mg/dL)

PARAMEDIC

No Additional Paramedic Level Interventions

PARAMEDIC

No Additional Paramedic Level Interventions

IMMUNOCOMPROMISED PATIENTS

ALL PROVIDERS

- ❑ Focused history and physical exam
 - Blood glucose, temperature and oxygen saturation assessment.
 - Assess and document reasons the patient may be immunocompromised, such as congenital syndromes, chemotherapy, transplant surgery, autoimmune disorder, or steroid usage.
- ❑ Continuous ECG, ETCO₂, and pulse oximetry monitoring when available.
- ❑ **Treatment Plan**
 - Assess and treat compromised airway, respiratory distress, altered mental status.
 - Assess for overwhelming sepsis with shock and treat per the *Shock and Fluid Therapy Guideline*.
 - If severely febrile (temperature 100.4°F or 38.0°C), may give acetaminophen orally and document temperature. If temperature below this level, do not treat fever.
- ❑ **Key Considerations**
 - Family members are often the best resource for patient care information.
 - Due to patient's inability to fight infection, patient may become very ill in a short period of time. These patients may present in overwhelming shock or sepsis, or respiratory distress.
 - Protect patients from infectious exposure during transport.
 - All EMS providers should use universal precautions (strict hand washing, gloves) and masks should be worn by providers with any possible infectious condition (URI, etc.)
 - These patients are at risk for low platelets and anemia, bleeding is a risk.
 - No rectal medications for treatment.
 - Avoid Ibuprofen with these patients.

ADULT

PEDIATRIC (<15 years of Age)

NOTE: Pediatric weight based dosing should not exceed Adult dosing.

EMT

- ❑ For fever above 104°F or 40.0°C:
 - **Acetaminophen (Tylenol) 1000 mg** by mouth.

EMT

- ❑ For fever above 104°F or 40.0°C :
 - **Acetaminophen (Tylenol) 15mg/kg by mouth or rectum** – Recognize that Acetaminophen comes in various concentrations:
 - Children’s Liquid: 160mg/5mL
 - Chewable Tablets: 80mg or 160mg
 - Junior Strength caplets: 160mg
 - Rectal Suppositories: 80mg, 120mg and 325mg and may be cut to an estimated dose

AEMT

- ❑ Advanced airway, vascular access and fluid therapy per *IV/IO Access and Fluid Therapy Guideline*

AEMT

- ❑ Advanced airway, vascular access and fluid therapy per *IV/IO Access and Fluid Therapy Guideline*

PARAMEDIC

No Additional Paramedic Level Interventions

PARAMEDIC

No Additional Paramedic Level Interventions

OBSTETRICAL EMERGENCIES

ALL PROVIDERS

- ❑ Focused history and physical exam
 - Do not perform pelvic exam
- ❑ Continuous ECG, ETCO₂, and pulse oximetry monitoring when available.
- ❑ **Treatment Plan**
 - Imminent Deliveries, normal delivery procedures
 - Attempt to prevent explosive delivery.
 - As delivery occurs, suction newborn's mouth, then nose.
 - If membrane is still intact as head delivers.
 - Instruct the mother to stop pushing.
 - Gently tear open membrane and immediately suction mouth, then nose.
 - Keep newborn at level of vagina until cord is cut.
 - Place one clamp 6 inches away from baby, place second clamp 9 inches away from baby, cut cord between the clamps.
 - Keep newborn warm and dry with vigorous stimulation.
 - Allow infant to nurse.
 - In multiple births, do not allow babies to nurse until all have been delivered.
 - Document APGAR score at 1 minute and again at 5 minutes

APGAR SCORING SYSTEM

	0 Points	1 Point	2 Points	Points totaled
Activity (muscle tone)	Absent	Arms and legs flexed	Active movement	<div style="text-align: center;">  </div>
Pulse	Absent	Below 100 bpm	Over 100 bpm	
Grimace (reflex irritability)	Flaccid	Some flexion of Extremities	Active motion (sneeze, cough, pull away)	
Appearance (skin color)	Blue, pale	Body pink, Extremities blue	Completely pink	
Respiration	Absent	Slow, irregular	Vigorous cry	

Severely depressed	0-3
Moderately depressed	4-6
Excellent condition	7-10

- Special Situations – **TRANSPORT TO THE CLOSEST HOSPITAL**
- **Excessive hemorrhage** following delivery or delayed placenta delivery.
 - Begin fundal massage (unless multiple birth is anticipated).
 - Paramedics should begin oxytocin (see below).
- **Nuchal cord:** cord is wrapped around the infant's neck
 - Attempt to slip cord over the head.
 - If cord is too tight to remove, immediately clamp in two places and cut between clamps.
- **Prolapsed cord or limb presentation:** cord or limb out of the vagina before the baby – **DO NOT ATTEMPT DELIVERY**
 - In order to maintain a pulsatile cord, insert two fingers of gloved hand into vagina to raise presenting portion of newborn off the cord.
 - If possible, place mother in Trendelenburg position. Otherwise, use knee-chest position.
 - Keep cord moistened with sterile saline.
 - Continue to keep pressure off cord throughout transport.

- Consider albuterol nebulized treatment and/or IV magnesium sulfate to suppress uterine contractions (contact OLMC)
 - **Breech presentation (coming buttocks first)**
 - Position mother with her buttocks at edge of bed, legs flexed.
 - Support baby's body as it delivers.
 - As the head passes the pubis, apply gentle upward pressure until the mouth appears over the perineum. Immediately suction mouth, then nose.
 - If head does not deliver, but newborn is attempting to breath, place gloved hand into the vagina, palm toward newborn's face, forming a "V" with the index and middle finger on either side of the nose. Push the vaginal wall from the face. Maintain position throughout transport.
 - Consider albuterol nebulized treatment and/or IV magnesium sulfate to suppress uterine contractions (contact OLMC)
 - **Shoulder Dystocia:** head is out but shoulder will not pass
 - Position mother with buttocks off the edge of the bed and thighs flexed upward as much as possible.
 - Apply firm, open hand pressure above the symphysis pubis.
 - If delivery does not occur, maintain airway patency as best as possible, immediately transport.
 - Consider albuterol nebulized treatment and/or IV magnesium sulfate to suppress uterine contractions (contact OLMC)
 - **Stillborn/Abortion**
 - All products of conception should be carefully collected and transported with the mother to the hospital. Anything other than transport should be coordinated with on-line medical consultation and/or law enforcement.
- **Key Considerations**
 - Attempt to maintain a sanitary environment
 - Transport in left lateral decubitus position

ADULT

PEDIATRIC (<15 years of Age)
NOTE: Pediatric weight based dosing should not exceed Adult dosing.

EMT AEMT

- Vascular access and fluid therapy per *IV/IO Access and Fluid Therapy Guideline*
- Treat seizures as per *Seizure Guideline*

PARAMEDIC

- **Oxytocin (Pitocin)**
 - **Intramuscular. Give 10 units IM.**
 - ① **IV/IO Infusion may be started if bleeding continues by adding 40 units to 1000mL NS and titrating the infusion to decrease bleeding and patient comfort.**
- In the event of uterine inversion, make one attempt to put the uterus back into place. Using the palm of the hand, push the fundus of the inverted uterus toward the vagina. If unsuccessful, cover uterus with moistened sterile gauze.

EMT AEMT

- Vascular access and fluid therapy per *IV/IO Access and Fluid Therapy Guideline*
- Treat seizures as per *Seizure Guideline*

PARAMEDIC

- Refer to the *Newborn Resuscitation Guideline*

OPTIONAL ORDERS BY OLMC ONLY

- ① **High-risk preterm labor when delivery is imminent, to suppress uterine contractions:** (1) Rapidly infuse 1 liter of NS (AEMT/PM) (2) Albuterol 2.5 mg via nebulization (AEMT/PM) (3) Magnesium Sulfate 1gram IV and titrate per OLMC (PM only)

OVERDOSE

ALL PROVIDERS

- ❑ Focused history and physical exam
 - Assess blood glucose, temperature, and oxygen saturation.
 - Assess the time and circumstances of the ingestion. Document evidence of suicide attempt or deliberate attempt at self-harm.
 - Assess scene for additional information on toxins, poisons, medications or other possible concerns.
- ❑ Continuous ECG, ETCO₂, and pulse oximetry monitoring when available.
- ❑ **Treatment Plan**
 - Do not give charcoal prior to OLMC or Poison Control consultation and agreement
 - Consider a 12 lead EKG.
 - Patient's who have attempted suicide by overdose CANNOT be released and MAY be taken in against their will. Police MAY need to assist in ensuring the transport.
- ❑ **Key Considerations**
 - Transport any pill bottles, open containers, or potential chemicals that may have been ingested.
 - Transport suicide notes or other pre-ingestion communications.

ADULT

PEDIATRIC (<15 years of Age)

NOTE: Pediatric weight based dosing should not exceed Adult dosing.

EMT

- ❑ Apply oxygen to maintain oxygen saturation >90%
- ❑ **Naloxone 0.4–2 mg** Intranasal (IN) for suspected narcotic overdose. May repeat once

EMT

- ❑ Apply oxygen to maintain oxygen saturation >90%
- ❑ **Naloxone 0.1 mg/kg** intranasal (IN) (intranasal) for suspected narcotic overdose. May repeat once

AEMT

- ❑ Advanced airway, vascular access and fluid therapy per *IV-IO Access and Fluid Therapy Guideline*
- ❑ **Naloxone 0.4–2 mg (per dose)** IV/IM/IO/IN for suspected narcotic overdose. May repeat once

AEMT

- ❑ Advanced airway, vascular access and fluid therapy per *IV-IO Access and Fluid Therapy Guideline*
- ❑ **Naloxone 0.1 mg/kg (max 2mg per dose)** IV/IM/IO/IN for suspected narcotic overdose. May repeat once

PARAMEDIC

- ❑ **Sodium bicarbonate 1 mEq/kg** slow IV/IO push for tricyclic antidepressant overdose with sustained HR >120 bpm, QRS >0.10 secs, hypotension unresponsive to fluids, or ventricular dysrhythmias
- ① **Epinephrine (1:1000) 2–10 mcg/min** IV/IO infusion for hypoperfusion. Titrate to maintain a SBP >100 mmHg
And/or
- ① **Dopamine 2-20 mcg/kg/min** IV/IO infusion for hypoperfusion. Titrate to maintain a SBP >100 mmHg. (Goal is to maintain a mean arterial pressure (MAP) >70 mmHg)

PARAMEDIC

- ① **Sodium bicarbonate:** Contact OLMC
- ① **Epinephrine (1:1000) 0.1–2 mcg/kg/min** IV/IO infusion for hypoperfusion. Titrate to maintain a SBP >70 + (age in years x 2) mmHg
And/or
- ① **Dopamine 2-20 mcg/kg/min** IV/IO infusion for hypoperfusion. Titrate to maintain a SBP >70 + (age in years x 2) mmHg

OPTIONAL ORDERS BY OLMC ONLY

- ① **Administer Charcoal by orders of OLMC or Poison Control Only:** Do not give for liquid ingestion or hydrocarbon ingestions
 - **Adults: Charcoal 25 grams by mouth** if the patient is alert, awake and gag reflex is intact
 - **Pediatrics: Charcoal 1g/kg up to 25 grams by mouth** if the patient is alert, awake and gag reflex is intact

RESPIRATORY DISTRESS

ALL PROVIDERS

- ❑ Focused history and physical exam:
 - Determine the need to treat under the *Allergic Reaction/Anaphylaxis Guideline*.
 - Determine the need to treat under the *Congestive Heart Failure/Pulmonary Edema Guideline*.
 - Assess blood glucose, temperature and oxygen saturation.
- ❑ Continuous ECG, ETCO₂, and pulse oximetry monitoring when available.
- ❑ Consider a 12 lead EKG.
- ❑ **Treatment Plan**
 - Evaluate for and remove any obvious airway obstruction
 - For choking infants apply a sequence of 5 back blows and 5 chest thrusts until the item is dislodged.
 - For choking adults and children, use the abdominal thrust maneuver.
 - Maintain airway, administer 10-15 lpm of oxygen via NRB.
- ❑ **Key Considerations**
 - Recall that infants and small children are primarily nose breathers, provide oral and nasal suctioning for copious secretions.
 - Keep patient NPO for any respiratory distress and if children have a RR >60.

ADULT

PEDIATRIC (<15 years of Age)

NOTE: Pediatric weight based dosing should not exceed Adult dosing.

EMT

- ❑ Assist with administration of prescribed metered dose inhaler or nebulizer medication per dosing instructions. If specific MDI dosing instructions are not available, give second dose after 20 minutes, if needed
- ❑ For patients with inadequate ventilations, in severe respiratory distress, assist ventilations with BVM and oropharyngeal or nasopharyngeal airway

EMT

- ❑ Assist with administration of prescribed metered dose inhaler or nebulizer medication per dosing instructions. If specific MDI dosing instructions are not available, give second dose after 20 minutes, if needed
- ❑ Allow the patient to achieve and remain in a position of comfort (the parents arms if desired) and keep them as calm as possible.
- ❑ For patients with inadequate ventilations, in severe respiratory distress, assist ventilations with BVM and oropharyngeal or nasopharyngeal airway

AEMT

- ❑ Advanced airway, vascular access and fluid therapy per *IV-IO Access and Fluid Therapy Guidelines*
- ❑ For ANAPHYLAXIS: see *Allergic Reaction / Anaphylaxis Guideline*
 - **Epinephrine 0.3mg IM** for severe respiratory distress or shock
 - If symptoms persist, may repeat every 5 minutes to max total of 1.2 mg
- ❑ For significant WHEEZING give:
 - **Albuterol 2.5 mg every 10 minutes** via nebulization until symptoms subside.

AEMT

- ❑ Advanced airway, vascular access and fluid therapy per *IV-IO Access and Fluid Therapy Guidelines*
- ❑ For ANAPHYLAXIS: see *Allergic Reaction / Anaphylaxis Guideline*
 - **Epinephrine (1:1000) 0.01 mg/kg to max 0.3mg** per dose **IM** for severe respiratory distress or shock
 - If symptoms persist, may repeat every 5 minutes to max total of 1.2 mg
- ❑ For significant WHEEZING give:
 - **Albuterol 2.5 mg every 10 minutes** via nebulization until symptoms subside. Start with **1.25 mg if patient is <1 yr in age**.

- ❑ For **STRIDOR** give:
 - **Epinephrine (1:1000) 2mL** mixed with 3mL of NS via nebulizer
- ❑ Patient respiratory status must be reassessed after each dose to determine need for additional treatment. **Call OLMC for additional doses.**
- ❑ Consider supraglottic airway in comatose patients in severe distress who are not responding to the above treatment measures

- ❑ **CPAP** – Consider when the patient is awake but needs assistance with oxygenation and ventilation such as in a CHF/Pulmonary Edema patient or COPD patient.
 - Explain the procedure to the patient
 - Initially apply the mask and begin the CPAP according to training instructions.
 - **CPAP** - Provide CPAP of 5 cm H₂O to begin. May increase to 10 mm H₂O if needed. **Further increase only with OLMC consultation.**
 - Contact OLMC to discuss further settings and treatment above the initial setup

- ❑ For **STRIDOR** give:
 - ❑ **Epinephrine (1:1000) 2mL** mixed with 3mL of NS via nebulizer
 - ❑ Patient respiratory status must be reassessed after each dose to determine need for additional treatment. **Call OLMC for additional doses.**
 - ❑ **CPAP** – ONLY use when the patient is on the machine at home. Maintain home settings and bring machine with the patient. If unable to adequately ventilate return to BVM or advance to intubation

🕒 **Lidocaine 2% 40-60 mg (2–3 mL) added to Albuterol** for adult patients with “*cough variant asthma*” with severe coughing which inhibits respiratory function (with or without audible wheezes)

PARAMEDIC

- ❑ Consider supraglottic airway, endotracheal intubation, or cricothyrotomy in patients in severe distress who are not responding to above treatment measures per the Airway and Tracheostomy Management Guideline.

PARAMEDIC

SEIZURES

ALL PROVIDERS

- ❑ Focused history and physical exam
 - Blood glucose, temperature and oxygen saturation assessment.
 - Question patient / bystanders regarding possibility of pregnancy.
 - Assess scene for possible toxin, overdose or trauma.
- ❑ Continuous ECG, ETCO₂, and pulse oximetry monitoring when available.
- ❑ **Treatment Plan**
 - Do not restrain, but provide protection during the tonic-clonic phase.
 - Spinal motion restriction per **Spinal Immobilization and Clearance Guideline**
 - Ensure patients experiencing febrile seizures are not excessively dressed or bundled.
 - Any child <12 months old with seizure activity should be transported to the ED for further evaluation.

ADULT

PEDIATRIC (<15 years of Age)

NOTE: Pediatric weight based dosing should not exceed Adult dosing.

EMT

- ❑ Treat for hypoglycemia, if present, per **Hypoglycemia/Hyperglycemia Guideline**
- ❑ Apply oxygen to maintain oxygen saturation >90%
- ❑ Assist patient's family or caretaker with any home medication treatments
- ❑ If patient has a vagal nerve stimulator in place, assist patient's family or caretaker with use of the magnet every 3 minutes, 3 attempts maximum

EMT

- ❑ Treat for hypoglycemia, if present, per **Hypoglycemia/Hyperglycemia Guideline**
- ❑ Apply oxygen to maintain oxygen saturation >90%
- ❑ Assist patient's family or caretaker with any home medication treatments
- ❑ If patient has a vagal nerve stimulator in place, assist patient's family or caretaker with use of the magnet every 3 minutes, 3 attempts maximum

AEMT

- ❑ Advanced airway, vascular access and fluid therapy per **IV-IO Access and Fluid Therapy Guidelines**
- ❑ Choose **ONE** benzodiazepine for treatment and maximize dosing. **Contact OLMC before changing to a different medication.**
- ❑ **Midazolam (Versed)**
 - Dosage is cut in half if the patient has received narcotics or alcohol
 - Consider the size of the patient for dosing
 - **IV/IO - 2-4mg** every 5 minutes to the desired effect or max dose of 10mg
 - **Intranasal or oral- 0.2 mg/kg** to a maximum of 10mg as a one-time dose
- ❑ **Diazepam (Valium)** – May be used as an alternative. Follow the same safety parameters as with Midazolam
 - **IV/IO – 5-10mg** every 5 min to the desired effect or max dose of 30mg
 - **Rectally** – Same dosage
- ❑ **Lorazepam (Ativan)** – May be used as an alternative. Follow the same safety parameters as with Midazolam
 - **IV/IO – 1-2mg** every 5 min. to the desired effect or max dose of 4mg

AEMT

- ❑ Advanced airway, vascular access and fluid therapy per **IV-IO Access and Fluid Therapy Guidelines**
- ❑ Choose **ONE** benzodiazepine for treatment and maximize dosing. **Contact OLMC before changing to a different medication**
- ❑ **Midazolam (Versed)**
 - **Intranasal or oral- 0.2 mg/kg, max dose of 10mg** as a one-time dose
 - Dosage is cut in half if the patient has received narcotics or alcohol.
 - Consider the size of the patient for dosing
 - **IV/IO - 0.1 mg/kg, max dose of 4mg**
 - Do NOT exceed adult dosing
- ❑ **Diazepam (Valium)** – May be used as an alternative. Follow the same safety parameters as with Midazolam
 - **IV/IO - 0.1 mg/kg, max dose of 10mg**
 - Do NOT exceed adult dosing
 - **Rectally – 0.3 mg/kg PR**
- ❑ **Lorazepam (Ativan)** – May be used as an alternative. Follow the same safety parameters as with Midazolam
 - **IV/IO – 0.1mg/kg, max dose of 4mg.** Do NOT exceed adult dosing

① **Contact OLMC for dosages above those provided or use of medication NOT fitting the guideline parameters**

① **Contact OLMC for dosages above those provided or use of medication NOT fitting the guideline parameters**

PARAMEDIC

① For females with advanced pregnancy and seizures: magnesium sulfate - 4 grams IM or 4 grams over 15 to 30 min IV/IO.

PARAMEDIC

① Magnesium sulfate – For pediatric patients who are pregnant and having a seizure contact OLMC

STROKE or NEURO DEFICITS

ALL PROVIDERS

- ❑ Focused history and physical exam
 - Blood glucose, temperature and oxygen saturation assessment.
 - Keep NPO.
 - Document symptom onset time or time last seen normal.
- ❑ Continuous ECG, blood pressure, ETCO₂, and pulse oximetry monitoring when available.
- ❑ 12 Lead EKG, if available.
- ❑ **Treatment Plan**
 - Rapidly transport
 - Preferentially transport to a Primary Stroke Center or Stroke Receiving Facility, if available. Consider air medical transport to facilitate rapid transport.
 - Alert the receiving emergency department that you are transporting a suspected stroke patient as soon as you have made a destination decision.
- ❑ **Key Considerations**
 - Children can have strokes as well as adults. Some risk factors include; sickle cell disease, congenital and acquired heart disease, head and neck infections, systemic conditions, (e.g. inflammatory bowel disease and autoimmune disorders), head trauma or dehydration.

ADULT

PEDIATRIC (<15 years of Age)

NOTE: Pediatric weight based dosing should not exceed Adult dosing.

EMT

- ❑ Apply oxygen to maintain oxygen saturation 90 - 95%
- ❑ Evaluate and Document **Cincinnati Stroke Scale** during assessment. The scale is positive (a stroke is likely) if ANY of following are abnormal:
 - **Facial Droop**
 - Normal: Both sides of face move equally
 - Abnormal: One side of face does not move as well as the other (or not at all)
 - **Arm Drift**
 - Normal: Both arms move equally or not at all
 - Abnormal: One arm does not move, or drifts down compared to the other
 - **Speech**
 - Normal: Patient uses correct words with no slurring
 - Abnormal: Slurred or inappropriate words or mute

EMT

- ❑ Apply oxygen to maintain oxygen saturation 90 - 95%
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 - **Speech**
 - Normal: Patient uses correct words with no slurring
 - Abnormal: Slurred, inappropriate words or mute

AEMT

- ❑ Advanced airway, vascular access and fluid therapy per *IV-IO Access and Fluid Therapy Guidelines*

AEMT

- ❑ Advanced airway, vascular access and fluid therapy per *IV-IO Access and Fluid Therapy Guidelines*

PARAMEDIC

No Additional Paramedic Level Interventions

PARAMEDIC

No Additional Paramedic Level Interventions

TEMPERATURE AND ENVIRONMENTAL EMERGENCIES

ALL PROVIDERS

- ❑ Scene and patient management
 - Remove patient from hot or cold environment, when possible
- ❑ Focused history and physical exam
 - Body temperature and blood glucose assessment.
 - Assess level of consciousness; apply the ***Altered Mental Status Guideline***, if applicable.
 - Assess for underlying causes; medications, toxins, CNS lesions or other medical conditions.
- ❑ Continuous ECG, ETCO₂, and pulse oximetry monitoring when available
- ❑ **Treatment Plan**
 - Heat Related (Hyperthermia)
 - Temperature elevation **WITHOUT** altered mental status (**Heat Exhaustion**)
 - Slow cooling with ice packs, wet towels, and/or fans to areas in the vicinity of head and neck, axillae, and groin.
 - If patient is alert and not nauseated, oral rehydration with water or balanced electrolyte solution.
 - Severe muscle cramps may be relieved by gentle stretching of the muscles.
 - Temperature elevation **WITH** altered mental status (**Heat Stroke**)
 - Aggressive cooling to unclothed patient utilizing fine mist water spray and fans in conjunction with ice packs to head and neck area, groin and axilla while maintaining modesty. **NOT recommended for children and infants.**
 - Aggressive cooling should be stopped if shivering begins.
 - Monitor closely for dysrhythmia, recognize and treat with the appropriate ***Cardiac Patient Care Guideline***
 - Cold Related (Hypothermia)
 - Protect patient from further heat loss (application of blankets, warm environment, etc.).
 - Suspicion of cardiac arrest in cold environment: utilize 30-45 seconds to confirm pulselessness.
 - Confirm body temperature and treat accordingly.
 - **Severe** <86°F (30°C)
 - No active external rewarming (no heat, forced hot air, warm packs, etc.)
 - Limit defibrillation attempts to 3 and NO external pacing
 - Rapid but gentle transport (rough movement may precipitate arrhythmias)
 - **Moderate** 86-93°F (30-34°C)
 - Use warm packs to head and neck, axillae, and groin
 - **Mild** >93°F (34°C)
 - Warm with blankets, warm environment, etc.
 - Frost Bite precautions – Do not rub or use dry external heat. Re-warm with 40°C water if possible.
- ❑ **Key Considerations**
 - Avoid refreezing. It is better not to rewarm frostbite if refreezing is a possibility.

ADULT

PEDIATRIC (<15 years of Age)

NOTE: Pediatric weight based dosing should not exceed Adult dosing.

EMT
AEMT

EMT
AEMT

- ❑ Advanced airway, vascular access and fluid therapy per ***IV-IO Access and Fluid Therapy Guidelines***
- ❑ Warm or cool IV fluids, if available, should be begun for moderate to severe hypothermia or hyperthermia, respectively.

- ❑ Advanced airway, vascular access and fluid therapy per ***IV-IO Access and Fluid Therapy Guidelines***
- ❑ Warm or cool IV fluids, if available, should be begun for moderate to severe hypothermia or hyperthermia, respectively.

PARAMEDIC

PARAMEDIC

- ❑ Cold emergencies
 - Withhold anti-arrhythmic meds until temperature >86°F (30°C)

- ❑ Cold emergencies
 - Withhold anti-arrhythmic meds until temperature >86°F (30°C)

TOXIC EXPOSURE- CARBON MONOXIDE / CLOSED SPACE FIRE AND SMOKE EXPOSURE

ALL PROVIDERS

- ❑ Scene and patient management
 - Safely and rapidly remove patient from source of exposure.
 - Collect environmental CO levels if equipment is available.
 - Treat external burns and possible airway burns per *Burns Guideline*
- ❑ Focused history and physical exam
 - Estimation of exposure time.
 - Pulse oximetry readings are inaccurate in the face of CO poisoning
- ❑ Continuous ECG, ETCO₂, and pulse oximetry monitoring when available.
- ❑ Utilize transcutaneous CO monitoring, if available
- ❑ **Treatment Plan**
 - Administer high flow oxygen by 100% non-rebreather mask immediately and continuously.
 - Patients exposed to closed space fires are at risk for both carbon monoxide and cyanide poisoning. Consider treatment with **hydroxycobalamin** for severe symptoms (mental status changes, hypotension, dysrhythmias).
- ❑ **Key Consideration**
 - Pregnant patients who have been exposed should be transported.
 - Provide early notification to receiving ED of possible CO and/or cyanide poisoning.

ADULT

PEDIATRIC (<15 years of Age)

NOTE: Pediatric weight based dosing should not exceed Adult dosing.

EMT AEMT

EMT AEMT

- ❑ Advanced airway management, vascular access and fluid therapy per *IV-IO Access and Fluid Therapy Guidelines*
- ❑ **Hydroxocobalamin 5 g IV/IO** over 15 minutes (see indications above)

- ❑ Advanced airway management, vascular access and fluid therapy per *IV-IO Access and Fluid Therapy Guidelines*
- ① **Hydroxocobalamin 70mg/kg IV/IO** over 15 minutes, not to exceed a max dose of 5 grams. Requires order from OLMC or consultation with Poison Control Center prior to use.

PARAMEDIC

PARAMEDIC

- ① Early notification to receiving ED of potential CO poisoning
- ① **Epinephrine (1:1000) 2–10 mcg/min IV/IO** infusion for hypoperfusion. Titrate to maintain a SBP >100 mmHg.
And/or
- ① **Dopamine 2-20 mcg/kg/min IV/IO** infusion for hypoperfusion. Titrate to maintain a SBP >100 mmHg. (Goal is to maintain a mean arterial pressure (MAP) >70 mmHg)

- ① Early notification to receiving ED of potential CO poisoning
- ① **Epinephrine (1:1000) 0.1–2 mcg/kg/min IV/IO** infusion for hypoperfusion. Titrate to maintain a SBP >70 + (age in years x 2) mmHg.
And/or
- ① **Dopamine 2-20 mcg/kg/min IV/IO** infusion for hypoperfusion. Titrate to maintain a SBP >70 + (age in years x 2) mmHg

TOXIC EXPOSURE - CYANIDE

ALL PROVIDERS

- ❑ Scene Management
 - Rapidly remove patient from the source of exposure.
 - Request HazMat response as appropriate.
 - Industries in which to consider cyanide exposure:
 - Electroplating and Metallurgy
 - Organic chemicals production
 - Photographic developing
 - Manufacture of plastics
 - Fumigation of ships
 - Mining processes, including gold/copper
 - Patients and EMS providers may be exposed to cyanide in the following ways;
 - Breathing air, drinking water, touching soil, or eating foods that contain cyanide.
 - Smoking cigarettes and breathing smoke-filled air during fires are major sources of cyanide exposure.
 - Breathing air near a hazardous waste site containing cyanide.
 - Eating foods naturally containing cyanide compounds, such as tapioca, lima beans, apricot seeds and almonds. However, the portions eaten in the United States contain relatively low amounts of cyanide.
- ❑ Focused history and physical exam
 - Be alert for exposure related signs and symptoms;
 - Acute dyspnea/tachypnea without cyanosis
 - Nausea/vomiting
 - Seizures
 - Hyper or hypotension
 - Total body erythema (redness)
- ❑ Continuous ECG, ETCO₂, and pulse oximetry monitoring when available
- ❑ Treatment Plan
 - Administer high flow oxygen immediately and continuously.
 - Normal pulse oximetry readings may be found in the face of severe cyanide poisoning.
 - Consider carbon monoxide poisoning in patients exposed to closed space fire and smoke.
 - For industrial exposures, request the Material Safety Data Sheet (MSDS) for the chemical involved and bring this to the ED.

ADULT

PEDIATRIC (<15 years of Age)

NOTE: Pediatric weight based dosing should not exceed Adult dosing.

EMT AEMT

- ❑ Advanced airway, vascular access and fluid therapy per *IV/IO Access and Fluid Therapy Guidelines*
- ❑ **Hydroxocobalamin 5 gm IV/IO** over 15 minutes (approximately 15 mL/min)

EMT AEMT

- ❑ Advanced airway, vascular access and fluid therapy per *IV/IO Access and Fluid Therapy Guidelines*
- ① **Hydroxocobalamin 70mg/kg IV/IO** over 15 minutes, not to exceed a max dose of 5 grams. Requires order from OLMC or consultation with Poison Control Center prior to use.

PARAMEDIC

- ① **Epinephrine (1:1000) 2–10 mcg/min IV/IO** infusion for hypoperfusion. Titrate to maintain a SBP >100 mmHg. **And/or**
- ① **Dopamine 2-20 mcg/kg/min IV/IO** infusion for hypoperfusion. Titrate to maintain a SBP >100 mmHg. *(Goal is to maintain a mean arterial pressure (MAP) >70 mmHg)*

PARAMEDIC

- ① **Epinephrine (1:1000) 0.1–2 mcg/kg/min IV/IO** infusion for hypoperfusion. Titrate to maintain a SBP >70 + (age in years x 2) mmHg. **And/or**
- ① **Dopamine 2-20 mcg/kg/min IV/IO** infusion for hypoperfusion. Titrate to maintain a SBP >70 + (age in years x 2) mmHg

TOXIC EXPOSURE - HYDROFLUORIC ACID

ALL PROVIDERS

- ❑ Scene Management
 - Industrial exposures in which to consider hydrofluoric acid exposure:
 - Aluminum Processing
 - Chemical Plants
 - Construction – Waste Products
 - Creation of chlorofluorohydrocarbons for refrigerants, aerosols, foams, plastics, and specialty solvents
 - Dry Cleaning Spotting Solutions
 - Electroplating
 - Foundry Cast Sand Removal
 - Glass Etching or Cleaning
 - Meat Packing Industry
 - Petroleum Refineries for high octane gasoline
 - Semiconductor Silicon Etching or Cleaning
 - Stainless Steel “Pickling”
 - Stone Etching or Polishing
 - Uranium Processing
- ❑ Focused history and physical exam
- ❑ Continuous ECG, ETCO₂, and pulse oximetry monitoring when available
- ❑ For industrial exposures, request the Material Safety Data Sheet (MSDS) for the chemical involved and bring this to the ED.
- ❑ **Treatment Plan**
 - ❑ Skin Exposure
 - Immediate irrigation. Clothing, jewelry etc. must be removed for irrigation.
 - Soak burned skin in magnesium hydroxide antacid preparations (e.g. Milk of Magnesia, Mylanta, Maalox).
 - ❑ Eye Exposure
 - Continuous rinsing for a minimum of 15 minutes.
 - ❑ Ingestion – Conscious/Alert Patient Only (OG tube recommended for the pediatric patient).
 - If patient is able to swallow, administer large amounts of any calcium or magnesium based antacid (e.g. Milk of Magnesia, Mylanta, Maalox). In the absence of these products, have patient drink approximately 8-16 oz. of water.

ADULT

PEDIATRIC (<15 years of Age)

NOTE: Pediatric weight based dosing should not exceed Adult dosing.

EMT

AEMT

- ❑ Advanced airway, vascular access and fluid therapy per *IV-IO Access and Fluid Therapy Guidelines*
- ❑ **Calcium Gluconate Gel for application** – Mix 25mL of 10% Calcium Gluconate in 75mL of a sterile water-soluble lubricant. Apply topically or if hand exposure, in a glove

PARAMEDIC

No Additional Paramedic Level Interventions

EMT

AEMT

- ❑ Advanced airway, vascular access and fluid therapy per *IV-IO Access and Fluid Therapy Guidelines*
- ① **Calcium Gluconate Gel for application: Contact OLMC or Poison Control Center for instructions**

PARAMEDIC

No Additional Paramedic Level Interventions

TOXIC EXPOSURE – ORGANOPHOSPHATES / NERVE AGENTS

ALL PROVIDERS

- ❑ Scene management
 - ❑ Ensure scene safety and that there is no risk of toxic exposure to rescuers/providers
 - ❑ When safe to do so, remove patient from the source of exposure.
 - ❑ Request HazMat response.
- ❑ Focused history and physical exam.
 - Assess for “S.L.U.D.G.E.M.” presentation (Salivation, Lacrimation, Urination, Defecation, Gastrointestinal cramping, Emesis and Miosis).
- ❑ Continuous ECG, ETCO₂, and pulse oximetry monitoring when available
- ❑ **Treatment Plan**
 - Decontaminate immediately
 - ❑ Remove clothing, jewelry etc. as irrigation is taking place
 - ❑ Assess Exposure Level
 - Mild – Miosis (constricted pupils) only, or no symptoms
 - Moderate – Other “S.L.U.D.G.E.M.” symptoms
 - Severe – Unconscious, in respiratory distress, seizing, flaccid, or apneic
- ❑ **Key Considerations**
 - Always protect yourself from exposure before entering a treatment zone.
 - Organophosphates and carbamates are the two general categories of these toxic substances.
 - These substances may be used in fertilizers or as pesticides, herbicides, fungicides, fire retardants, or chemical nerve agents.

ADULT

PEDIATRIC (<15 years of Age)

NOTE: Pediatric weight based dosing should not exceed Adult dosing.

EMT AEMT

EMT AEMT

- ❑ Advanced airway, vascular access and fluid therapy per *IV/IO Access and Fluid Therapy Guidelines*
- ❑ **Atropine / Pralidoxime kits (Mark I, Duodote, etc.) may be used instead of the individual drugs**
 - **Mild** Exposure: Patient with no symptoms may require no treatment. If miosis is present, administer 1 kit
 - **Moderate** Exposure: with evidence of SLUDGEM, administer 2 Kits
 - **Severe** Exposure: with respiratory distress, decreased mental status, seizures, administer 3 Kits

- ❑ Advanced airway, vascular access and fluid therapy per *IV/IO Access and Fluid Therapy Guidelines*

📞 Contact OLMC or Poison Control Center for instructions

📞 Monitor patients carefully for worsening symptoms and consult OLMC or Poison Control Center regarding further treatment

PARAMEDIC

PARAMEDIC

- ❑ **Atropine sulfate 2 mg rapid IV/IO** (preferred) or IM repeated every 15 minutes until symptoms improving as follows:
 - Control of bronchorrhea (excessive watery sputum)
 - Control of bronchoconstriction, (as reflected by level of oxygenation and ease of ventilation)
 - Reversed dangerous bradyarrhythmias or AV-blocks

VIOLENT PATIENT / CHEMICAL SEDATION

ALL PROVIDERS

- ❑ Scene management
 - Contact Law Enforcement if the patient is determined to be a threat to themselves or others or if assistance with patient control is needed.
 - Remove patient from the stressful environment and remove any possible weapons.
 - Before touching any patient that has been Tasered, ensure law enforcement has disconnected the wires from the hand held unit.
- ❑ Focused history and physical exam
 - Blood glucose, temperature and oxygen saturation assessment.
 - Always assess for a possible medical condition, exposure or trauma including possible abuse/assault.
- ❑ Continuous ECG, ETCO₂, and pulse oximetry monitoring when available
- ❑ **Treatment Plan**
 - Tasered patient
 - Removal of Taser probes
 - EMS providers may remove probes, unless they are embedded in the face, neck, groin, breast, or spinal area.
 - To remove probes
 - Place one hand on the patient in the area where the probe is embedded and stabilize the skin surrounding the puncture site. Place other hand firmly around the probe.
 - In one fluid motion pull the probe straight out from the puncture site and repeat procedure with second probe.
 - The following patients should be transported to an Emergency Department for evaluation
 - Patient with probes embedded in the face, neck, groin, breast, or spinal area
 - Patient with significant cardiac history
 - Patient having ingested drugs, especially stimulants, such as phencyclidine/PCP, cocaine, "spice", "bath salts", "designer drugs", etc.
 - Patients exhibiting bizarre behavior or who have persistently abnormal vital signs
 - Pepper Spray exposure
 - Irrigate eyes copiously with normal saline or water, medial to lateral, with copious amounts of water
- ❑ **Key Considerations**
 - ❑ Chemical sedation should be considered for patients that cannot be calmed by another method available and they are a danger to themselves or others

ADULT

PEDIATRIC (<15 years of Age)

NOTE: Pediatric weight based dosing should not exceed Adult dosing.

EMT

- ❑ Attempt to calm or gently restrain the patient

AEMT

- ❑ Vascular access and fluid therapy per *IV-IO Access and Fluid Therapy Guidelines*
- ❑ Choose **ONE** benzodiazepine for treatment and maximize dosing. Contact OLMC before changing to a different medication.

EMT

- ❑ Attempt to calm or gently restrain the patient

AEMT

- ❑ Vascular access and fluid therapy per *IV-IO Access and Fluid Therapy Guidelines*
- ❑ Choose **ONE** benzodiazepine for treatment and maximize dosing. Contact OLMC before changing to a different medication

Midazolam

- Dosage is cut in half if the patient has received narcotics or alcohol
- Consider the size of the patient for dosing.
- **IV/IO - 2-4mg** every 5 minutes to the desired effect or max dose of 10mg
- **Intranasal or oral - 0.2 mg/kg** to a maximum of 10mg as a one-time dose.

Diazepam – May be used as an alternative. Follow the same safety parameters as with Midazolam.

- **IV/IO – 5-10mg** every 5 min to the desired effect or max dose of 30mg.
- **Rectally** – Same dosage.

Lorazepam – May be used as an alternative. Follow the same safety parameters as with Midazolam.

- **IV/IO – 1-2mg** every 5 min. to the desired effect or max dose of 4mg.

① **Contact OLMC for dosages above those provided or use of medication NOT fitting the guideline parameters.**

PARAMEDIC

Haloperidol 5-10mg IM or 2-5 mg IV/IO

① **Haloperidol (Haldol) Contact OLMC for repeat dosing.**

Midazolam

- Dosage is cut in half if the patient has received narcotics or alcohol
- Consider the size of the patient for dosing.
- **IV/IO - 0.1 mg/kg, max dose of 4mg**
 - Do NOT exceed adult dosing
- **Intranasal or oral - 0.2 mg/kg to a maximum of 10mg** as a one-time dose

Diazepam – May be used as an alternative. Follow the same safety parameters as with Midazolam

- **IV/IO - 0.1 mg/kg, max dose of 10mg**
 - Do NOT exceed adult dosing
- **Rectally – 0.3 mg/kg PR**

Lorazepam – May be used as an alternative. Follow the same safety parameters as with Midazolam

- **IV/IO – 0.1mg/kg, max dose of 4mg**
 - Do NOT exceed adult dosing

① **Contact OLMC for dosages above those provided or use of medication NOT fitting the guideline parameters.**

PARAMEDIC

① **Contact OLMC or Poison Control Center for instructions prior to using haloperidol**

- **Haloperidol**
 - 6-12 years old: **1-3 mg/dose IM**
 - 12 years and older: **5-10mg IM or 2-5 mg IV/IO**
 - <6 years old – NOT recommended.

PART IV. TRAUMA PATIENT CARE GUIDELINES

These guidelines were created to provide direction for each level of certified provider in caring for trauma patients. The Online Medical Consulting/Consultation (OLMC) physician will always be the final word on treatment in the field. If there are ever any discrepancies between the guidelines and the OLMC physician these should be documented and brought to the attention of the physician at the receiving hospital or the agency Medical Director for review.

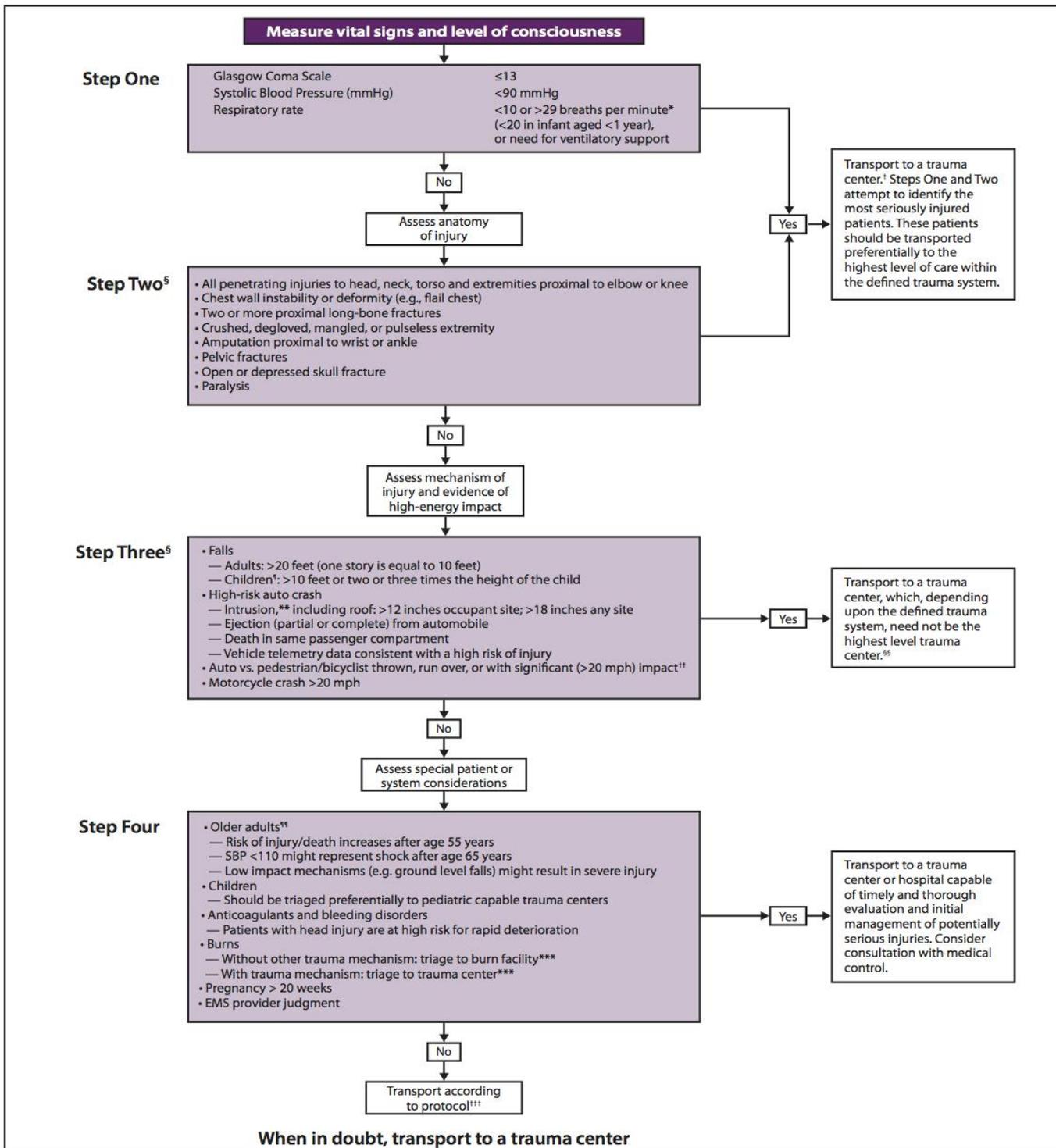
General Approach to Medical Patient Care Guidelines

- Assess your patient prior to initiating a guideline.
- Early notification allows the receiving physician to activate the receiving hospital's trauma alert system.
- Providers should describe vitals signs including GCS, injuries, mechanism of injury and any complicating factors that will affect treatment (step 4 Utah Trauma Field Triage Guidelines) so that the hospital may activate the appropriate level of trauma response.
- Consider stopping at a lower level trauma center if you have a prolonged transport and the patient has a compromised airway that you cannot secure.
- Pediatric reference tape-based dosing is preferred over calculated doses for infants and children.
- Pediatric lowest acceptable systolic blood pressures are: birth to 1 month = 60mmHg, 1 month to 1 year = 70mmHg, 1 year to 10 years is = 70mmHg + (age x 2) and over 10 years = 90mmHg. These are the blood pressures to use for Pediatrics (<15 years old) under step one of the Utah Trauma Field Triage Guidelines.
- More than one guideline may apply.
- If conflicts arise between treatment guidelines contact OLMC for clarification.
- Providers may provide treatment up to the level of their certification only.
- Air Medical Transport Service personnel function under their own clinical guidelines.
- Contact your receiving hospitals and OLMC as soon as clinically possible for each patient.
- OLMC with a physician may change your treatment plan.
- Any variations to a guideline by the OLMC physician should be clarified to insure that the provider has properly characterized the situation.
- The OLMC Physician has the final word on treatment once contact is made.
- The OLMC Physician must approve usage of dosages in excess of the guidelines.

Key to Symbols used in Guidelines

- ① This symbol and yellow highlighted instructions precedes any treatment that requires OLMC prior to initiating the treatment unless otherwise specified.

Utah Trauma Field Triage Guidelines



Reference: MMWR, January 13, 2012, Vol. 61 No. 1.

4/25/2012

AMPUTATIONS

ALL PROVIDERS

- ❑ Focused history and physical exam
- ❑ Continuous ECG, ETCO₂, and Pulse Oximetry monitoring when available
- ❑ **Treatment Plan**
 - ❑ Maintain airway, administer 10-15 lpm of oxygen.
 - ❑ Unless this is an isolated injury, consider spinal motion restriction per the *Selective Spinal Immobilization Guidance*.
 - ❑ Apply direct pressure to control hemorrhage. Also consider tourniquets and hemostatic agents, if needed.
 - Amputated Body Parts and/or Tissue
 - If amputation is incomplete, cover stump with sterile dressing saturated in NS, splint affected digit or limb in baseline physiologic position.
 - All retrievable tissue should be transported (do not delay transport by spending an excessive amount of time looking for an amputated part).
 - Rinse part(s) with NS.
 - Wrap tissue in sterile gauze moistened with NS.
 - Place tissue into plastic bag or container.
 - Place bag/container into separate container filled with ice.
 - Do not allow tissue to come into direct contact with ice, do not freeze, and do not submerge in water.
 - Tooth Avulsion that are out over 30 minutes, partial or cannot be re-implanted on scene.
 - Handle tooth by chewing surface only (avoid touching the root).
 - Rinse with water. Do not scrub, dry, or wrap tooth in tissue or cloth.
 - Place tooth in container of (**in order of preference**)
 - Patient's Saliva
 - Milk
 - Normal Saline
 - Water
 - Re-Implantation of permanent teeth on scene within the first 30 minutes of injury (Primary or baby teeth should not be re-implanted).
 - Do not try to re-implant if more than 2 teeth are involved.
 - The tooth must be cleanly avulsed with the entire root present.
 - Only re-implant if it is one of the front 6 upper or lower teeth.
 - Patient must be conscious and cooperative.
 - Gently insert tooth back into the appropriate location without forcing it. Do not worry about positioning well.
- Monitor closely for signs of shock, especially in amputations above the wrist or ankle.
- Treat for pain and anxiety per the *Pain and Anxiety Management Guideline*.
- ❑ **Key Considerations**
 - Time to re-implantation for most limbs is critical.
 - Generally toe re-implantation from lawnmower accidents is not done.

ADULT

PEDIATRIC (<15 years of Age)

NOTE: Pediatric weight based dosing should not exceed Adult dosing.

EMT
AEMT

EMT
AEMT

- ❑ Advanced airway, vascular access and fluid therapy per *IV-IO Access and Fluid Therapy Guideline*

- ❑ Advanced airway, vascular access and fluid therapy per *IV-IO Access and Fluid Therapy Guideline*

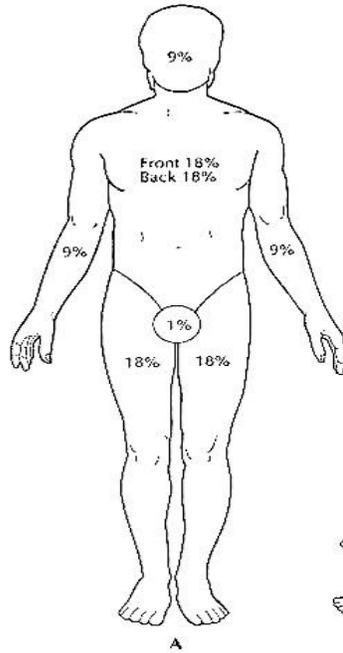
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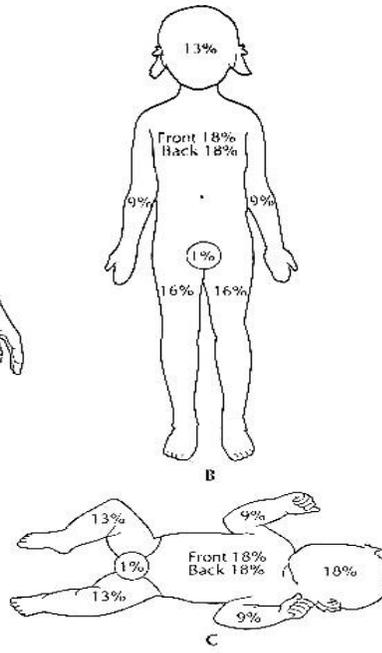
BURNS – ELECTRICAL/THERMAL

ALL PROVIDERS

- ❑ Scene and patient management
 - ❑ Thermal Burns
 - Stop the burning process.
 - Do not pull material out of the wound but cut clothing around it.
 - ❑ Electrical Burns
 - Safely evacuate patient from electrical source.
 - Do not touch the patient until you are sure that the electrical source is disconnected.
 - When multiple patients are struck simultaneously by lightning or a high voltage source, those in respiratory and/or cardiac arrest should be given the highest priority of care, even those who appear dead on initial evaluation.
- ❑ Focused history and physical exam
 - ❑ Identify potential entry and exit wounds for electrical burns – both sites will generally be a full thickness burn site.
- ❑ Continuous ECG, ET_{CO}₂, and Pulse Oximetry monitoring when available.
 - ❑ Avoid placing monitor attachments over burned skin if possible.
 - ❑ Pediatric lowest acceptable systolic blood pressures are birth to 1 month = 60mmHg, 1 month to 1 year = 70mmHg, 1 year to 10 years is = 70mmHg + (age x 2) and over 10 years = 90mmHg.
- ❑ 12 lead ECG where appropriate and if possible, avoid placing electrodes over burned skin.
- ❑ **Treatment Plan**
 - ❑ Monitor for developing airway compromise.
 - ❑ Initiate early oxygen therapy with high flow O₂, this is critical despite level of respiratory distress.
 - ❑ In the unconscious patient, implement spinal motion restriction per the **Selective Spinal Immobilization Guidance**.
 - ❑ With electrical burns anticipate heart rhythm irregularities (both ventricular and atrial).
 - ❑ Assess for circulatory compromise from circumferential extremity burns or ventilator compromise from circumferential chest burns.
 - ❑ Remove items that may constrict swelling tissue.
 - ❑ Estimate size and depth of burn using the percentage chart (below).
 - ❑ Dressings
 - Partial or Full Thickness (2nd or 3rd degree) <10% BSA - Wet sterile dressings.
 - Partial or Full Thickness (2nd or 3rd degree) >10% BSA - Dry sterile dressings.
 - ❑ Closely monitor patient's temperature and prevent hypothermia.
 - ❑ Treat for pain and anxiety per the **Pain and Anxiety Management Guideline**.
 - ❑ Consider AMTS (Air Medical Transport from the Scene) to a designated burn center for the following:
 - Inhalation injuries
 - Partial or Full Thickness (2nd or 3rd degree) burns (>20% BSA in adults or >15% in pediatrics).
 - Major trauma with burns
 - Circumferential burns
 - Burns covering significant portions of the face, hands, or perineum
- ❑ **Key Considerations**
 - Electrical Burns are frequently more serious than they appear.
 - Identifying the source as AC or DC voltage with the amperage will be helpful in the treatment.
 - Burn patients are TRAUMA patients. Care for traumatic injuries should precede care for the burn.
 - Potential CO and/or Cyanide exposure (closed space smoke exposure) should receive 100% oxygen by NRB.
 - Patients are prone to hypothermia due to heat loss from the burns.
 - Consider Child Abuse as a cause. Circumferential scald burn to hands, feet, buttocks, and genitalia are common burns seen in child abuse (especially in children <5 years old)
 - Definitions:
 - Superficial (1st Degree) Burns – red, painful, without blisters.
 - Partial Thickness (2nd Degree) Burns – red, painful/hypersensitive, swollen, with either intact or ruptured blisters.
 - Full Thickness (3rd Degree) Burns – dark, leathery, painless, waxy, and does not blanch.

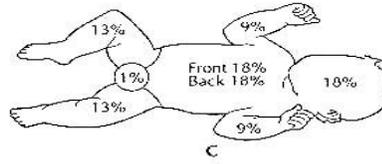


ADULT



PEDIATRIC (<15 years of Age)

NOTE: Pediatric weight based dosing should not exceed Adult dosing.



EMT
AEMT

- ❑ Advanced airway, vascular access per *IV-IO Access and Fluid Therapy Guideline*
 - ❑ If possible, avoid placing IV through burned skin
- ❑ Partial or Full Thickness (2nd or 3rd degree) >10% BSA – Fluid therapy following Parkland Burn Formula
 - ❑ NS 4 ml per kg body weight per % burn during the first 24 hours
 - To calculate: multiply 4ml X kg X % burn = total fluid requirement
 - Give half of this amount during the first 8 hours from the time of injury

PARAMEDIC

- ❑ High voltage electrical injury or direct lightning strike with significant tissue destruction
 - ❑ **Sodium Bicarbonate 1 mEq/kg (maximum of 100 mEq)** in 1000 mL NS wide open

EMT
AEMT

- ❑ Advanced airway, vascular access per *IV-IO Access and Fluid Therapy Guideline*
 - ❑ If possible, avoid placing IV through burned skin
- ❑ Partial or Full Thickness (2nd or 3rd degree) >10% BSA – Fluid therapy following Parkland Burn Formula
 - ❑ NS 4 ml per kg body weight per % burn during the first 24 hours
 - To calculate: multiply 4ml X kg X % burn = total fluid requirement
 - Give half of this amount during the first 8 hours from the time of injury

PARAMEDIC

- ❑ High voltage electrical injury or direct lightning strike with significant tissue destruction
 - ❑ **If diagnosed with rhabdomyolysis prior to transport from the hospital, increase fluid replacement to keep urine output >2ml/kg/hr.**
 - ❑ **Sodium bicarbonate per medical control**

CHEST TRAUMA

ALL PROVIDERS

- ❑ Focused history and physical exam
- ❑ Continuous ECG, ETCO₂, and Pulse Oximetry monitoring when available
- ❑ **Treatment Plan**
 - Maintain airway, administer 10-15 lpm of oxygen.
 - Consider spinal motion restrictions per the **Selective Spinal Immobilization Guideline**.
 - Apply direct pressure to any obvious external hemorrhage.
 - Cover open chest wounds with occlusive dressing.
 - Perform a needle decompression on the affected side for patient with chest injury and signs of shock.
 - Immobilize any obvious injuries and penetrating object, do not remove penetrating objects.
 - Maintain warmth to minimize heat loss.
 - Monitor for shock and hypovolemia. Assess mental status prior to and every 15 minutes during transport (GCS/AVPU).
 - Treat for pain and anxiety per the **Pain and Anxiety Management Guideline**.
- ❑ **Key Considerations**
 - Consider chest trauma as a cause in PEA arrest.
 - Pediatric lowest acceptable systolic blood pressures are birth to 1 month = 60mmHg, 1 month to 1 year = 70mmHg, 1 year to 10 years is = 70mmHg + (age x 2) and over 10 years = 90mmHg.

ADULT

PEDIATRIC (<15 years of Age)

NOTE: Pediatric weight based dosing should not exceed Adult dosing.

EMT

EMT

AEMT

AEMT

- ❑ Vascular access and fluid therapy per **IV-IO Access and Fluid Therapy Guideline**
- ❑ Suspected Tension Pneumothorax
 - ❑ Immediate needle decompression of affected side
- ❑ Traumatic Arrest
 - ❑ Consider bilateral needle decompression based on mechanism of injury

- ❑ Vascular access and fluid therapy per **IV-IO Access and Fluid Therapy Guideline**
- ❑ Suspected Tension Pneumothorax
 - ❑ Immediate needle decompression of affected side
- ❑ Traumatic Arrest
 - ❑ Consider bilateral needle decompression based on mechanism of injury

PARAMEDIC

PARAMEDIC

CRUSH INJURIES

ALL PROVIDERS

- ❑ Focused history and physical exam
- ❑ Continuous ECG, ET/CO₂, and Pulse Oximetry monitoring when available
- ❑ 12 Lead ECG where available, before and after extrication
- ❑ **Treatment Plan**
 - Crush Syndromes should be considered for the following:
 - Entrapped/compressed patients under a load for more than 30 minutes
 - Patients with little or no movement for more than 4 hours (e.g. older patient falls, overdoses)
 - Maintain airway, administer 10-15 lpm of oxygen via NRB.
 - Consider spinal motion restriction per the *Selective Spinal Immobilization Guidance*.
 - Anticipate possible cardiac arrest upon extrication.
 - Patients often quickly develop elevated levels of potassium. Watch for the following ECG changes as signs of Hyperkalemia: peaked T waves, prolonged PR intervals, ST segment depression, QRS widening, heart blocks, and ventricular arrhythmias.
 - Immediately prior to the extrication, provide the adult patient with both Sodium Bicarbonate and Calcium Chloride. Use of these medications for the pediatric patient should be directed by medical control.
 - Treat for pain and anxiety per the *Pain and Anxiety Management Guideline*.
- ❑ **Key Considerations**
 - Victims will often develop hypo or hyperthermia with prolonged environmental exposure.
 - ❑ Pediatric lowest acceptable systolic blood pressures are birth to 1 month = 60mmHg, 1 month to 1 year = 70mmHg, 1 year to 10 years is = 70mmHg + (age x 2) and over 10 years = 90.

ADULT

PEDIATRIC (<15 years of Age)

NOTE: Pediatric weight based dosing should not exceed Adult dosing.

EMT
AEMT

EMT
AEMT

- ❑ Vascular access and fluid therapy per *IV-IO Access and Fluid Therapy Guideline*
 - ❑ NS 0.9% only; 1 liter bolus, then reassess
 - ❑ When possible, **initiate IV prior** to patient being freed from object or removed from floor after a prolonged immobile period of time
- ❑ Constant crush injuries greater than 30 min duration
 - **Sodium Bicarbonate 1 mEq/kg (Maximum of 100 mEq)** IV push prior to beginning infusion and up to 2 additional times if patient develops cardiac arrhythmias or a prolonged QRS > 100ms

-AND-

 - **Sodium Bicarbonate drip: 1 mEq/kg (maximum of 100 mEq)** in 1000 mL NS wide open.

- ❑ Vascular access and fluid therapy per *IV-IO Access and Fluid Therapy Guideline*
 - ❑ NS 0.9% only; 20ml/kg then reassess
 - ❑ When possible, **initiate IV prior** to patient being freed from object or removed from floor after a prolonged immobile period of time
- ❑ Constant crush injuries greater than 30 min duration
 - **If diagnosed with rhabdomyolysis prior to transport, increase fluid replacement to keep urine output >2ml/kg/hr.**
 - **Sodium Bicarbonate per medical control**

PARAMEDIC

PARAMEDIC

HEAD INJURY (TRAUMATIC BRAIN INJURY)

ALL PROVIDERS

- ❑ Focused history and physical exam
- ❑ Continuous ECG, ETCO₂, and Pulse Oximetry monitoring when available
- ❑ **Treatment Plan**
 - ❑ Maintain airway. Administer oxygen 10-15 lpm via NRB.
 - ❑ Consider spinal motion restrictions per the *Selective Spinal Immobilization Guideline*.
 - Consider elevating head of spinal board or stretcher 30 degrees.
 - ❑ Monitor the level of consciousness during the transport.
 - ❑ Document a GCS for the patient.
 - ❑ If GCS ≤ 8 consider an advanced airway.

Mild Hyperventilation Guide

Age	Normal Target RR	10% increase in RR
0 days - <2 mon	30	33
2 mon - <12 mon	25	28
12 mon - 3 yrs	20	22
4 yrs - <6 yrs	15	17
6 yrs - Adult	12	14

- ❑ Do not hyperventilate excessively. If patient has an obvious unilateral pupillary dilation, increase respiratory rate by 10% above normal target respiratory rate (RR) until the patient improves. Hyperventilation below a ETCO₂ of 30mmHg is discouraged.
- ❑ Open skull fractures should be covered with non-pressure dry sterile dressings.

❑ Key Considerations

- ❑ TBI may be painful; however, pain medications can cloud serial neurological assessments. Routine pain medications should not be administered to a patient with altered mental status after TBI.
- ❑ Patients with TBI may be confused or combative. Consider restraints if needed to protect everyone.
- ❑ Loss of memory, prolonged confusion or altered mental status associated with trauma may indicate a significant head injury.
- ❑ Pediatric lowest acceptable systolic blood pressures are birth to 1 month = 60mmHg, 1 month to 1 year = 70mmHg, 1 year to 10 years is = 70mmHg + (age x 2) and over 10 years = 90mmHg.

ADULT

PEDIATRIC (<15 years of Age)

NOTE: Pediatric weight based dosing should not exceed Adult dosing.

EMT

- ❑ Administer supplemental oxygen for any saturation <90% or if unable to obtain a reliable pulse oximeter reading

AEMT

- ❑ Advanced airway, vascular access, and fluid therapy per *IV-IO Access and Fluid Therapy Guideline*
- ❑ Ventilate to maintain EtCO₂ between 35-40 mmHg when capnography is available
- ❑ Check blood pressure every 5-10 minutes.
- ❑ Follow the Traumatic Brain Injury pressure management under the **Shock and Fluid Therapy** guideline.
- ❑

PARAMEDIC

Persistent hypotension unresponsive to fluids

- ① **Epinephrine (1:1000) 2–10 mcg/min IV/IO** infusion for hypoperfusion. Titrate to maintain a SBP >100 mmHg. **And/or**
- ① **Dopamine 2-20 mcg/kg/min IV/IO** infusion for hypoperfusion. Titrate to maintain a SBP >100 mmHg. (*Goal is to maintain a mean arterial pressure (MAP) >70 mmHg*)

EMT

- ❑ Administer supplemental oxygen for any saturation <90% or if unable to obtain a reliable pulse oximeter reading

AEMT

- ❑ Advanced airway, vascular access, and fluid therapy per *IV-IO Access and Fluid Therapy Guideline*
- ❑ Ventilate to maintain EtCO₂ between 35-40mmHg when capnography is available
- ❑ Check blood pressure every 5-10 minutes.
- ❑ Initiate NS 20ml/kg for hypotension OR if unable to obtain blood pressure
- ❑ If hypotensive patient shows no improvement with initial treatment, may repeat NS 20ml/kg up to a total of 60 ml/kg

PARAMEDIC

Persistent hypotension unresponsive to fluids

- ① **Epinephrine (1:1000) 0.1–2 mcg/kg/min IV/IO** infusion for hypoperfusion. Titrate to maintain a SBP >70 + (age in years x 2) mmHg. **And/or**
- ① **Dopamine 2-20 mcg/kg/min IV/IO** infusion for hypoperfusion. Titrate to maintain a SBP >70 + (age in years x 2) mmHg

HEMORRHAGE CONTROL AND SOFT TISSUE INJURIES

ALL PROVIDERS

- ❑ Focused history and physical exam
- ❑ **Treatment Plan**
 - ❑ Maintain airway, administer oxygen 10-15 lpm via NRB
 - ❑ Assess for deformity, swelling, tenderness, crepitus, open or closed fractures, hemorrhaging, lacerations, ecchymosis, instability, decreased function or pulses, loss of sensation of distal extremities.
 - ❑ Bleeding from the nose (epistaxis) should be controlled by first having the patient sit and lean forward (unless there is a need for spinal motion restriction). Apply direct pressure by pinching the fleshy portion of the nostrils.
 - ❑ Cover lacerations or puncture wounds on the neck near the great vessels or trachea with an occlusive dressing.
 - ❑ Cover abdominal eviscerations with a moist sterile dressing.
 - Do not attempt to replace organs.
 - ❑ Cover extruded eye or deflated globe with a moist sterile dressing and protective covering.
 - Do not apply pressure or attempt to replace in socket.
 - Cover both eyes.
 - ❑ In large, partially attached avulsions, the tissue should be returned to its' baseline position and stabilized whenever possible.
 - ❑ Elevate the limb such that the wound is above the heart.
 - ❑ Impaled objects should be stabilized in place and covered with dry sterile dressings. The exceptions would be:
 - Objects through the cheek where there is the possibility of airway compromise.
 - Objects that would interfere with chest compressions.
 - Treatment for pain and anxiety per the *Pain and Anxiety Management Guideline*.
- ❑ **Key Considerations**
 - Sharp objects may need to be removed if their presence is causing ongoing injury, compromise, or inhibiting CPR.
 - Tourniquets should be used to control hemorrhage not controlled with direct pressure.

ADULT

PEDIATRIC (<15 years of Age)

NOTE: Pediatric weight based dosing should not exceed Adult dosing.

EMT
AEMT

EMT
AEMT

- ❑ Advanced airway, vascular access and fluid therapy per *IV-IO Access and Fluid Therapy Guideline*

- ❑ Advanced airway, vascular access and fluid therapy per *IV-IO Access and Fluid Therapy Guideline*

PARAMEDIC

PARAMEDIC

NON-ACCIDENTAL TRAUMA/ABUSE

ALL PROVIDERS

- ❑ Scene and patient management
 - Contact Law Enforcement if someone on scene is a threat to themselves or others.
 - Separate any possible assailants, including parents, from the patient.
 - Remove patient from the stressful environment and remove any possible weapons.
 - Non-accidental trauma includes any act of commission or omission that results in harm to a person's physical, developmental, or emotional state.
- ❑ Focused history and physical exam
 - Blood glucose, Temperature and Oxygen Saturation assessment.
 - Always consider the possibility of abuse when evaluating any medical condition or trauma.
- ❑ Continuous ECG, ETCO₂, and Pulse Oximetry monitoring when available
- ❑ **Treatment Plan**
 - Suspect: Look for suspicious circumstances or actions from patient or caregiver
 - Listen to and document circumstances of the event.
 - Evaluate the environment in which you find the patient.
 - Protect: Be the patient advocate
 - Make all efforts to remove patient from the situation.
 - Respect: Communicate appropriately with family
 - Avoid confrontation with caregivers.
 - Confrontation may lead to caregiver's refusal to allow you to care for the patient.
 - Be nonjudgmental and avoid accusations.
 - Consider law enforcement assistance.
 - Collect: Provide good documentation of incident.
 - Document using direct quotation when possible.
 - Document objectively without speculation.
 - Report: You have the responsibility to report suspected abuse and neglect to the ED **and also** to law enforcement or the Division of Family Services.
- ❑ **Key Considerations**
 - ❑ Non-accidental trauma can occur in patients of any age and in all ethnic and socio-economic groups.
 - ❑ Risk factors include children under age of 5, the elderly, drug or alcohol abuse, and a history of domestic violence.
 - ❑ In children under the age of two the most common form of child abuse is **Abusive Head Injury (AHI)**. Mortality of AHI is 25%. For those that live, there is significant morbidity, usually associated with traumatic brain injury.
 - ❑ Do not directly engage a hostile patient, parent, assailant or perpetrator. If situation becomes unsafe for EMS personnel, call for police assistance.
 - ❑ If anxious or agitated, attempt non-pharmacological options to calm a patient. Consider pain and anxiety management per the *Pain and Anxiety Management Guideline*.

SKELETAL INJURIES

ALL PROVIDERS

- ❑ Scene and patient management
- ❑ Focused history and physical exam
- ❑ Continuous ECG, ETCO₂, and Pulse Oximetry monitoring when available
- ❑ **Treatment Plan**
 - Treat for pain and anxiety per the *Pain and Anxiety Management Guideline*.
 - ❑ Uncomplicated fractures/dislocations with adequate circulation
 - Splinted in a position of function/comfort.
 - ❑ Fractures/dislocations with circulation deficits or severely angulated
 - Treat with one attempt at placing the extremity in a position of function/comfort.
 - If unsuccessful, splint in position found and expedite transport.
 - Fractures and joint dislocations without palpable distal pulses are true orthopedic emergencies.
 - ❑ Potential pelvic fractures
 - Treatment of choice is application of the pelvic binder. If unavailable, a cloth sheet or blanket can be wrapped tightly around the pelvis to stabilize it.
 - ❑ Isolated proximal femur (hip) fractures (especially in the elderly)
 - Best managed with anatomical splinting utilizing a scoop stretcher. Traction splints are not appropriate for any proximal femur fractures.
 - ❑ Femoral shaft fractures
 - Immobilized utilizing a traction splint unless one of the situations listed below is present:
 - Injuries just proximal to or involving the knee joint
 - Injury to the pelvis
 - Partial amputation
 - Lower leg or ankle injuries
 - If use would delay transport of a patient with a life-threatening condition

ADULT

PEDIATRIC (<15 years of Age)

NOTE: Pediatric weight based dosing should not exceed Adult dosing.

EMT
AEMT

EMT
AEMT

- ❑ Vascular access and fluid therapy per *IV-IO Access and Fluid Therapy Guideline*

- ❑ Vascular access and fluid therapy per *IV-IO Access and Fluid Therapy Guideline*

PARAMEDIC

PARAMEDIC

SNAKE BITES

ALL PROVIDERS

- ❑ Focused history and physical exam
 - Identify and document the type of snake, appearance, location, and distinguishing marks.
 - Obtain an accurate time of injury.
 - Clarify any first aid provided by friends or family prior to arrival.
 - Coral Snakes in North America – “Red on Yellow = Poison Fellow, Red on Black = Safe with attack”.
 - Signs of envenomation include paresthesias, metallic taste, chills, nausea, vomiting, headache, dysphagia, cramps, hypotension, fever, local edema, blebs, and discoloration.
- ❑ Continuous ECG, ETCO₂, and Pulse Oximetry monitoring when available
- ❑ **Treatment Plan**
 - ❑ Ensure scene safety by moving the patient to a safe distance, away from the snake.
 - ❑ Splint limb and place below the level of the heart.
 - ❑ Keep patient calm and movement to a minimum. You may need to treat for pain and/or anxiety to help achieve this goal per *Pain and Anxiety Management Guideline*.
 - ❑ Remove items that may constrict swelling tissue.
- ❑ **Key considerations**
 - Do not start the IV in the affected limb.
 - Do not apply ice to the limb.
 - Do not try to capture the snake.
 - Do not bring a live snake to the ED.
 - If you transport the snake make sure you do it safely. Remember that snakes can reflexively envenomate up to 1 hour after death.
 - Pictures of the snake can be helpful.
 - Any bite can be dangerous and should be evaluated in the ED.
 - Watch for signs of shock and allergic reaction.

ADULT

PEDIATRIC (<15 years of Age)

NOTE: Pediatric weight based dosing should not exceed Adult dosing.

EMT
AEMT

EMT
AEMT

- ❑ Advanced airway, vascular access, and fluid therapy per *IV-IO Access and Fluid Therapy Guideline*

- ❑ Advanced airway, vascular access, and fluid therapy per *IV-IO Access and Fluid Therapy Guideline*

PARAMEDIC

PARAMEDIC

Persistent hypotension unresponsive to fluids

Persistent hypotension unresponsive to fluids

- ① **Epinephrine (1:1000) 2–10 mcg/min IV/IO** infusion for hypoperfusion. Titrate to maintain a SBP >100 mmHg.
And/or
- ① **Dopamine 2-20 mcg/kg/min IV/IO** infusion for hypoperfusion. Titrate to maintain a SBP >100 mmHg. *(Goal is to maintain a mean arterial pressure (MAP) >70 mmHg)*

- ① **Epinephrine (1:1000) 0.1–2 mcg/kg/min IV/IO** infusion for hypoperfusion. Titrate to maintain a SBP >70 + (age in years x 2) mmHg.
And/or
- ① **Dopamine 2-20 mcg/kg/min IV/IO** infusion for hypoperfusion. Titrate to maintain a SBP >70 + (age in years x 2) mmHg

PART V. STATE OF UTAH PEDIATRIC GENERAL GUIDELINES

Pediatric General Assessment Protocol

Use Pediatric Assessment Triangle to form a general impression of the child.



Appearance

Characteristic	Features to Look For
Tone	Good muscle tone OR limp, listless, flaccid
Interactiveness	Alert, will reach for toy, light, OR is uninterested in playing or interacting
Consolability	Can be consoled OR crying or agitation is unrelieved
Look/Gaze	Fixes on face, object OR glassy eyed stare
Speech/Cry	Cry strong and spontaneous OR weak or high pitched Is Speech age appropriate OR confused, garbled?

Breathing

Circulation/ Skin Color Circulation/ Skin Color

Characteristics	Features to Look For
Abnormal Airway Sounds	Snoring, muffled or hoarse speech, Stridor, grunting, wheezing
Abnormal positioning	Sniffing position, tripodding, refusing to lie down
Retractions	Supraclavicular, intercostal, substernal retractions of the chest wall; head bobbing in infants
Flaring	Flaring of the nares on inspiration

Characteristic	Features to look for
Pallor	White or pale skin or mucous membranes
Mottling	Patchy/lacey skin discoloration due to vasoconstriction/ vasodilatation
Cyanosis	Bluish discoloration of skin/mucous membranes

***If patient is in severe distress expedite transport**

Airway—Ensure airway is patent; if not, take appropriate action

Refer to Appropriate Protocol
Respiratory Failure
Upper Airway Obstruction
Lower Airway Obstruction
Anaphylaxis/Allergic Reaction

Breathing—Count respiratory rate

- Assist ventilations if less than 12 breaths per minute
- Look at chest rise and fall, check for work of breathing
- Listen to breath sounds

Sound	Cause	Examples
Stridor	Upper Airway Obstruction	Croup, foreign body aspiration, throat abscess
Wheezing	Lower Airway Obstruction	Asthma, foreign body, bronchiolitis
Expiratory Grunting	Inadequate Oxygenation	Pulmonary contusion, pneumonia, drowning
Inspiratory Crackles	Fluid, Mucous or Blood in the airway	Pneumonia, pulmonary contusion
Absent breath sounds despite work of breathing	Complete Airway Obstruction (Upper or Lower)	Physical barrier to transmission of breath sounds: foreign body, severe asthma, Hemothorax, pneumothorax, pleural fluid, pneumonia, pneumothorax *2

Circulation—Count heart rate

- Evaluate skin temperature, pulses, and capillary refill time

Start CPR if Heart Rate is less than:
80 for infants (up to 1 year of age)
60 for children (1year to 8 years)

Disability—Evaluate level of consciousness with AVPU Scale

Category	Stimulus	Response Type	Reaction
Alert	Normal Environment	Appropriate	Normal interactiveness for age
Verbal	Simple command or sound stimulus	Appropriate or Inappropriate	Responds to name. Nonspecific or confused
Painful	Pain	Appropriate, Inappropriate, Pathological	Withdraws from pain. Sound or motion without purpose or localization of pain. Posturing.
Unresponsive			No perceptible response to any stimulus

Contact medical control per local protocols

Additional Assessments

Exposure—Fully expose child to check for injuries, rashes; be sure to maintain warmth; consider patient’s temperature

Signs and Symptoms	Onset and nature of symptoms or pain or fever-age appropriate signs of distress
Allergies	Known drug reactions or other allergies
Medications	Exact names and doses of ongoing drugs; timing and amount of last dose
Past medical problems	Previous illnesses, injuries, or congenital problems; immunizations; history of labor and delivery (infants/toddlers)
Last food or liquid	Timing of the child’s last food or drink, including bottle or breast feeding
Events leading to the injuries or illness	Key events leading to the current incident; fever history

Focused History and Physical Exam

SAMPLE History

determine mechanism of injury or nature of illness

perform head to toe exam

Detailed Physical Exam (Trauma)

Head to toe assessment to check for and treat injuries

Ongoing assessment

obtain blood pressure if possible

measure oxygen saturation

repeat vital signs every 5 minutes for unstable patients, every 15 minutes for stable patients

review effectiveness and safety of treatments

T transport

Vital Signs that would be abnormal according to age of child:

Age of Patient	HR		RR		Systolic BP	Temp	
0 days – < 1 mo	<80	>205	<30	>60	<60	<36	>38
≥ 1 mo – < 3 mos	<80	>205	<30	>60	<70	<36	>38
≥ 3 mos – < 1 yr	<75	>190	<30	>60	<70	<36	>38.5
≥ 1 yr – < 2 yrs	<75	>190	<24	>40	<70 + (age x 2)	<36	>38.5
≥ 2 yrs – < 4 yrs	<60	>140	<24	>40	<70 + (age x 2)	<36	>38.5
≥ 4 yrs – < 6 yrs	<60	>140	<22	>34	<70 + (age x 2)	<36	>38.5
≥ 6 yrs – < 10 yrs	<60	>140	<18	>30	<70 + (age x 2)	<36	>38.5
≥ 10 yrs – < 13 yrs	<60	>100	<18	>30	<90	<36	>38.5
≥ 13 yrs – < 18 yrs	<60	>100	<12	>16	<90	<36	>38.5

W eight—Average per Age

Estimated Weights	
Newborn	3 kg
3 months	5 kg
6 month	7 kg
12 months	10 kg
2 years	13 kg
3 years	15 kg
4 years	18 kg
5-6 years	20 kg
8 years	25 kg
10 years	35 kg
14 years	50 kg
18 years	65 kg

X-tra Information

Appropriate mask size for Bag/Valve/Mask ventilation:

Age	Mask #	Mask Name
Preterm neonate	#0	Neonatal
Newborn–1 year	#1	Infant
1–6 years	#2	Toddler
6–12 years	#3	Pediatric
>12 years	#4	Small Adult

Appropriate bag size for Bag/Valve/Mask ventilation:

Age	Bag Size	Bag Volume
Newborn–3 months	Neonatal	400–500 mL
Child <30 kg	Pediatric	750 mL
Child >30 kg	Adult	1000–1200 mL

Endotracheal tube size and depth per length based tape

Weight	ET Tube Size	ET Tube Insertion Depth
3–5 kg	2.5 uncuffed, 3.0 uncuffed	3kg: 9–9.5cm; 4kg: 9.5–10cm; 5kg: 10–10.5cm
6–7 kg	3.5 uncuffed	10.5–11cm
8–9 kg	3.5 uncuffed	10.5–11cm
10–11 kg	4.0 uncuffed	11–12cm
12–14 kg	4.5 uncuffed	13.5cm
15–18 kg	5.0 uncuffed	14–15cm
19–23 kg	5.5 uncuffed	16.5cm
24–29 kg	6.0 cuffed	17–18cm
30–36 kg	6.5 cuffed	18.5–19.5cm (7)

References

Pediatric Education for Prehospital Professionals, 2nd Ed., American Academy of Pediatrics, 2005.

Table 1-1, 1-2, 1-3

Table 1-5

Table 1-9

Table 1-10

Intermountain Healthcare Primary Children's Medical Center Emergency Department Shock/Sepsis Protocol. *5

Intermountain Healthcare Primary Children's Medical Center Trauma/Critical Care Flow Sheet.

*6

Section I: Pediatric Respiratory Emergencies

Anaphylaxis

Definition: Anaphylaxis is a serious systemic allergic reaction that is rapid in onset and may cause death.

Clinical Presentation: Is highly variable and cutaneous symptoms may be transient and brief. Symptoms include: itching, hives, flushing, cough, wheeze, dyspnea, stridor, respiratory distress, mouth, throat or chest tightness, difficulty swallowing, hypotension, angioedema, abdominal cramps, diarrhea, vomiting, syncope, dizziness, seizure, arrhythmia. Anaphylaxis can present with hypotension alone especially in a known allergic individual.

Basic Life Support

Refer to General Pediatric Assessment Guidelines

Assess and maintain airway patency, oxygen 10-15 lpm via non-rebreather

If respirations are ineffective, begin BVM ventilation with 100% oxygen

Suction airway as needed

Initiate CPR for pulseless arrest or symptomatic bradycardia (refer to specific pediatric dysrhythmia guideline)

Use epinephrine auto-injector, call medical control for repeat doses (IM administration, lateral-superior thigh)

For children < 15 kg, call medical control

Epinephrine auto-injector (0.15 mg/0.3 mL) for children 15-25 kg

Epinephrine auto-injector (0.3 mg-0.3 mL) for children > 25 kg

Transport for medical evaluation



BLS

Advanced Life Support

Follow BLS procedures

Place patient on a cardiac monitor including pulse oximeter

Intubate if patient is apenic, has a significantly depressed LOC, or if the patient has severe respiratory distress or depression

If the patient is unconscious and has significant oral edema, place an oral airway while preparing to intubate

Initiate CPR for pulseless arrest or symptomatic bradycardia (refer to specific pediatric dysrhythmia guideline)

Administer epinephrine (1:1,000) .01 mg/kg, maximum 0.3 mg, IM (lateral superior thigh), repeat every 5-15 minutes prn persistent symptoms

Administer nebulized albuterol if patient has significant wheezing

< 1 year of age: 1.25 mg

> 1 year of age: 2.5 mg

Administer nebulized epinephrine if patient has significant stridor

Place an IV and administer a 20 mL/kg NS bolus, repeat x2 for persistent hypotension

If hypotension persists, consult medical control

Following stabilization of the patient, administer diphenhydramine IV 1.25 mg/kg, maximum 50 mg

Transport for medical evaluation



ALS

Key Points/Considerations

It is extremely important to give **IM** epinephrine as soon as the diagnosis of anaphylaxis has been established.

Place an IV as quickly as possible but do not delay epinephrine administration.

If the patient has any respiratory distress and is conscious, allow them to achieve a "position of comfort" and keep the child with the parent.



Medication/Treatments Table

Medication	Dose	Route	Max Dose	EMT	Advanced EMT	Paramedic
Epinephrine 1:1000 (1mg/mL)	2mL in 3 mL saline	Neb	Call for additional doses		DO	DO
Epinephrine Autoinjector	0.15 mg for children 15–25 kg 0.3 mg for children > 25 kg	IM	Call for additional doses	ST*	ST	ST
Epinephrine 1:1000 (1mg/mL)	0.01 mg/kg Repeat q 5-15min prn persistent symptoms	IM	0.3mg		ST	ST
Albuterol	1.25 mg < 1 year of age 2.5 mg for > 1 y.o.	Neb	One dose		ST	ST
Diphenhydramine	1.25 mg/kg	IV	50 mg			ST

DO: Direct order from on line medical control

ST: Standing Order

ST*: Standing Order if medical control not immediately available

Teaching Points: Epinephrine and stridor with sound clips

Epinephrine solution for nebulization is made by mixing epinephrine 2m, 2 mL of epinephrine 1:1000, with 3mL NS.

Pediatric Asthma Attack	
Standing Orders	Medical Control Options
EMT Basic:	
1) Establish ABC's, correct life-threatening complications.	
2) Position patient to maintain airway & position of comfort. Usually sitting upright (45-90 degrees w/feet dropped).	
3) Obtain baseline vitals, including SPO2, temperature & Glasgow score.	
4) Administer O2 via NRB.	
5) Obtain SAMPLE history regarding: (accessory muscle use, tripod/positioning, drooling, pursed lips, retractions, nasal flaring, one/two word dyspnea, orthopnea, JVD, intubation history,).	
6) Assess for associated signs/symptoms.	
Advanced EMT & Paramedic:	
<u>If patient breathing:</u>	
7) Move patient to ambulance and begin transport.	
8) En route to hospital, may give nebulized Albuterol 2.5 mg w/0.25mg Atrovent added to 3ml saline. May repeat neb of Albuterol 2.5 mg.	
9) Establish IV access NS/LR, TKO.	
10) Contact medical control for patients with continued moderate-to-severe respiratory distress after two nebs.	
11) Consider oral/nasal intubation.	
	12) Consider Epinephrine 0.01mg/kg 1:1000 (0.01 cc/kg) IM. Maximum dose = 0.3 cc Epinephrine (to be used prehospital only if condition severe).
<u>If patient in respiratory arrest:</u>	
13) Insert oral airway and begin positive pressure ventilation. Ventilate with short insp: long exp ratio at rate of 8-10/min.	

Pediatric Asthma Attack	
14) Intubate as soon as possible. Confirm ET tube placement by exam plus confirmation device (End-Tidal Carbon Dioxide Detection Device, Endotracheal Tube Locator, or Capnographer).	
15) If ET intubated give in-line nebulized albuterol 2.5 mg w/0.25mg Atrovent added to 3ml saline. May repeat neb of albuterol 2.5 mg.	
16) Attach cardiac monitor and interpret rhythm.	
17) Expedite transport.	
18) Contact medical control.	
	19) If not already given, consider Epinephrine 0.01 mg/kg 1:1000 (0.01 cc/kg) IM. Maximum dose = 0.3 cc Epinephrine.
	20) If patient ET intubated and becomes agitated from increased level of consciousness: a) Consider Versed 0.1 mg/kg IV/IO.

Bronchospasm

Definition: Bronchiolitis is a viral disease that affects infants and young children and causes inflammation of the small airways and may cause significant respiratory distress, hypoxemia, respiratory arrest, and apnea in infants.

Clinical Presentation: Symptoms may include: wheezing, altered level of consciousness, tachypnea, abnormal skin color, nasal flaring, retractions, grunting, apnea and cyanosis.

BLS

Basic Life Support

Refer to General Pediatric Assessment Guidelines

Maintain airway, administer 10-15 lpm of oxygen via NRB

If respirations are ineffective, begin BVM ventilation

Oral suctioning for copious nasal and/or oral secretions as needed

Initiate CPR for pulseless arrest or symptomatic bradycardia (refer to specific pediatric dysrhythmias protocol)

Transport for medical evaluation

ALS

Advanced Life Support

Follow BLS procedures

Place on cardiac monitor and continuous pulse oximeter

Intubate if patient is apenic, unresponsive, or if the patient has severe respiratory distress or depression

Initiate CPR for pulseless arrest or symptomatic bradycardia (refer to specific pediatric dysrhythmias)

Administer nebulized albuterol if patient has significant wheezing

< 1 year of age: 1.25 mg

≥ 1 year of age: 2.5 mg

If patient "responds" (ie: has decreased work of breathing, decreased wheezing or oxygen need), may repeat the treatment every 30-60 minutes as needed

If no response to albuterol, consider nebulized epinephrine if patient has severe respiratory distress

Transport for medical evaluation



Key Points/Considerations

Keep patients NPO if they have any respiratory distress or have a respiratory rate > 60

Medication/Treatments Table

Medication	Dose	Route	Max Dose	EMT	Advanced EMT	Paramedic
Epinephrine 1:1000 (1mg-mL)	2mL in 3 mL saline	Neb	Call for additional doses		DO	DO
Albuterol	1.25 mg < 1 year of age 2.5 mg > 1 y.o.	Neb	3 doses		ST	ST

DO: Direct order from on line medical control

ST: Standing Order

Teaching Points: Discuss oxygen administration, BVM, NRB mask, simple mask, nasal cannula or blow-by. Recognize seasonal nature of this very common pediatric illness. Epinephrine solution for nebulization is made by mixing epinephrine 2m, 2 mL of epinephrine 1:1000, with 3mL NS.

Respiratory Failure & Impending Failure

Definition: A clinical state characterized by inadequate ventilation or oxygenation

Clinical Presentation: May include increased or decreased respirations, cyanosis, nasal flaring, grunting, retractions, absent or diminished breath sounds, or decreased responsiveness

BLS

Basic Life Support

Follow General Pediatric Assessment Guidelines

Maintain airway, administer 10-15 lpm of oxygen via NRB

Begin BVM ventilation with 100% oxygen for:

Ineffective respiratory effort

Heart rate

< 80 for infants

< 60 for children

Cyanosis despite 100% oxygen via NRB

Decreased level of consciousness

If patient does not respond to BVM, start chest compressions

Oral suctioning for copious nasal and/or oral secretions as needed

Immobilize cervical spine for suspected trauma

Refer to appropriate protocol for suspected **Upper Airway Obstruction, Anaphylaxis, or Bronchospasm**

Transport for medical evaluation

ALS

Advanced Life Support

Refer to BLS guidelines

Place on cardio-respiratory monitor and continuous pulse oximeter

If unable to effectively perform BMV, consider intubation

Establish IV / IO access and give 20mL/kg NS if indicated

Consider NG or OG for gastric decompression

Treat based on suspected diagnosis: **Upper Airway Obstruction, Anaphylaxis, or Bronchospasm**

Transport for medical evaluation

Key Points/Considerations

1. Confirm and document ETT position by auscultation and secondary device.
2. Limit intubation attempts to 3 per patient.

Upper Airway Obstruction

Definition: A clinical state characterized by a blockage of the upper airway, which can be in the mouth, trachea, larynx or pharynx.

Clinical Presentation: May include increased respiratory rate or effort, nasal flaring, inspiratory stridor, barking cough, sudden onset of choking/gagging, drooling, cyanosis, absent or diminished breath sounds, depressed mental status.

BLS

Basic Life Support

Follow General Pediatric Assessment Guidelines

Assess airway patency

If audible stridor present, but breathing is adequate, place child in position of comfort and administer high flow 100% O₂; use non-rebreather mask or blow by as tolerated

If patient is not breathing, position airway, start bag-valve-mask ventilations with high flow, 100% O₂ (refer to **Respiratory Failure Protocol**)

If unable to ventilate after repositioning, and foreign body is suspected, perform:

Infant: 5 back blows followed by 5 chest thrusts

Child: Heimlich maneuver

If patient is or becomes unconscious, start chest compressions

Continue to attempt BMV after efforts to remove obstruction

Transport for medical evaluation

ALS

Advanced Life Support

Follow BLS guidelines

Place on cardio-respiratory monitor and continuous pulse oximeter

If breathing is adequate:

Consider 3mL NS via nebulizer ("cool mist")

If clinical evidence of stridor, administer Epinephrine (1:1000 2cc in 3ml NS) via nebulizer

If patient not breathing attempt ventilation

If unable to effectively ventilate, do direct visualization to determine if there is object obstructing airway and if object identified, attempt removal with McGill forceps

If unable to remove and ventilate effectively around object, consider emergency cricothyrotomy

Once airway is clear, if no spontaneous respiratory effort, consider intubation (refer to

Respiratory Failure Protocol)

Establish IV/IO access

Transport for medical evaluation.



Common Causes of Upper Airway Obstruction in Children

Croup	Usually < 5 years old Hoarse "barky" cough URI symptoms; often worse at night
Epiglottitis	Usually > 2 years old High fever; very ill appearing Drooling; leaning forward
Anaphylaxis (refer to Anaphylaxis Protocol)	+/- history exposure to allergen Facial/lips/tongue swollen; stridor Absent or diminished breath sounds
Foreign Body Aspiration	Sudden onset of choking/gagging +/- witnessed with object in mouth

Key Points/Considerations

Agitation increases airway obstruction; leave child in position of comfort, with parent if possible; if any intervention causes agitation—**STOP!**
Never perform blind finger sweeps of the mouth or throat.



Medication/Treatments Table

Medication	Dose	Route	Max Dose	EMT	Advanced EMT	Paramedic
Epinephrine 1:1000 (1mg-mL)	2mL in 3mL saline	Neb	Call for additional doses		ST	ST

DO: Direct order from on line medical control

ST: Standing Order

Note: Epinephrine solution for nebulization is made by mixing epinephrine 2m, 2 mL of epinephrine 1:1000, with 3mL NS.

Section II: Children with Special HealthCare Needs

Assessment of a Child with Special Health Care Needs

Definition: Children with special health care needs (CSHCN) are children who have chronic health issues (physical, developmental, behavioral or emotional) and who require health and related services that other children do not.

Clinical Presentation: Children with multiple medical problems, neurological disorders, sensory deficits (hearing and vision loss). Children with uncommon or complex medical conditions, chronically ill and technology dependent children.

BLS

Basic Life Support

Refer to General Pediatric Assessment Guidelines

Ask if child has special health care needs

Ask for Emergency Health Information Sheet (and, if appropriate, for Life with Dignity (DNR) Order)

Assess ABCs, know that interventions may vary according to age but also to patients size and medical condition

See specific protocol for **Tracheostomy, Ventilator, Feeding tube, Internal pacemaker, Seizures, Behavioral issues, DNR**

Explain interventions, to children and family members when appropriate

Transport in position of comfort for medical evaluation

ALS

Advanced Life Support

Follow BLS procedures

Place cardiorespiratory monitor and continuous pulse oximetry

See specific protocol for **Tracheostomy, Ventilator, Feeding tube, Internal pacemaker, Seizures, Behavioral issues**

Transport in position of comfort for medical evaluation

Key Points/Considerations

Family members are many times the best resource for patient care.

Interventions may vary according to age, but also on size and medical condition.



Teaching Points: Do not become overwhelmed by equipment. Staying focused on ABCs will help you succeed with care of the special needs patient. Remember that the parents take care of these kids 24/7. They are experts on their children. Do not be afraid to ask them for guidance.

Feeding Tube

Definition: Feeding tubes are used in the home care setting to provide feedings for children. They can be placed in the stomach or jejunum (upper part of small intestine) through the nose, mouth or abdomen.

Indications: Impaired or insufficient oral intake.

Clinical presentation: These tubes may be positioned in the nasal orifice or percutaneous.

BLS

Basic Life Support

Refer to General Pediatric Assessment Guidelines

Obtain accurate history. Include type of feeding tube, its patency, accessibility including how and when it was placed

Document site of feeding tube whether present or not, for color, drainage and/or malfunction

Assess for dehydration (see **Non-traumatic shock** protocol)

If stoma is bleeding apply sterile dressing and use pressure to stop bleeding

Keep NPO and nothing per feeding tube

Transport in position of comfort for medical evaluation

ALS

Advanced Life Support

Follow BLS procedures

If feeding tube is percutaneous and has come out, place an 8 Fr suction catheter in the stoma 2-3 inches to prevent it closing

If patient has G-tube and is in respiratory and/or abdominal distress, the G-tube may be gently aspirated or opened to air to allow for gastric content drainage and decompression. Wrap end with diaper. (A G-tube button needs access adapter to do this)

Consider nasogastric tube placement if gastric tube dislodged, non functional or significant abdominal distension

Transport in position of comfort for medical evaluation

Key Points/Considerations

Family members are many times the best resource for patient care.

Some tubes continue on to jejunum, do not try to replace or remove tube.

Teaching Points: Demonstrate different types of feeding tubes, the most common ED visits for patients with feeding catheters include the tube has come out, is falling apart, is leaking, blocked or the stoma site has unusual drainage or bleeding.

Internal Pacemaker and Defibrillator

Definition: An internal pacemaker is a medical device placed under the skin and connected with wires to the heart to regulate the heart rate. An internal defibrillator is an electronic device implanted under the skin to monitor the heart rhythm and deliver shock as necessary to treat excessively fast heart rates that originate in the ventricles.

Clinical Presentation: Symptoms of failure of pacemaker or defibrillator may include: palpitations, inappropriate delivery of electric shock, increased respiratory rate, pallor or cyanosis, delayed capillary refill, poor perfusion, and altered mental status.

BLS

Basic Life Support

Refer to General Pediatric Assessment Guidelines

Assess and maintain airway patency, oxygen 10-15 lpm via non-rebreather

If respirations are ineffective, begin BVM ventilation with 100% oxygen

Suction airway as needed

Initiate CPR for pulseless arrest or symptomatic bradycardia (refer to specific protocol)

Attach AED if patient is 12 months or older and follow AED instruction, treat underlying rhythm

Transport for medical evaluation

ALS

Advanced Life Support

Follow BLS procedures

Place on cardio-respiratory monitor and continuous pulse oximeter

Continue bag-valve mask ventilation with 100% oxygen, intubate if unable to adequately ventilate or oxygenate child by BVM

Establish IV/IO access

Treat shock as indicated

Treat underlying rhythm

Transport for medical evaluation



Key Points/Considerations

Internal pacemakers and defibrillators may easily be felt near the clavicle or in the abdomen of small children.

Never place defibrillator paddles, patches or AED patches directly over the internal pacemaker or defibrillator generator.

1. The battery life for implanted pacemakers and defibrillators is 3 to 5 years.

Teaching Points: Discuss reasons for pacemaker/defibrillator placement.

Obtain history: Heart problems, underlying rhythm, has the child felt shocks? Symptoms?

Do not become distracted by equipment. The assessment and treatment of children with implanted medical devices should progress as with any child. Assessment and management of airway, breathing and circulation is primary.

Defibrillation or cardioversion, when indicated, is appropriate in a patient with an internal pacemaker or defibrillator.

Tracheostomy

Definition: A tracheostomy is a surgical opening that creates a stoma between the trachea and the anterior surface of the neck in order to bypass the upper airway.

Indication: Upper airway obstruction, long-term ventilation and facilitating the movement of secretions in those with ineffective or no gag or swallow reflex.

BLS

Basic Life Support

Refer to General Pediatric Assessment Guidelines

Position child to open and assess airway (placing a towel roll under the shoulders)

Assist ventilations with bag valve with 100% O₂ if patient is apenic, unresponsive, or if the patient has severe respiratory distress or depression

If unable to ventilate, suction tracheostomy, then reattempt ventilatory efforts

If still unable to ventilate: attempt BVM (may need to place gloved finger over tracheostomy)

Initiate CPR for **Pulseless Arrest** or symptomatic **Bradycardia** (refer to specific pediatric dysrhythmia protocol)

Perform tracheal, oral and nasal suctioning for secretions

Oxygenate between passes with the suction catheter

Transport for medical evaluation

ALS

Advanced Life Support

Follow BLS procedures

Place on cardio-respiratory monitor and continuous pulse oximeter

If unable to ventilate through tracheostomy, change tracheostomy tube with a same sized or smaller tracheostomy tube

If unable to pass a smaller tracheostomy tube: pass an endotracheal tube through stoma about 1-2 inches, secure and ventilate. Gauge depth based on breath sounds; a right mainstem intubation is likely

If still unable to ventilate attempt oral endotracheal intubation, laryngeal mask airway (LMA), King™ airway or Combitube™

Once airway secure: If stridor or wheezing present administer nebulized epinephrine

1. Initiate CPR for **Pulseless Arrest** or symptomatic **Bradycardia** (refer to specific pediatric dysrhythmia protocol)

2. For abdominal distension: place NG tube or open gastric tube to decompress stomach

3. Continue to reassess airway with suctioning, positioning and ventilation

Transport for medical evaluation

Key Points/Considerations

Keep patients NPO and nothing per gastric tubes if they have respiratory distress or a respiratory rate > 60.

If patient has a gastric tube, open it up to allow for gastric decompression (may need adapter for GT buttons).

Family members are many times the best people to change tracheostomy tube, suction, and use as a resource for patient care.

Medication/Treatments table

Medication	Dose	Route	Maximum Dose	EMT	Advanced EMT	Paramedic
Epinephrine 1:1000 (1mg-mL)	2mL in 3mL saline	Neb	Call for additional doses		ST/DO	ST/DO

DO: Direct order from on line medical control

ST: Standing Order

Teaching Points: Discuss oxygen administration, ventilation with a tracheostomy, BVM with tracheostomy in place, changing a tracheostomy tube, tracheostomy tube suctioning, and securing of tracheostomy tube.

Epinephrine solution for nebulization is made by mixing epinephrine 2m, 2 mL of epinephrine 1:1000, with 3mL NS.

Ventilator/BiPAP

Definition: Ventilators and BiPAP are medical devices designed to assist with ventilation of the special needs child.

Clinical Presentation: Symptoms of failure of the ventilator or BiPap machine may include: apnea and cyanosis, retractions, nasal flaring, altered level of consciousness.

BLS

Basic Life Support

Refer to General Pediatric Assessment Guidelines

Assess and maintain airway patency

Assess patient for tracheostomy, follow **Tracheostomy Protocol**

Assess ventilations

If ventilator is working properly and patient needs transport for non-respiratory medical evaluation; keep on ventilator/bipap for transport

If ventilator is not working properly

Assist ventilations with BVM as needed and 100 % oxygen

Initiate CPR for **pulseless arrest** or symptomatic **bradycardia** (refer to specific pediatric dysrhythmia protocol)

Oral suctioning for copious nasal and/or oral secretions

If patient is being transported for other medical condition, initiate appropriate medical protocol as indicated

Transport for medical evaluation

ALS

Advanced Life Support

Follow BLS procedures

Place patient on cardiorespiratory monitor and continuous pulse oximeter

For patients with tracheostomy, follow **Tracheostomy protocol**

For patients without tracheostomy:

Assess and maintain airway patency, oxygen 10-15 lpm via non-rebreather

If respirations are ineffective, begin BVM ventilation with 100% oxygen

Suction airway as needed

Continue bag-valve mask ventilation with 100% oxygen, intubate if unable to adequately ventilate or oxygenate child by BVM

Transport for medical evaluation

Key Points/Considerations

1. Patients with home medical devices have caregivers that are well educated as to their usage. If they are calling EMS it is usually because they are in trouble and have tried everything to get things back to normal, **OR** they are not having a problem with equipment but the child is sick and they need help transporting equipment and child to hospital.
2. Through EMSC and TAC (Technology-Assisted Children) EMS will be notified of special health care needs children in their area. You are strongly encouraged to get to know the patient when they are well and their medical devices so that you can be of better assistance in case of emergency.



Teaching Points: Parents usually know these children the best. Ask them for assistance; most are adept at suctioning, bagging, changing tracheostomy tubes, and troubleshooting medical devices.

Do not become distracted by equipment. The assessment and treatment of children with assisting medical devices should progress as with any child. Assessment and management of airway, breathing and circulation is primary.

Section III: Pediatric Trauma Protocols

Blunt Trauma

Definition: A type of physical trauma caused to a body part by direct impact. The impact may cause injury to underlying tissue or organs.

Clinical Presentation: Varies widely and ranges from minor complaints to severe shock. The presentation depends on the mechanism of injury and the organ systems injured. Patients may present with tachycardia, tachypnea, increased pain in the affected body part, and possibly altered mental status.

Basic Life Support Box

Refer to General Pediatric Assessment Guidelines

Maintain airway, administer 10-15 lpm of oxygen

If respirations are ineffective, begin BVM ventilation with 100% oxygen

Suction airway as needed

Employ **Spinal Immobilization Protocol** as indicated

Apply direct pressure to any obvious external hemorrhage

Expose patient and immobilize any obvious injuries

Maintain warmth using hat, sheet towels and blankets to minimize heat loss

Assess mental status prior to and every 15 minutes during transport (GCS/AVPU)

Transport for medical evaluation

Advanced Life Support Box

Follow BLS procedures

Place on cardiorespiratory monitor and continuous pulse oximetry

Consider intubation if indicated

Initiate IV / IO access

1. Infuse NS or LR 20 ml/kg
 - a. Repeat bolus if needed for shock (see table below)
 - b. For signs of *Spinal Shock* (hypotension with bradycardia) administer Epinephrine
2. Assess pain and initiate **Pain Protocol**
3. Continue to reassess mental status, vital signs, and pain score
4. Transport for medical evaluation



BLS

ALS

AVPU TABLE	Stimulus	Response type	Reaction
Alert	Normal environment	Appropriate	Normal interactiveness for age
Verbal	Simple command or sound stimulus	Appropriate or Inappropriate	Responds to name Nonspecific or confused
Painful	Pain	Appropriate Inappropriate Pathological	Withdraws from pain Nonpurposeful Response Posturing
Unresponsive	Above stimuli	No perceptible response to any stimulus	No perceptible response to any stimulus

Glasgow Coma Scale

Activity	Score	Infant Response	Adult Response
Eye Opening	4	Spontaneous	Spontaneous
	3	To speech or sound	To speech
	2	To painful stimuli	To pain
	1	None	None
Verbal	5	Appropriate words, sounds and social smile	Oriented to person, place, month and year
	4	Cries but consolable	Confused
	3	Persistently irritable	Inappropriate words
	2	Restless/agitated	Incomprehensible
	1	None	None
Motor	6	Spontaneous movement	Obeys commands
	5	Localizes pain	Localizes pain
	4	Withdraws to pain	Withdraws to pain
	3	Abnormal extremity flexion	Abnormal extremity flexion
	2	Abnormal extremity extension	Abnormal extremity extension
	1	None	None

Age of Patient	HR		Systolic BP
0 days - < 1 mo	<80	>205	<60
≥ 1 mo - < 3 mos	<80	>205	<70
≥ 3 mos - < 1 yr	<75	>190	<70
≥ 1 yr - < 2 yrs	<75	>190	<70 + (age x 2)
≥ 2 yrs - < 4 yrs	<60	>140	<70 + (age x 2)
≥ 4 yrs - < 6 yrs	<60	>140	<70 + (age x 2)
≥ 6 yrs - < 10 yrs	<60	>140	<70 + (age x 2)
≥ 10 yrs - < 13 yrs	<60	>100	<90
≥ 13 yrs - < 18 yrs	<60	>100	<90

Key Points/Considerations

Severe internal trauma may not have obvious visible external injuries.

Altered mental status may be a result of blunt head trauma or significant internal hemorrhage.

Prevention of hypoxia and hypotension in the pediatric trauma patient can significantly improve patient outcomes.

Medication	Dose	Route	Max Dose	EMT	Advanced EMT	Paramedic
Epinephrine 1:10,000 (0.1 mg/mL)	0.01mg/kg Repeat q 3-5 minutes prn	IV/IO	NA		ST	ST
Epinephrine 1:1,000 (1 mg/mL)	0.1 mg/kg dilute in NS to 3-5 mL Repeat q 3-5 minutes prn	ETT	NA		ST	ST

DO: Direct order from on line medical control

ST: Standing Order

Teaching Points: Kids don't always verbalize pain, need for pain assessment

Tables adapted from Pediatric Education for Pre-hospital Professionals

Burn

Definition: A burn is an injury to tissue resulting from exposure to flames or hot liquids, contact with hot objects, exposure to caustic chemicals, radiation or contact with electric current.

Clinical Presentation: The severity of a burn injury is determined primarily by the extent of the body surface area involved and, to a lesser extent, by the depth of the burn. Other factors must be considered such as age, concurrent medical problems, smoke inhalation and burns to special areas such as the face, hands and genitalia.

BLS

Basic Life Support

STOP THE BURN—

Remove from electric contact in the case of electric injury

Remove clothing and jewelry from the involved areas;

In case of chemical burn, brush off any powder or residue and flush with copious amounts of water

Refer to General Pediatric Assessment Guidelines

Maintain airway, administer 15 lpm of oxygen per non-rebreather mask

If respirations are ineffective begin bag-valve mask ventilation with 100% oxygen

Suction airway as necessary

If trauma suspected, Initiate **Spinal immobilization** protocol

Place clean, dry dressings or sheets on burn area

Maintain warmth: bundle in blankets

Use hat, sheet, towel or blanket to minimize heat loss

Avoid contact with surfaces that might increase heat loss

Transport for medical evaluation



ALS

Advanced Life Support

Follow BLS procedures

Place patient on cardiorespiratory monitor and continuous pulse oximetry

AIRWAY SWELLING

If unconscious, intubate (May require smaller ETT size related to swelling of airway)

If patient conscious, nebulized epinephrine 2 mL of 1:1,000 Epinephrine in 3mL of saline

Rapid transport or consider air medical transport for early airway intervention

- a. Indicators of potential airway compromise, rapid airway decompensation or swelling.

Smoke inhalation	Stridor
Deposits in upper airway	Inability to swallow
Carbonaceous sputum	Respiratory distress
Edema	Large body surface area burned
Facial burn	Singed eyebrows or nasal hairs

ALS

2. Establish IV/IO access preferably through non-burned tissue, if no choice may use burn area

3. Bolus 20 mL/kg LR or NS

- a. Additional fluid boluses may be required for signs of shock
- b. Carefully monitor total fluid administered

4. Place NG/OG for intubated patients

5. Treat per **Pain** protocol

Calculate body surface area involved using attached chart or may be estimated using the patient's palm size as approximately 1% of BSA

Transport for medical evaluation

Medication/Treatments Table

Medication	Dose	Route	Max Dose	EM T	Advanced EMT	Paramedic
Morphine Sulfate	0.1 mg/kg	IV/IO/IM	4mg		ST	ST
Epinephrine 1:1000 (1 mg/mL)	2mL in 3mL of saline	Nebulized	Call for additional doses		ST	ST
Fentanyl	1mcg/kg	IV/IO	75 mcg		ST	ST
	2 mcg/kg	IN	100mcg		ST	ST

DO: Direct order from on line medical control

ST: Standing Order

Key Points/Considerations

1. Types of Burns

Thermal- Direct contact with hot object, flame or hot liquid.

Chemical- Contact with a variety of solids, liquids, powders or gasses that irritate or burn the skin surface, mucous membranes or internal organs.

Electrical- Contact with a source of electricity or lightning. Electrical injuries have an entry and exit wound. The entrance wound is dry, charred and depressed in the center. Exit wounds have a blown out appearance. Electrical burns may be much more severe than their appearance. Patients with electrical burns are also at risk for arrhythmias and should be placed on a cardiac monitor.

2. Airway Injury

Any child found in an enclosed space or a heavy smoke-filled environment is considered to have an inhalation injury. All patients need to have 100% Oxygen applied due to CO exposure. Exposure to heat and toxic fumes causes the airway to swell and occlude up to 50% of the total airway. Because the swelling process is continuous and rapid, the decision to intubate needs to be determined early, especially if there is a long transport time. BLS providers should rapidly transport this child for airway management or consider ALS intervention.

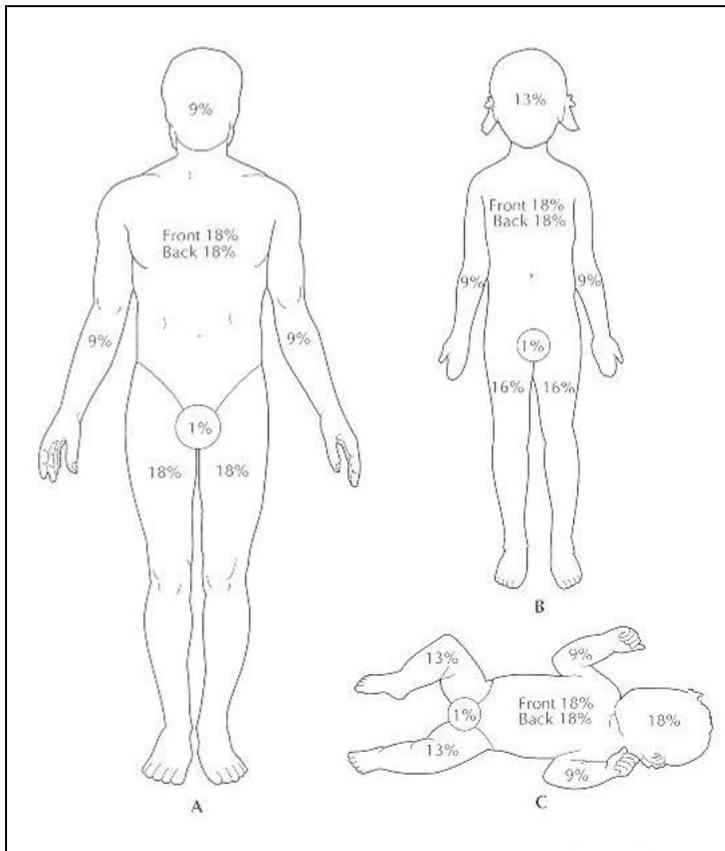
Teaching Points: Many children (usually <5 years of age) are burned as a result of child abuse. Circumferential scald burn to hands, feet, buttocks and genitalia are common burns seen in child abuse.

In the first few hours after a burn, fluid leaks out of the capillaries resulting in a loss of intravascular fluid. All burns require aggressive and accurate fluid management.

Superficial burns may be very painful. Consider treatment for pain.

Burn estimate diagrams: (A) adult;

(B) adaptations for children; and (C) infants



Subtract 1% from head for each year over one year of age
 Add ½% to each leg for each year over one year of age

Diagram adapted from: Eichelberger, M.R., et al. Brady pediatric emergencies: a manual for prehospital care providers. 2nd ed. p. 187. Prentice-Hall, Inc. Upper Saddle River, New Jersey, 1998.

Closed Head Injury

Definition: Closed head injury refers to any infant or child with non-penetrating traumatic brain injury (TBI). "Mild closed head injury" applies to children with GCS 13-15 after TBI.

"Moderate to severe closed head injury" applies to children with a GCS \leq 12 after TBI.

Clinical Presentation: Children with closed TBI may be confused, combative, or unresponsive. They may have associated skull fracture or other traumatic injuries (c-spine, chest, abdominal, extremities). TBI victims may develop hypoxia or poor oxygen saturation, hypotension, alterations in respiratory drive, and unequal or unresponsive pupils. Children with TBI are more likely than adults to exhibit post-traumatic seizures.

BLS

Basic Life Support

Refer to General Pediatric Assessment protocol

Maintain c-spine precautions at all times

Place on pulse oximeter. Administer supplemental oxygen for any saturation $<$ 90% or if unable to obtain a reliable pulse oximeter reading

Maintain airway, administer 10-15 lpm of oxygen

If respirations are ineffective, begin BVM ventilation. Target a normal respiratory rate for age

Check pupils. If one or both pupils are "blown" and patient is unresponsive, begin BVM to augment respiratory efforts. Target a normal respiratory rate for age (see chart below)

Reassess pupils every 5 minutes. If a pupil "blows" during frequent assessments, increase respiratory rate by 10% (see chart below)

Assess for other traumatic injuries. Apply pressure to stop any obvious bleeding

If the child exhibits seizure activity, assure sufficient space to prevent contact injury Support the airway with jaw thrust, avoiding any neck extension

Transport for medical evaluation



ALS

Advanced Life Support

Place on cardiac monitor—treat any arrhythmias

Continue to maintain airway, assist breathing as needed for inadequate respiratory effort

Consider intubation if BVM is ineffective

Target a normal respiratory rate for age (see chart below)

If end-tidal CO₂ (EtCO₂) monitoring is available, note the baseline reading after 1 minute of assisted ventilation. Adjust respiratory rate to maintain EtCO₂ reading at baseline \pm 5

Initiate IV or IO access if GCS \leq 12 or concern for poor perfusion or hypotension

For patients with GCS $>$ 12 and concern for other trauma, refer to blunt trauma protocol

1. Check blood pressure every 5-10 minutes
 - a. Initiate NS or LR 20 ml/kg for hypotension (see chart below) or if unable to obtain blood pressure
 - b. If a hypotensive patient shows no improvement with initial treatment, may repeat 20 ml/kg up to a total of 60cc/kg. Improvement may be assessed by a more appropriate blood pressure or palpation of strong distal pulses
2. Continue to check pupils every 5 minutes. If a pupil "blows" during reassessment, increase respiratory rate by 10% (see chart below) and contact medical control as soon as possible
 - a. If EtCO₂ monitoring is available, increase respiratory rate in order to obtain a target reading that is 5-10 points lower than the baseline reading



3. If child exhibits seizure activity that lasts longer than 5 minutes or is recurrent, treat with medications and contact medical control as soon as possible. Follow **seizure** protocol

Key Points/Considerations

TBI is a leading cause of childhood death. Hypotension, hypoxia, and either excessive or inadequate ventilation early after TBI are associated with worse outcomes.

A blown pupil is concerning for life-threatening increased intracranial pressure. If present, **MILD** hyperventilation may be life saving. Aggressive hyperventilation does not provide any additional benefit and is associated with worse outcomes.

TBI may be painful; however, pain medications can cloud serial neurological assessments. Consequently, routine pain medications should not be administered to children with altered mental status after TBI.

Self-limited seizures immediately after TBI (impact seizures) are not associated with worse outcomes. Prolonged or recurrent seizures are associated with worse outcomes.

Target Respiratory Rates for Age

Age	Normal	↑'d by 10%
0 days – < 2 mo	30	33
≥ 2 mo – < 12 mos	25	28
≥ 1 yr – 3 yrs	20	22
≥ 4 yr – < 6 yrs	15	17
≥ 6 yrs – 15 yrs	12	14

Lowest Acceptable Systolic BP for Age

Age	Systolic BP
0 days – < 1 mo	<60
≥ 1 mo – < 3 mos	<70
≥ 3 mos – < 1 yr	<70
≥ 1 yr – < 10 yrs	<70 + (age x 2)
≥ 10 yrs	90

Medication/Treatments Table

Medication	Dose	Route	Max Dose	EMT	Advanced EMT	Paramedic
Midazolam	0.1 mg/kg	IV/IO	5 mg		ST	ST
	0.2 mg/kg	IN/IM	10 mg		ST	ST
Lorazepam	0.1 mg/kg	IV/IO	4 mg		ST	ST
Diazepam	0.05 mg/kg	IV/IO	5 mg		ST	ST
	0.3 mg/kg	PR	10 mg		ST	ST

DO: Direct order from on line medical control

DO/P: Direct order from on line medical control or from a Paramedic

ST: Standing Order

Teaching Points

Discuss anoxic brain injury; abnormal neurological exam

Consider trauma/ non-accidental trauma (NAT)

Penetrating Trauma

Definition: Penetrating trauma is defined a trauma as a result of an object at high velocity entering the body through the skin causing an open wound and injury to the internal tissues.

Clinical Presentation: Penetrating trauma is rare in pediatric patients but can result from both accidental and intentional injury. The injury severity depends on many factors including the potential involvement of vital structures (blood vessels, nerve tissue, internal organs). As a result, patients may present with shock from ongoing blood loss or infection and altered mental status.

BLS

Basic Life Support

Refer to General Pediatric Assessment Guidelines

Maintain airway, administer 10-15 lpm of oxygen

If respirations are ineffective, begin BVM ventilation

Suction airway as needed

Employ **Spinal Immobilization** protocol as indicated

Apply direct pressure to any obvious external hemorrhage

Expose the patient

Look for signs of trauma and immobilize any obvious injuries and penetrating object

Do not attempt to remove penetrating object

Maintain warmth using hat, sheet towels and blankets to minimize heat loss

Assess mental status prior to and every 15 minutes during transport (GCS/AVPU)

Transport for medical evaluation

ALS

Advanced Life Support

Follow BLS procedures

Place on cardio-respiratory monitor and continuous pulse oximetry

Consider intubation if indicated

Initiate IV or IO access

Infuse NS or LR 20 mL/kg

Repeat bolus if needed for shock (see table below)

If signs of spinal shock (hypotension with bradycardia) give Epinephrine

Assess pain and initiate **Pain Protocol**

Continue to reassess mental status, vital signs, and pain score

Transport for medical evaluation



AVPU TABLE	Stimulus	Response type	Reaction
Alert	Normal environment	Appropriate	Normal interactiveness for age
Verbal	Simple command or sound stimulus	Appropriate or Inappropriate	Responds to name Nonspecific or confused
Painful	Pain	Appropriate Inappropriate Pathological	Withdraws from pain Nonpurposeful Response Posturing
Unresponsive	Above stimuli	No perceptible response to any stimulus	No perceptible response to any stimulus

Glasgow Coma Scale

Activity	Score	Infant Response	Adult Response
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Eye Opening	4	Spontaneous	Spontaneous
	3	To speech or sound	To speech
	2	To painful stimuli	To pain
	1	None	None
Verbal	5	Appropriate words, sounds and social smile	Oriented to person, place, month and year
	4	Cries but consolable	Confused
	3	Persistently irritable	Inappropriate words
	2	Restless/agitated	Incomprehensible
	1	None	None
Motor	6	Spontaneous movement	Obeys commands
	5	Localizes pain	Localizes pain
	4	Withdraws to pain	Withdraws to pain
	3	Abnormal extremity flexion	Abnormal extremity flexion
	2	Abnormal extremity extension	Abnormal extremity extension
	1	None	None

Vital Signs that would be abnormal according to age of child

AGE OF PATIENT	HR		SYSTOLIC BP
0 days - < 1 mo	<80	>205	<60
≥ 1 mo - < 3 mos	<80	>205	<70
≥ 3 mos - < 1 yr	<75	>190	<70
≥ 1 yr - < 2 yrs	<75	>190	<70 + (age x 2)
≥ 2 yrs - < 4 yrs	<60	>140	<70 + (age x 2)
≥ 4 yrs - < 6 yrs	<60	>140	<70 + (age x 2)
≥ 6 yrs - < 10 yrs	<60	>140	<70 + (age x 2)
≥ 10 yrs - < 13 yrs	<60	>100	<90
≥ 13 yrs - < 18 yrs	<60	>100	<90

Key Points/Considerations

Severe internal trauma may not have obvious visible external injuries.

The speed of the projectile is a more important factor than its mass in determining how much damage is done.

The penetrating object may remain in the tissues, exit the body the way it entered, or pass through the tissues and exit from another area.

Medication/Treatments Table

Medication	Dose	Route	Max Dose	EMT	Advanced EMT	Paramedic
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Epinephrine 1:10,000 (0.1 mg/mL)	0.01mg/kg Repeat q 3-5 minutes prn	IV/IO	NA		ST	ST
Epinephrine 1:1,000 (1 mg/mL)	0.1 mg/kg dilute in NS to 3-5 mL Repeat q 3-5 minutes prn	ETT	NA		ST	ST

DO: Direct order from on line medical control

ST: Standing Order

Epinephrine solution for nebulization is made by mixing epinephrine 2m, 2 mL of epinephrine 1:1000, with 3mL NS.

Spinal Immobilization

Definition: Immobilization of a patient's spine from cervical spine to lumbar spine, to prevent further damage to spinal vertebrae or spinal cord.

Symptoms indicating need for spinal immobilization are but are not limited to the following:

- Neck muscle spasm
- Numbness/tingling
- Bowel/bladder incontinence
- Hypotension with bradycardia (spinal shock)
- Altered gait
- Pain on neck palpation
- Limitation of motion
- Muscle weakness/flaccidity
- Priapism

Mechanisms of injury indicating need for spinal immobilization are:

- Head trauma
- Fall
- Motorized sports vehicle event
- Axial loading injury
- Facial trauma
- Auto-Pedestrian event
- MVC

Symptoms of Neurogenic Shock

- Bounding pulses
- Warm extremities
- Hypotension despite adequate fluid resuscitation
- Bradycardia
- Flaccid paralysis

Spinal immobilization requires an appropriate sized c-collar, head blocks (towel rolls), head strap (tape) to secure the head, and a pediatric/adult backboard with spider straps across the chest, pelvis, and knees to ensure patient immobilization. Use pediatric backboards for children less than 8 yrs old and adult backboards for children 8 yrs old or older. In case of multiple casualties or other cases when a pediatric specific backboard is not available use an adult backboard and raise the body (not the head) to ensure spinal alignment. (See diagram below)

Children less than 2 years of age should be immobilized in a car seat or commercial infant c-spine papoose device. When using a car seat for immobilization, proper c-spine precautions should be taken during application and extraction from car seat. Towel rolls to sides of the head with tape across forehead and towels filling in any spaces need to be applied. The car seat restraints need to be used as well.

Children with suspected spinal cord injuries at any level are maintained in spinal immobilization until definitive neurologic care occurs.

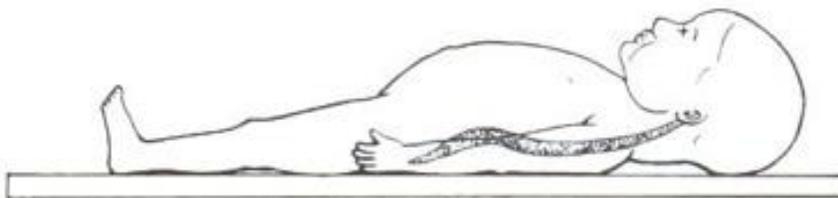
Remember to assess the child's motor and sensory function after application of spinal precautions.

Medication/treatments table

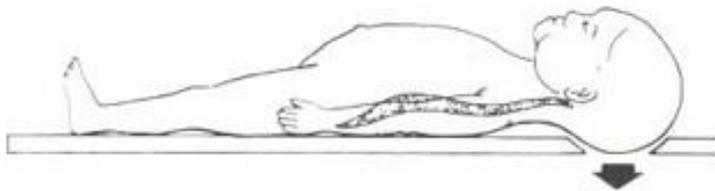
Medication	Dose	Route	Max Dose	EMT	Advanced EMT	Paramedic
Epinephrine 1:10,000 (0.1 mg/mL)	0.01mg/kg Repeat q 3-5 minutes prn	IV/IO	NA		ST	ST
Epinephrine 1:1,000 (1mg/mL)	0.1 mg/kg dilute in NS to 3-5 mL Repeat q 3-5 minutes prn	ETT	NA		ST	ST

DO: Direct order from on line medical control

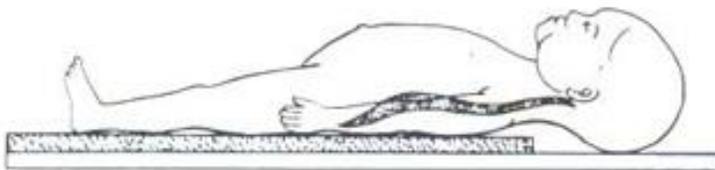
ST: Standing Order



A



B



Submersion Victim

Definition: Submersion injuries can be classified into two categories: Drowning and Near-drowning. *Drowning* occurs when the patient dies as a result of asphyxiation within the first 24 hours of the submersion event. The term *near drowning* indicates that the patient has survived past the first 24 hours. Near drowning victims may ultimately die from complications of their submersion.

Clinical Presentation: Submersion injuries can occur in any body of water such as the bathtub, swimming pools, buckets, and open bodies of water such as ponds, rivers, and streams. There can be co-existing conditions depending on the type of submersion injury including trauma, hypothermia, and intoxication. Mental status may range between normal and alert to significant alterations. Patients can be cyanotic, pale, have labored respirations with retractions, or appear well with minimal injury. All patients require some medical assessment beyond the initial scene presentation.

BLS

Basic Life Support

Refer to General Pediatric Assessment Guidelines

Assess and maintain airway patency:

If breathing spontaneously: Oxygen 10-15 LPM via non-rebreather to maintain oxygen saturations >95%

If patient is apneic or agonally breathing: Provide ventilation with BVM and 100% oxygen
Initiate CPR for pulseless arrest or symptomatic bradycardia (refer to specific pediatric dysrhythmia protocol)

If trauma is suspected or incident unwitnessed, protect the spine. Refer to **Spinal**

Immobilization Protocol

Obtain core body temperature

Protect patient from hypothermia and initiate warming measures as indicated (refer to **Hypothermia Protocol**)

Reassess and transport for medical evaluation



ALS

Advanced Life Support

Follow BLS procedures

Place on cardio-respiratory monitor and continuous pulse oximeter

Intubate if patient is apneic, unresponsive, has severe respiratory distress or depression or if unable to effectively ventilate or oxygenate child

Place IV/IO. If patient is hypotensive for age give 20 mL/kg of NS or LR

May repeat once if signs of shock persist after initial bolus

Reassess and transport for medical evaluation

Key Points/Considerations

Submersion in cold water will often cause severe hypothermia. Notify receiving hospital immediately of transport of hypothermic patient so that appropriate resources can be mobilized.

1. Hypotension is associated with worse outcomes. If in doubt, give fluid.

Teaching Points: Higher pressures may be required for ventilation as a result of aspiration and pulmonary edema. To improve chest rise, in such patients, you may need to occlude the pop-off valve on the BVM.

Section IV: Pediatric Medical Emergencies

Altered Mental Status

Definition: "Altered Mental Status" refers to any infant or child who displays a change in his or her normal mental state.

Clinical Presentation: Patients with altered mental status can often have decreased mental status or bizarre behavior. They can be hypo- or hypertensive, be hypo- or hyperglycemic, and can have alterations in respiratory drive.

BLS

Basic Life Support
 Refer to General Pediatric Assessment protocol
 Maintain airway, administer 10-15 lpm of oxygen
 If respirations are ineffective, begin BVM ventilation
 Look for signs of trauma and initiate **Spinal Immobilization Protocol** as indicated
 Check temperature. Initiate **Fever, Hyperthermia** or **Hypothermia Protocols** as indicated
 Check blood glucose
 If less than 60 mg/dl, and patient is able to maintain airway, call medical control
 Transport for medical evaluation

ALS

Advanced Life Support
 Follow BLS procedures
 Place on cardiorespiratory monitor and continuous pulse oximetry
 Consider intubation if necessary
 Initiate IV or IO access
 Initiate NS or LR 20mL/kg for hypotension or shock
 Check blood glucose, if less than 60 mg/dl
 Give D10W 2 mL/kg (200mg/kg) for neonates <30 days
 Give D10W 5 mL/kg (500 mg/kg) for all other children
 If opiates suspected (pinpoint pupils, respiratory depression):
 Give Naloxone (0.1 mg/kg IV or IO)
 After intervention, reassess mental status; if no change, repeat appropriate intervention
 Transport for medical evaluation



Recipe for D10W

Draw up 10 mL of D50 and mix with 40 mL of sterile water. NS should be used in place of sterile water for infants and children >30 days.

Key Points/Considerations

It is important to assess and treat any underlying and potential life-threatening conditions (see table below).
 Obtain complete history and do comprehensive physical exam
 If poisoning suspected, contact Utah Poison Control at 1-800-222-1222 for guidance.



AEIOUTIPPS: Possible causes of Altered Mental Status

A—Alcohol

T—Trauma, Temperature

E —Electrolytes	I —Infection
I —Insulin (hypoglycemia)	P —Psychogenic
O —Opiates	P —Poison
U —Uremia	S —Shock, Seizure

Medication/Treatments Table

Medication	Dose	Route	Max Dose	EMT	Advanced EMT	Paramedic
D10W (10 ml D50 and 40 ml diluent)	2 mL/kg (neonate) 5ml/kg (children)	IV/IO	Repeat as needed to keep glucose >60		ST	ST
Oral Glucose	20-30 mL of D5%W (infant)	PO	Repeat as needed to keep glucose >60	DO	ST	ST
Naloxone	0.1 mg/kg	IV/IO/IM/SQ	2 mg		ST	ST

DO: Direct order from on line medical control

ST: Standing Order

Apparent Life Threatening Event (ALTE)

Definition: ALTE is an episode that is frightening to the observer and involves some combination of apnea, color change, marked change in tone, choking, or gagging.

Important Information: ALTE usually occurs in infants less than 12 months. It may be a presentation for a variety of different pediatric conditions including seizures, upper airway obstruction, gastroesophageal reflux, metabolic problems, anemia, and cardiac disease.

Note that often patients with ALTE can be well appearing on presentation.

BLS

Basic Life Support

Refer to Pediatric General Assessment Guidelines

Maintain airway, administer 10-15 lpm oxygen via non-rebreather

Assist with BVM ventilation if ineffective respiratory effort

If patient exhibits decreased LOC, initiate **Altered Mental Status Protocol**

Complete thorough history and physical

Specifically assess for history of apnea, decreased tone, pallor or cyanosis

Obtain history of medications or possible toxic exposures/ingestions

Treat any identifiable problems (see **Hypoglycemia, Hypothermia** if applicable)

Transport for medical evaluation

ALS

Advanced Life Support

Follow BLS procedures

Place on cardiorespiratory monitor and continuous pulse oximetry

Consider intubation if patient is apneic, unresponsive, or difficult to ventilate/oxygenate

Initiate IV/IO

Administer 20 cc/kg NS or LR if signs of shock

May repeat second fluid bolus if signs of shock or hypotension persist

Treat any identifiable causes (**Shock, Respiratory Failure, Hypoglycemia, Hypothermia, Seizures** see specific protocol)

Transport for medical evaluation

Key Points/Considerations

1. Determine severity, duration, and nature of episode.
2. Obtain complete medical history.
3. Do comprehensive physical exam.
4. All patients should be transported for medical evaluation, even the well appearing child.
5. Contact medical control if parent/guardian is refusing medical care and/or transport.



Fever

Definition: Defined as a core body temperature of 100.4 degrees F or 38 degrees C or greater.

Clinical Presentation: Fever results in a faster metabolic rate. Patients often present with tachycardia and tachypnea. Fever can also be associated with seizures, hallucinations, and other forms of altered mental status.

BLS

Basic Life Support

Refer to General Pediatric Assessment Guidelines

Maintain airway, offer 100% oxygen via NRB

If respirations are ineffective, begin BVM ventilation

Obtain history and document temperature (rectal or axillary)

Administer acetaminophen 15mg/kg PO if >4 hours since last antipyretic

Begin cooling measures if temperature is greater than 103F or 39.5C

Passive cooling: remove excessive clothing

DO NOT USE ICE OR RUBBING ALCOHOL TO COOL

If seizing refer to **Seizure Protocol**

If core temperature is greater than 106 degrees F or 41 degrees C begin

Pediatric Hyperthermia Protocol

If immunosuppressed, initiate **Immunosuppressed Patient Protocol**

Transport for medical evaluation



ALS

Advanced Life Support

Follow BLS procedures

Place on cardiorespiratory monitor and continuous pulse oximetry

Assess for signs of hypotension, see table below. If present, establish IV/IO and initiate 20 mL/kg of NS or LR

- a. May repeat 20 mL/kg as needed for hypotension up to 60 mL/kg
2. Transport for medical evaluation

Sepsis Vital Signs

Age	T		P		R		Systolic BP
0m-3m	>36	>38	<80	>205	<30	>60	<60
3m-2y	>36	>38.5	<75	>190	<30	>60	<70
2y-6y	>36	>38.5	<60	>140	<22	>35	<70
6y-10y	>36	>38.5	<60	>140	<18	>30	<70
10y-18y	>36	>38.5	<60	>100	<12	>16	<90

Temperature Conversion Table

Fahrenheit	Celsius
98.6	37
100.4	38
102.5	39
104.0	40
105.8	41

Hyperglycemia

Definition: Hyperglycemia is a condition where blood glucose levels rise excessively. This elevated glucose level may lead to a potential hypovolemia.

Clinical Presentation: Increased thirst, increased urination, fatigue, increased respiratory effort (from an acidotic state), abdominal pain, nausea, vomiting, and any other signs of dehydration or decreased perfusion.

BLS

Basic Life Support

Refer to General Pediatric Assessment Guidelines

Maintain airway, offer 100% oxygen via NRB

If respirations are ineffective, begin BVM ventilation

Check blood glucose (if <60 mg/dL) see **Hypoglycemia** protocol

Contact medical control for glucose >500 mg/dl

Transport for medical evaluation



ALS

Advanced Life Support

Follow BLS procedures

Place patient on cardio-respiratory monitor and continuous pulse oximetry

Establish IV/IO

For the patient with high blood glucose (>300) and signs of decreased perfusion, begin an IV/IO bolus of 20 mL/kg NS

Transport for medical evaluation



Key Points/Considerations

Hyperglycemia can result from an inadequate supply of insulin or the body's resistance to circulating insulin.

As the body uses other sources of fuel for metabolism, ketones and acid production occurs. This results in an acidotic state.

Hyperthermia

Definition: Hyperthermia is the decreased ability of a patient's body to regulate a response to high environmental temperatures. This is often associated with dehydration.

Clinical Presentation: *Heat Exhaustion:* Moist, cool skin, cramping, slightly elevated or normal temperature or nausea. *Heat Stroke:* Hot, dry skin, altered mental status, dilated pupils, tachycardia, seizure activity, elevated body temperature, or arrhythmias.

BLS

Basic Life Support

Remove patient from hot environment

Refer to General Pediatric Assessment Guidelines

Maintain airway, administer 10-15 lpm of oxygen via NRB

Begin BVM ventilation with 100% oxygen for:

Ineffective respiratory effort

Heart rate

< 80 for infants

< 60 for children

Cyanosis despite 100% oxygen via NRB

Decreased level of consciousness

Obtain history and document temperature

Passive cooling measures: cool environment, fan, ice packs, remove clothing

Oral rehydration with electrolyte solution if mental status is normal

Transport for medical evaluation

ALS

Advanced Life Support

Follow BLS procedures

Place on cardio-respiratory monitor and continuous pulse oximeter assess for arrhythmias (see specific Dysrhythmia protocol)

Intubate if unable to adequately ventilate or oxygenate child by BVM

IV/IO

Initiate IV fluids 20mL/kg

Assess for seizure activity and refer to **Seizure Protocol**

Transport for medical evaluation

Temperature Conversion Table

Fahrenheit	Celsius
98.6	37
100.4	38
102.5	39
104.0	40
105.8	41

Key Points/Considerations

Move patient from hot environment to shade.

Remove excess clothing.

Mortality from heat stroke is usually from dysrhythmia. It is important to recognize early and treat.

Teaching Points: Consider creative ways to cool the individual. The head is a good location to administer cooling measures.

Hypoglycemia

Definition: Hypoglycemia is defined as a blood glucose concentration of less than 60 mg/dl in a child and less than 40 mg/dl in a term neonate (<30 days of age).

Clinical Presentation: Tachycardia, tachypnea, sweating, agitation and tremor. When blood glucose is dangerously low, seizures and altered mental status may be seen.

BLS

Basic Life Support

Refer to General Pediatric Assessment Guidelines

Maintain airway, administer 10-15 lpm of oxygen via NRB

Begin BVM ventilation with 100% oxygen for ineffective respiratory effort

Check blood glucose

If hypoglycemic notify medical control to obtain order to administer oral glucose

Attempt oral glucose replacement, unless vomiting or altered mental status

Recheck blood glucose and assess mental status 30 minutes after oral glucose administration

Transport for medical evaluation

ALS

Advanced Life Support

Follow BLS procedures

Place patient on cardio-respiratory monitor and continuous pulse oximetry

Establish vascular access and:

For infants and children: Administer D10W 5 mL/kg

- a. For term neonates (<30 days of age): Administer D10W 2 mL/kg
2. Repeat blood glucose and assess mental status 30 minutes after IV or oral glucose administration
3. Transport for medical evaluation



Recipe for D10W

Draw up 10 mL of D50 and mix with 40 mL of sterile water. NS should be used in place of sterile water for infants and children >30 days.

Medication/Treatments Table

Medication	Dose	Route	Max Dose	EMT	Advanced EMT	Paramedic
D10W (10 mL D50 and 40 mL diluent)	2 mL/kg (neonate) 5mL/kg (children)	IV/IO	Repeat as needed to keep glucose >60		ST	ST
Oral Glucose	20-30 mL of D5%W (infant)	PO	Repeat as needed to keep glucose >60	DO	ST	ST

DO: Direct order from on line medical control

ST: Standing Order

Hypothermia

Definition: Environmental cold exposure leading to drop in core body temperature and injury to exposed body parts (frostbite).

Mild Hypothermia: Core temperature 35–32 C (95–89.6F). Patients have shivering, uncomfortable, red skin, confusion, poor judgment.

Moderate Hypothermia: Core temperature 32–28 C (89.6–82.4 F). Patients present with decreased mental status, arrhythmias including bradycardia, pallor.

Severe Hypothermia: Core temperature <28 C (82.4 F). Patient may be unconscious, have severely decreased mental status, slow respirations, asystole, bradycardia, or other arrhythmias.

Clinical Presentation: Frostbite usually affects the area of skin most exposed to the elements. The skin turns reddened then mottled, bluish, white and /or grey with continued exposure. Pain persists during initial phases then numbness ensues. If patient is still conscious, confusion may be present along with decreased mental status and bradycardia.

BLS

Basic Life Support

Remove any wet clothing from patient and **carefully** move to warm environment (do not immerse patient in water)

Refer to General Pediatric Assessment Guidelines

Maintain airway, administer 10-15 lpm of oxygen via NRB

Begin BVM ventilation for **3 minutes*** with 100% oxygen for:

Ineffective respiratory effort

Heart rate

< 80 for infants

< 60 for children

Cyanosis despite 100% oxygen via NRB

Decreased level of consciousness

Check for pulse, if no pulse begin CPR

Begin active rewarming measures (hats, blankets), apply heat packs over chest to warm heart

Protect injured (frostbite) areas, *do not rub or place on heated surface*

Protect patient from further heat loss

If patient awake and alert with intact airway, offer sugar containing solution to drink

Transport for medical evaluation



ALS

Advanced Life Support

Follow BLS procedures

1. Place on cardio-respiratory monitor and continuous pulse oximeter
 - a. Assess for arrhythmias
2. If unable to effectively perform BMV, consider intubation
3. Initiate IV/IO
 - a. **Warm** IV NS or LR 20mL/kg
4. Administer medications as directed by Medical Control
5. Transport for medical evaluation

*Adapted from State of Alaska Guidelines (reference)

Temperature Conversion Table

Fahrenheit	Celsius
------------	---------

77	25
78.8	26
80.6	27
82.4	28
84.2	29
86	30
87.8	31
89.6	32
91.4	33
93.2	34
95	35
96.8	36
98.6	37

Key Points/Considerations

Do not remove clothing unless immediate active rewarming can be done.

Remove wet clothing from the patient before rewarming.

Be careful in the transport of unconscious patients, rough movement can precipitate arrhythmias.

Keep patient lying flat to reduce cardiac work.

In the re-warming phase arrhythmias can develop; recognize and treat.

Notify medical control early to activate resources at receiving hospital.

Pediatric MAST Guidelines

Place patient in appropriate size pneumatic compression trousers (MAST) (uninflated) whenever symptoms of shock are present, i.e., cool skin, poor capillary refill, tachycardia, etc.

- Do **not** inflate without verbal order if patient has chest injury or penetrating injury to the neck;
- For other patients with traumatic shock, inflate MAST if SBP is less than lower limit for age (see table below) after obtaining permission from Medical Control.

<u>Age</u>	<u>Systolic BP Lower Limit</u>
6 mos.	70
2 years	80
4 years	80
6 years	80
8 years	85
10 years & older	90

Patient Size:

- >100 lbs: use adult pneumatic compression trousers
- 40-100 lbs: use pediatric MAST

Precautions:

- Use the lowest effective pressure when inflating MAST
- Do not apply the abdominal compartment above mid-abdomen on any pediatric patient.
- Monitor adequacy of ventilation carefully whenever the abdominal compartment is inflated.
- Prepare to suction vomitus when abdominal compartment is inflated.

Non-Traumatic Shock/Sepsis

Definition: Hypoperfusion or shock is defined as decreased effective circulation, with inadequate delivery of oxygen to tissues. Shock may be present in a compensated state (normal blood pressure) or in a decompensated state (low blood pressure).

Hypovolemic shock (cold shock state) is most common cause in pediatrics due to fluid losses from dehydration.

Distributive shock (warm shock state) is from inadequate fluid distribution causing hypoperfusion. Examples include septic shock or anaphylaxis.

Clinical Presentation: **Cold shock:** increased heart rate, prolonged capillary refill >3 seconds, cool pale, clammy, or mottled skin, weak or absent peripheral pulses and altered mental status. **Warm shock:** increased heart rate, "flash" capillary refill time, warm, flushed skin, bounding peripheral pulses, increased respiratory rate, mental status decreased or confused.

BLS

Basic Life Support

Refer to General Pediatric Assessment Guidelines

Obtain vital signs including blood pressure

Maintain airway, administer 10-15 lpm of oxygen if signs of respiratory distress

If respirations are ineffective, begin BVM ventilation

Suction as needed

Transport for medical evaluation



ALS

Advanced Life Support

Follow BLS procedures

Place patient on cardio-respiratory monitor and continuous pulse oximeter

Consider intubation if unable to effectively ventilate with BVM

Obtain IV/IO and initiate 20 ml/kg of NS or LR

Contact medical control as soon as possible to mobilize resources at receiving facility

Reassess patient perfusion status including vital signs

If patient is persistently hypotensive or with signs of poor perfusion, repeat 20 ml/kg of NS or LR

Transport for medical evaluation



Key Points/Considerations

Patients who are in a cardiogenic shock state will worsen after fluid resuscitation.

1. Reassessment between fluid boluses is very important component of care.

AGE OF PATIENT	HR		RR		SYSTOLIC BP	TEMP	
0 days - < 1 mo	<80	>205	<30	>60	<60	<36	>38
≥ 1 mo - < 3 mos	<80	>205	<30	>60	<70	<36	>38
≥ 3 mos - < 1 yr	<75	>190	<30	>60	<70	<36	>38.5
≥ 1 yr - < 2 yrs	<75	>190	<24	>40	<70 + (age x 2)	<36	>38.5
≥ 2 yrs - < 4 yrs	<60	>140	<24	>40	<70 + (age x 2)	<36	>38.5
≥ 4 yrs - < 6 yrs	<60	>140	<22	>34	<70 + (age x 2)	<36	>38.5
≥ 6 yrs - < 10 yrs	<60	>140	<18	>30	<70 + (age x 2)	<36	>38.5
≥ 10 yrs - < 13 yrs	<60	>100	<18	>30	<90	<36	>38.5
≥ 13 yrs - < 18 yrs	<60	>100	<12	>16	<90	<36	>38.5

Teaching Points: Perfusion is important, barriers between skin, how to identify frostbite and protect skin, IV fluid warming.

Pain Management

Definition: Pain is often a result of either trauma or other noxious stimuli and often requires treatment in addition to the underlying cause.

Clinical Presentation: Patients in pain can present in significant distress often leading to crying or significant agitation, hyperventilation, and tachycardia.

BLS

Basic Life Support

Refer to General Pediatric Assessment Guidelines

Maintain airway, administer 10-15 lpm of oxygen if signs of respiratory distress

If respirations are ineffective, begin BVM ventilation

Immobilize any obvious injuries to alleviate any ongoing pain

Place in position of comfort. If there are signs of multi-system trauma, follow **Spinal**

Immobilization protocol as indicated

Transport for medical evaluation

ALS

Advanced Life Support

Follow BLS procedures

Place on cardio-respiratory monitor and continuous pulse oximetry

Consider intubation if necessary

Initiate IV/IO access as needed

Initiate treatment for underlying cause of pain

1. Assess patient's pain using either Wong-Baker Faces scale (ages 3-8 years) or numerical scale (ages 8-18 years)
2. Administer morphine or fentanyl for a pain scale of greater than or equal to 3 on the faces scale or 4 on numerical scale
3. After intervention, reassess mental status and for signs of respiratory depression
4. If respiratory depression, administer nalaxone
 - a. Call for medical control if additional doses are required
5. Transport for medical evaluation in position of comfort



Key Points/Considerations

Treatment of pain can lead to an alteration of mental status or respiratory depression so should be limited to those where head trauma is not suspected.

Obtain complete history and do comprehensive physical exam.

Family-centered care can often assist in alleviating pain and anxiety in a distressed child.



Wong-Baker FACES Pain Rating Scale



From Hockenberry MJ, Wilson D: Wong's essentials of pediatric nursing, ed. 8, St. Louis, 2009, Mosby. Used with permission. Copyright Mosby

Medication/Treatments Table

Medication	Dose	Route	Max dose	EMT	Advanced EMT	Paramedic
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Morphine	0.1 mg/kg	IV/IM/IO	4 mg		ST	ST
Fentanyl	1 mcg/kg	IV/IO	75 mcg		ST	ST
	2 mcg/kg	IN	100 mcg		ST	ST
Naloxone	0.1 mg/kg	IV	2 mg		ST	ST

DO: Direct order from on line medical control

Seizure

Definition: Seizures are a neuromuscular response to an underlying cause such as: epilepsy, hypoxia, hypoglycemia, head injury, recent illness, poisoning, and infection.

Clinical Presentation: May include: altered level of consciousness, tonic/clonic muscle movement, eye deviation, tachycardia, tachypnea bradycardia, bradypnea, twitching, staring episodes.

BLS

Basic Life Support

Refer to General Pediatric Assessment Guidelines

Protect airway by suctioning or positioning and apply 100% oxygen via NRB

Obtain history of seizures, diabetes, fever, ingestion, or trauma

Monitor patient, protect from further injury

Obtain a blood glucose and if hypoglycemic then refer to **Hypoglycemic Protocol**

Transport for medical evaluation

ALS

Advanced Life Support

Follow BLS procedures

Apply cardiac monitor

Support breathing by BVM or intubate for respiratory failure or apnea

Administer medications if seizure activity is present or for recurrent seizure activity (see table below)

If seizure does not stop within 5 minutes of medication administration, contact medical control

Implement protocols as determined by history obtained

Transport for medical evaluation



Key Points/Considerations

If a patient has a history of frequent seizures refer to Medical Emergency Health Care Information (Children with Special Healthcare Needs).

1. Medications used to stop seizures often cause transient respiratory depression, monitor patients closely for apnea after seizure is controlled and support breathing as necessary.
2. Be aware that medications to control seizures may potentiate hypotension in patients.
 - a. Therefore, if seizures are due to traumatic brain injury, actively monitor for hypotension.
3. Mortality and morbidity increases with duration and frequency of seizures.
 - a. Status epilepticus is defined as seizure duration greater than 5 minutes.
 - b. Often patients with recurrent seizures may be in non-convulsive status epilepticus in between when they appear post-ictal.
4. A seizure burns glucose, and hypoglycemia can cause additional seizures. Therefore it is important to check glucose and treat hypoglycemia.

Medication/Treatments Table

Medication	Dose	Route	Max Dose	EMT	Advanced EMT	Paramedic
Midazolam	0.1 mg/kg	IV/IO	5 mg		ST	ST
	0.2 mg/kg	IN/IM	10 mg		ST	ST
Lorazepam	0.1 mg/kg	IV/IO	4 mg		ST	ST
Diazepam	0.05 mg/kg	IV/IO	5 mg		ST	ST
	0.3 mg/kg	PR	10 mg		ST	ST

DO: Direct order from on line medical control

ST: Standing Order

Toxic Exposure

Definition: Pediatric toxic exposure is the ingestion, inhalation, contact or intravenous administration of a potentially toxic substance.

Clinical Presentation: Mental status changes, respiratory depression, hypo/hypertension, seizures and arrhythmias (tachycardia/bradycardia).

Basic Life Support

Scene assessment and possible decontamination (i.e. Hazmat protocols)

Refer to General Pediatric Assessment Guidelines

History:

Other potential toxic substances

Past Medical History

Quantity

Route of ingestion (oral, inhaled, contact, intravenous)

Substance

Time ingested/duration of exposure

Check blood glucose for decreased level of consciousness

If child appears unstable than transport immediately

If stable, notify Poison Control Center: **(800) 222-1222** for guidance

Contact medical control and consider administration of activated charcoal for if within 1 hour of ingestion, transport time > 30 minutes, and patient is awake and alert. Do **NOT** administer for any of the following ingestions.

Minerals/electrolytes

Alcohols

Cyanide

Caustics (i.e. lye)

Solvents (ex. cleaning solution)

Heavy Metals (iron, lithium, fluoride, etc.)

Hydrocarbons (gasoline)

Transport for medical evaluation



BLS

Advanced Life Support

Follow BLS procedures

Cardiac Monitor (assess for arrhythmias, hypotension, and bradycardia)

1. Consider treatment with Naloxone (0.1 mg/kg up to 2mg IV) for respiratory depression and suspected overdose/ingestion of opiate medications (i.e. morphine, oxycodone)

2. Consider intubation for airway protection or respiratory support

3. Consider antidotes (i.e. atropine) in consultation with Poison Center/Medical Control

4. Transport for medical evaluation



ALS

Key Points/Considerations

It is extremely important to monitor asymptomatic patients for delayed affects.

Obtain a thorough history with an emphasis on quantity and timing of all potential substances (medications, illicit drugs, household products, etc.). Contact Medical Control/Poison Control Center for guidance: **(800) 222-1222**.

Medication/Treatments Table

Medication	Dose	Route	Max Dose	EMT	Advanced EMT	Paramedic
Activated charcoal	1 g/kg	PO	50 g	DO	ST	ST
Oral Glucose	20-30 mL of D5W	PO	repeat to keep glucose >60	ST	ST	ST
D50	2mL/kg (neonates) 5mL/kg (children)	IV/IO	repeat to keep glucose >60	DO	ST	ST
Naloxone*	0.1 mg/kg	IV	2 mg		ST	ST
Atropine	.01 mg/kg	IV	1 mg		ST	ST

DO: Direct order from on line medical control

ST: Standing Order

*use with caution as this may cause withdrawal complications in opiate dependent (addicted) patients

Section V: Pediatric Cardiac Emergencies

Asystole & Pulseless Electrical Activity (PEA)

Definition: Asystole is a form of cardiac arrest with a complete absence of electrical activity of the heart. Cardiac arrest with PEA indicates the presence of cardiac electrical activity in the absence of a pulse.

Clinical Presentation: Asystole and PEA are both forms of cardiac arrest; an absence of vital signs.

BLS

Basic Life Support

Refer to General Pediatric Assessment Guidelines

If patient is 12 months or older, attach AED leads and follow AED instructions

If patient is less than 12 months of age, initiate age appropriate CPR

Begin bag-mask ventilation with 100% oxygen

Consider oral-pharyngeal airway

Consider possible causes (See Table below)

Transport for medical evaluation

ALS

Advanced Life Support

Follow BLS procedures

Place on cardio-respiratory monitor and continuous pulse oximetry

1. Confirm asystole in at least 2 leads or identify PEA
2. If, at any time, a cardiac rhythm other than asystole or PEA is noted on the monitor, treat based on the appropriate protocol
3. Intubate and ventilate with 100% oxygen
4. Establish IV/IO access, start NS infusing wide open up to 60 mL/kg
5. Consider intraosseous cannulation if unable to rapidly establish venous access
6. Administer Epinephrine; may repeat every 3-5 minutes prn
7. Patient should be reassessed for return of vital signs every 10 mL/kg of fluid, 5 cycles of CPR and after each intervention
8. When 60 ml/kg of volume replacement has been reached, infuse at TKO
9. Consider possible causes (See table below)
10. Transport for medical evaluation



Key Points/Considerations

Causes of PEA: The 5 "H's" and 5 "T's"	
Hypoxia	Tamponade (Cardiac)
Hypovolemia	Tension Pneumothorax
Hypo- or Hyperkalemia	Toxic Overdose
Hypothermia	Thrombosis, Pulmonary – PE
Hydrogen ion (Acidosis)	Thrombosis, Coronary – ACS

Medication / Treatments Table

Medication	Dose	Route	Max Dose	EMT	Advanced EMT	Paramedic
Epinephrine 1:10,000 (0.1 mg/mL)	0.01mg/kg Repeat q 3-5 minutes prn	IV/IO	1 mg		ST	ST
Epinephrine 1:1,000 (1 mg/mL)	0.1 mg/kg dilute in NS to 3-5 mL Repeat q 3-5 minutes prn	ETT	NA		ST	ST

DO: Direct order from on line medical control

ST: Standing Order

Bradycarrhythmias

Definition: A heart rate that is slow compared to normal heart rates for the patients age. The most common cause of bradycardia in a child is hypoxia. Cardiac rhythm disturbance may be due to abnormal pacemaker or electrical conduction.

Clinical Presentation: Nonspecific symptoms such as lightheadedness, dizziness, syncope, and fatigue. Or patient may have shock, hypotension, altered level of consciousness (ALOC), slow or absent breathing, or sudden collapse.

BLS

Basic Life Support

Follow General Pediatric Assessment Protocol

Provide 100% oxygen and assisted ventilation if indicated

Initiate CPR if HR <60 and signs of shock or collapse

Attach AED, if patient is 12 months or older, and follow AED instructions

Transport for medical evaluation

Normal Heart Rates in Children

Age	Awake	Asleep	Mean
0-3 mo	85-205	80-160	140
2 mo-2 yr	100-190	75-160	130
2-10 yr	60-140	60-90	80
> 10 yr	60-100	50-90	75

ALS

Advanced Life Support

Follow BLS procedures

Place on cardio-respiratory monitor and continuous pulse oximeter

Intubate and ventilate with 100% oxygen if indicated

Perform CPR if despite oxygenation and ventilation, HR is <60 and poor perfusion

Establish IV/IO access

Consider intraosseous cannulation if unable to rapidly establish venous access

Give Epinephrine if no response to above measures, repeat every 3-5 minutes as needed

Reassess after 2 minutes (5 cycles) of CPR

Intravenous fluid boluses may be infused if indicated (LR or NS 20 mL/kg)

If at any time a cardiac rhythm other than bradycardia is noted, treat based on the appropriate protocol

Transport for medical evaluation



Key Points/Considerations

CPR should be performed with as few interruptions as possible.

Possible contributing factors: The 5 "H's" and 5 "T's"

Hypoxia	Tamponade (Cardiac)
Hypovolemia	Tension Pneumothorax
Hypo- or Hyperkalemia	Toxic Overdose
Hypothermia	Thrombosis, Pulmonary - PE
Hydrogen ion (Acidosis)	Thrombosis, Coronary - ACS

Medication/ treatments table

Medication	Dose	Route	Max Dose	EMT	Advanced EMT	Paramedic
Epinephrine 1:10,000 (0.1 mg/mL)	0.01mg/kg Repeat q 3-5 minutes prn	IV/IO	1 mg		ST	ST
Epinephrine 1:1,000 (1 mg/mL)	0.1 mg/kg dilute in NS to 3-5 mL Repeat q 3-5 minutes prn	ETT	5 mg		ST	ST

Tachyarrhythmia with Pulse

Definition: A heart rate that is fast compared to normal for the patient's age; and too fast for the child's level of activity and clinical condition.

Clinical Presentation: Nonspecific symptoms such as lightheadedness, dizziness, syncope, and fatigue. Or patient may have shock, hypotension, altered mental status, respiratory distress, or sudden collapse.

BLS

Basic Life Support

Refer to General Pediatric Assessment Guidelines

Maintain airway, administer 10-15 lpm of oxygen via NRB

Begin BVM ventilation with 100% oxygen for ineffective or insufficient respiratory effort

Check pulse, verify heart rate

If no pulse move to appropriate pulseless algorithm

Transport for medical evaluation

Normal Heart Rates in Children

Age	Awake	Asleep	Mean
0-3 mo	85-205	80-160	140
2 mo-2 yr	100-190	75-160	130
2-10 yr	60-140	60-90	80
> 10 yr	60-100	50-90	75

ALS

Advanced Life Support

Follow BLS procedures

Place on cardio-respiratory monitor and continuous pulse oximeter

Check a blood pressure

If patient has a wide complex tachycardia (QRS > 0.08 sec), and is hypotensive--synchronized cardiovert with 1 J/kg; may repeat with 2 J/kg

Intubate and ventilate with 100% oxygen if indicated

Establish IV/IO access

Consider intraosseous cannulation if unable to rapidly establish venous access

Intravenous fluid boluses may be infused if indicated

If at any time a cardiac rhythm other than tachycardia is noted, treat based on the appropriate protocol

Transport for medical evaluation

Key Points/Considerations

Possible contributing factors: The 5 "H's" and 5 "T's"	
Hypoxia	Tamponade (Cardiac)
Hypovolemia	Tension Pneumothorax
Hypo- or Hyperkalemia	Toxic Overdose
Hypothermia	Thrombosis, Pulmonary - PE
Hydrogen ion (Acidosis)	Thrombosis, Coronary - ACS

Classification of Tachyarrhythmias

Narrow Complex	Wide Complex
Sinus tachycardia Infants <220/min Children <180/min	Supraventricular tachycardia (SVT) with aberrant conduction
Atrial flutter	Ventricular tachycardia
SVT Infant >220/min Children >180/min	

Ventricular Fibrillation and Pulseless Ventricular Tachycardia

Definition: Patient with no pulse, absent vital signs and ventricular fibrillation (V Fib) or ventricular tachycardia (VT) on the cardiac monitor.

Clinical Presentation: Pediatric cardiac arrest usually represents the terminal event of progressive shock, hypotension, or respiratory failure.

BLS

Basic Life Support

Refer to General Pediatric Assessment Guidelines

Initiate age appropriate CPR

Maintain airway, bag-mask ventilate with 100% oxygen

Perform 2 minutes (5 cycles) of CPR before reassessing, avoid interruption of compressions

Transport for medical evaluation

ALS

Advanced Life Support

Follow BLS procedures

Attach patient to cardiorespiratory monitor and continuous pulse oximetry

1. If rhythm is V Fib or VT, and the patient has no pulse, immediately defibrillate at 2 J/kg
2. If at any time, a rhythm other than V Fib or pulseless VT appears, treat as per that protocol
3. Intubate and ventilate with 100% oxygen
4. Establish IV/IO access
5. Consider intraosseous cannulation if unable to rapidly establish venous access
6. Intravenous fluid boluses may be infused if indicated
7. Reassess after 2 minutes (5 cycles) of CPR
8. If rhythm is unchanged, defibrillate at 4 J/kg, and give Epinephrine
9. Restart compressions immediately, reassess after 2 minutes of CPR
10. If rhythm is unchanged, defibrillate at 4 J/kg and immediately give Amiodorone or Lidocaine
11. Restart compressions immediately, reassess after 2 minutes of CPR
12. Transport for medical evaluation



Key Points/Considerations

Push hard, push fast, allow complete chest recoil.

Manual defibrillation at set doses is preferred, however if manual defibrillation equipment not available, may use AED to provide shocks as indicated.

CPR should be performed with as few interruptions as possible.

Medication	Dose	Route	Max Dose	EMT	Advanced EMT	Paramedic
Epinephrine 1:10,000 (0.1 mg/mL)	0.01mg/kg Repeat q 3-5 minutes prn	IV/IO	1 mg		ST	ST
Epinephrine 1:1,000 (1 mg/mL)	0.1 mg/kg dilute in NS to 3-5 mL Repeat q 3-5 minutes prn	ETT	10 mg		ST	ST
Lidocaine	1mg/kg (Dilute in NS to 3-5 ml) Repeat q 5-10 min prn	IV/IO	3mg/kg		ST	ST
Lidocaine	2-3 mg/kg (Dilute in NS to 3-5 ml)	ETT	3mg/kg		ST	ST

DO: Direct order from on line medical control

ST: Standing Order

Section VI: Pediatric Special Care Protocols

Assessment and Transport of the Neonate

Definition: Neonate refers to a newly born child. Appropriate transport of a neonate requires knowledge of common post-natal complications and continual assessment of the clinical status of the newborn child.

Clinical Presentation: Most neonates transition to post-natal life without difficulty, although 10% of infants will require some medical assistance. Respiratory insufficiency is the most common complication observed in the newborn. Infants born precipitously may exhibit additional signs of stress (apnea, grunting respirations, lethargy, poor tone).

Basic Life Support

1. Refer to General Pediatric Assessment Guidelines
2. Provide warmth, bulb suction nose and mouth, and dry the newborn infant
3. Evaluate respirations, heart rate, and activity:
 - a. If breathing spontaneously, HR > 100, and vigorous, continue to monitor
 - b. If apneic, cyanotic, lethargic or HR < 100, provide BVM ventilation at a rate of 30-40 breaths/minute with 100% oxygen
 - c. If HR < 60, begin CPR
4. Continue warming measures and protect from hypothermia
5. Transport for medical evaluation

BLS

Advanced Life Support

1. Follow BLS procedures
2. Place on cardiorespiratory monitor and continuous pulse oximetry
3. Consider intubation for:
 - a. Persistent apnea
 - b. Central cyanosis
 - c. Bradycardia (HR < 100)
4. If HR persistently < 60:
 - a. Continue CPR
 - b. Ensure that optimal ventilation is being provided with 100% oxygen
 - c. Place IV/IO
 - d. For persistent HR < 60, administer epinephrine IV or via ETT 3-5 minutes as needed
5. Obtain blood glucose level and if < 60 then administer D10W. *Never give a higher concentration than D10W to newborns*
6. If newborn continues without improvement despite adequate ventilation, chest compressions, and epinephrine, consider hypovolemia and administer 10mL/kg normal saline over 5-10 minutes
7. Transport for medical evaluation

ALS



Key Points/Consideration

1. Newborn babies are at high risk for hypothermia. Dry the baby and provide early warming measures. Keep covered as much as possible, especially the head. Increase the temperature in the ambulance.
2. Most complications seen during transition to post-natal life are due to respiratory insufficiency. Provide effective and early ventilation for the neonate who does not transition normally.

3. Frequent reassessment of the effectiveness and quality of assisted ventilation is paramount in the newborn not responding well.
4. Acrocyanosis (cyanosis of only the hands and feet) is normal in newborns and does not require intervention.
5. If child is vigorous and not requiring intervention, allow mom to hold the baby and breastfeed if desired.
6. Obtain pregnancy history, if possible, noting the gestational age of the infant, any complications to the pregnancy, illicit drug abuse during pregnancy, etc.
 - a. Children born to mothers who abused narcotic medications will exhibit poor tone, poor respirations, and possible seizure activity.

Recipe for D10W

Draw up 10 mL of D50 and mix with 40 mL of sterile water. NS should be used in place of sterile water for infants and children >30 days.

Medication/Treatments Table

Medication	Dose	Route	Max Dose	EMT	Advanced EMT	Paramedic
D10W	2 mL/kg	IV	Repeat as needed to keep glucose >60		ST	ST
Epinephrine 1:10,000	0.01mg/kg Repeat q 3-5 minutes prn	IV/IO	1 mg		ST	ST
Epinephrine 1:1,000 (1 mg/mL)	0.1 mg/kg dilute in NS to 3-5 mL	ETT	Repeat q 3-5 minutes as needed		ST	ST

DO: Direct order from on line medical control

ST: Standing Order

Behavioral Emergencies

Definition: Behavioral emergencies are situations involving patients who require a medical and/or psychiatric evaluation.

Clinical Presentation: They may have intentions to harm themselves or others. Self-harm behaviors may include cutting of arms or ingestions. They may display aggressive, destructive or violent behaviors.

BLS

Basic Life Support

1. Law enforcement should be contacted if patient is deemed a threat to self or others present
2. Determine if patient is a threat to self or others at present. Ask patient if they are thinking of hurting themselves or others
3. Ensure safety of the patient and yourself
 - a. Remove any possible weapons (lighters, matches, medications, knives, pens/pencils, and glasses)
 - b. Use restraints if necessary
 - c. Wear a mask to protect yourself from patient spitting
4. Assess and maintain airway patency, oxygen 10-15 lpm via non-rebreather
 - a. If respirations are ineffective, begin BVM ventilation with 100% oxygen
 - b. Suction airway as needed
5. Examine patient and treat any injuries with appropriate dressings or splints
6. Transport for medical or psychological evaluation



ALS

Advanced Life Support

Follow BLS Procedures

Apply cardio-respiratory monitor and continuous pulse oximetry

Maintain airway

If there is a history of ingestion or signs and symptoms of a toxidromal state. Follow **Toxic**

Exposure protocol

Administer medications as indicated. Contact Medical Control if necessary

Transport for medical or psychological evaluation

Key Points/Considerations

Be aware that parents may help keep patient calm or may be a source of anxiety for the patient and possibly escalate the situation.

Clearly state and explain your actions while providing care to the patient:

Vital signs and monitoring.

Behaviors you expect (no injuring self/others).

Do not make promises or bargains that you will not be able to fulfill.



Do Not Resuscitate

Some children may have advanced directives expressing preferences for emergency medical care. In 2008, the Utah Legislature passed the "Life with Dignity" law, which allows parents or guardians of children with terminal or serious medical conditions to express their wishes regarding resuscitation of their child in the event of a cardiac or respiratory arrest. These laws are commonly known as "Do not resuscitate" or "DNR."

There are strict rules regarding resuscitation of children. The regulation passed by the Utah legislature allows EMS personnel to respect the wishes of parents or guardians to avoid resuscitative efforts of their children under the following conditions:

1. The child has a Life with Dignity order present (or a valid "Life with Dignity" bracelet or necklace) specifying "Do not attempt resuscitation".
2. The Life with Dignity order must be completed, signed by the parents or guardians, and also by TWO physicians.
3. A copy of the order must be kept with the child, or a valid Life with Dignity bracelet or necklace must be worn.
4. The Utah Life with Dignity bracelet or necklace is a legal and valid substitute for the actual form.
5. All prior valid POLST or DNR orders remain valid and should be honored by EMS and other medical personnel. However, they should be converted to Life with Dignity orders as soon as possible to avoid confusion.

Protocol

Upon arrival to the scene of a critically ill child, the presumption is that the child will be resuscitated.

If the parents or guardians inform you that the child should not be resuscitated, ask to examine the Life with Dignity (DNR) order and ascertain that it is signed by the parent/guardian and two physicians. A copy of the form is valid.

If the child is wearing a valid Utah Life with Dignity bracelet or necklace, this may substitute for the paper form.

If a valid Life with Dignity (DNR) form, bracelet or necklace is present, resuscitative efforts may be withheld.

If a valid Life with Dignity (DNR) form, bracelet or necklace is not available, resuscitative efforts should be begun and continued until the order is produced, care is completed according to the usual protocol, or care is transferred to the Emergency Department personnel.

Family Centered Care

Definition: Family Centered Care is a mutually collaborative health care effort between family, patient and provider and has proved essential in providing effective patient care. It is an art as well as a skill and therefore it requires practice.



Demonstration: Demonstration of family centered care is in one's actions and behaviors when caring for patients. These actions and behaviors include: Attention to human needs, Respect, Patient accountability, Inclusiveness, Communication with families, Collaboration with families and Cultural and Developmental Competency.

Family centered care is demonstrated in practice, not just policy development.

Attention to Human Needs: Treat patients and families as individuals and people with problems just like yourself. Use a person's name. It is okay to ask a parent their first name so that you can call them by name. Let them know what to expect in advance (if you can). Treat families and their relatives with respect and consider the needs of the entire family. Include families in the decision making process.

Respect: Treat others with the same respect that you want to receive yourself. This starts with your patient and their family and it shows in your interaction with your partner, colleagues, hospital staff and the public.

Patient Accountability: At the end of a call, can you say: "I did my very best for my patient. I considered their needs and the needs of the entire family."

Inclusive: Provide direct, honest and open communication. Use a calm and nonjudgmental tone of voice. Engage the child and family, treat both with respect. Include a family member in resuscitation and decision making as they desire and are capable. If possible, designate a crew member to be a liaison to the family in order to facilitate communication and continuity.

Communicate with Families: Identify yourself to the child and the family. Identify a team member that would interact with the family and keep them updated. Ask them how they would like to be addressed and how the patient likes to be addressed. Watch for ways to distract the child i.e. a story, toy, blanket, humor, pen light, etc. Watch for verbal and non-verbal cues as to whether they seem to understand the information that is being presented. Speak simply about what you are doing.

Tell the family what you are about to do and what they can expect.

Pay attention to your tone of voice. Allow and encourage conversation between the parent and the child. Ask open ended questions i.e. (tell me about your pain).

Touch the child in a non-invasive way as well as allow the family to touch and nurture their child if at all possible.

Collaboration with Families: Empower the patient and the family by involving them in the care as well as the decision making process. Family Centered care is a skill requiring competency and caring. Like any other fine tuned skill it requires practice. Gather staff and develop language on how to describe the situation so information is consistent. Family Centered Care = compassion.

Cultural Competency: Respect, sensitivity, and an understanding of the unique cultural and religious differences. Be aware of any language barriers. If at all possible engage an interpreter that is able to understand some of the emotional issues as well as medical terminology associated with a trauma.

An understanding of the hierarchy of the family is key to a positive outcome.

Developmental Competency: Use appropriate language for the age. When in pain or hurt children often regress to childhood issues or more infantile responses. They may still need attachment items late in life. Describe what you will be doing. Use eye contact and touch when appropriate. Be respectful at all times.

Infants: General calming measures (Soft voices, gentle pats, pacifiers or rocking) Allow parents to stay close and bonded with the child and help them to anticipate the situation if possible

Toddlers: toys, teddy bear, blanket
Parents or family members are often a great source of comfort and nurturing. Allow them to be present

School Age: attachment objects, honesty about procedures, "no owies until I tell you," imaginary thinking (I made the car crash, I told a lie and that is why mom is hurt) Refrain from conversations about a child's treatment unless you are including them

Adolescents: Physician and provider honesty is key as well as paying attention to pain. Help them to participate in their own care and take their views seriously. Focus on giving them some sense of control. Pain management is key. Adolescents as well as adults are afraid of pain. The anticipation of pain can be worse than the pain itself. Some transitional objects/toys/stuffed animals can also be useful. Respect their privacy and modesty as much as possible. Allow them to discuss what is happening both with and without caregivers around.

Teaching Points

The "art of family-centered-care" requires practice and thoughtfulness.

Family Centered Care is an art as well as a skill and therefore it requires practice. Are we willing to join hands in order to practice our skills? As a parent I need you. As a provider you need me. We all want to make a difference in our own lives, in our communities, and in the lives of our children. It is never going to be "ok" for a parent or a child to be where we are in this event. As parents or patients our wish would be to never need this type of help. Family centered care is looking into the eyes of a parent or child and seeing the hurt as well as the hope. The hope is the easy part. Listen before you speak and help us to understand. As a parent I most likely have had little practice in what I am about to do in this emergency situation. You, as a provider have an awareness of the possibilities before me. We are all standing in one of the most intimate and vulnerable experiences of any human being. "I will most likely not remember all the medical information you communicate to me. What I will remember is how you made me feel, even when you delivered bad news."

Immunocompromised Children

Definition: An immunocompromised person is someone whose immune system is weakened and as a result, their ability to fight infection is poor or absent. Most immune deficiencies are acquired although some can be congenital. An immunocompromised state can result from chemotherapy for cancer, immunosuppression after organ or bone marrow transplant, or treatment for an auto-immune disease.

Clinical Presentation: Due to the patient's inability to fight infections, he or she may become very ill in a short period of time. These patients may present in overwhelming sepsis or shock (please see clinical presentation of cold shock and warm shock in the non-traumatic shock protocol), or respiratory distress. Additionally, they may have suppression of their bone marrow, often leading to thrombocytopenia or anemia. These patients may also have pallor or easy bruising and bleeding.

BLS

Basic Life Support

Refer to General Pediatric Assessment Guidelines

Obtain vital signs **including blood pressure**

Assess and maintain airway patency, oxygen 10-15 lpm via non-rebreather

If respirations are ineffective, begin BVM ventilation with 100% oxygen

Suction airway as needed

If febrile (Temperature >100.4 F or 38.0 C) and has no signs of altered mental status give acetaminophen *orally*

Apply protective face mask to patient if not receiving oxygen by face mask

Transport for medical evaluation



ALS

Advanced Life Support

Follow BLS procedures

Place patient on cardiorespiratory monitor and continuous pulse oximetry

Intubate patient if unable to maintain airway and BVM ventilations are ineffective

For febrile patients, assess for shock (see table below) and initiate **Non-Traumatic Shock** protocol if indicated reassess patient perfusion status including vital signs every five minutes

Transport for medical evaluation

Key Points/Considerations

Patients need protection from infectious exposures during transport.

1. EMS providers who are ill should also wear mask.
2. **All** EMS providers should observe strict hand washing techniques during care of the immunocompromised patient.
3. **All** EMS providers should use universal precautions when caring for the patient.
4. Immunocompromised patients should never receive rectal medications or have a core temperature checked rectally.



Medication/Treatments Table

Medication	Route	Dose	Max Dose	EMT	Advanced EMT	Paramedic
Acetaminophen	PO	15mg/kg	15 mg/kg q 4 hours	ST	ST	ST

Non-Accidental Trauma

Definition: Non-accidental Trauma is an act of commission or failure to protect by a caregiver that results in harm to a child's physical, developmental and/or emotional state. This has become a serious problem that has finally been recognized and great efforts are being made to prevent and/or report such trauma.

Responsibilities

1. **Suspect:** Look for suspicious circumstances or actions, either from child or caregiver. Listen to and document circumstances of the event. Evaluate the environment in which you find the child. Is the room hot? Is the room cold? Is the environment clean or dirty? Are there indications of illicit substances present? Note unusual living conditions that might lead to child abuse or neglect.
2. **Protect:** Be the child advocate. Administer appropriate medical care for injuries found. Recognize that you need to make all efforts to remove child from situation. Control emotions; remember that the child needs you to help protect them from further injury.
3. **Respect:** Communicate appropriately with family.
 - a. Avoid confrontation with caregivers. Confrontation may lead to caregiver's refusal to allow you to take the child.
 - b. Be nonjudgmental and avoid accusations.
 - c. Consider law enforcement assistance. Identify how you and your partners will share the need to get law enforcement involved. Identify how you will let the others know that you think there might be child abuse or neglect.
 - d. Transport to ensure patient safety. Follow all transport safety rules and regulations for your agency
4. **Collect:** Provide good documentation of incident. Record statements from caregivers. Document actual words in quotation marks when possible. All statements may be used in court. Be careful what you write and say.
5. **Report:** You have the responsibility to report suspected child abuse and neglect to the ED and also to law enforcement or the Division of Child and Family Services (Utah Law 62A-4a-403).



When any person including persons licensed under Title 58, Chapter 67, Utah Medical Practice Act, or Title 58, Chapter 31b, Nurse Practice Act, has reason to believe that a child has been subjected to incest, molestation, sexual exploitation, sexual abuse, physical abuse, or neglect, or who observes a child being subjected to conditions or circumstances which would reasonably result in sexual abuse, physical abuse, or neglect, he shall immediately notify the nearest peace officer, law enforcement agency, or office of the division" (Division of Child and Family Services, or DCFS).

Key Points/Considerations

1. Child maltreatment occurs in all ethnic and socio-economic groups.
2. Risk Factors: Children under age of 5, drug or alcohol Abuse, Domestic Violence.
3. There are four types of abuse: Physical, Emotional, Sexual, and Neglect.
4. In children under the age of two the most common form of child abuse is **Shaken Baby Syndrome**. Mortality of Shaken Baby Syndrome is 25%. For those that live, there is significant morbidity, usually associated with traumatic brain injury.
5. Of all abused kids, 50% will be abused again. Of those with recurrent abuse, mortality is 5%.

Safe Infants Act

Definition: Under Utah state law, a mother or her designee may safely relinquish care and custody of a newborn child under the age of 72 hours to hospital personnel at a hospital or with EMS services. The mother may retain anonymity as long as the newborn has not been neglected or abused. This protocol refers to any abandoned infant.

Clinical Presentation: It may be difficult to determine age of infant; this protocol should be used for any abandoned infant. The infant may have symptoms of hypothermia, hypoglycemia, and dehydration.

BLS

Basic Life Support

Refer to General Pediatric Assessment Guidelines

Obtain vital signs

Assure newborn is warm and dry

Maintain airway, administer 10-15 lpm of oxygen if signs of respiratory distress

If respirations are ineffective, begin BVM ventilation

Suction as needed

Check glucose, offer infant oral glucose if <60 mg/dl

Transport for medical evaluation



ALS

Advanced Life Support

Follow BLS procedures

Place on cardio-respiratory monitor and continuous pulse oximeter

Intubate if unable to effectively ventilate with BVM

Assess for signs of shock and obtain IV/IO if necessary

Give NS or LR 10 mL/kg

Give D10W, if glucose <60 mg/dL

Refer to **Assessment of the Neonate** protocol as needed

Contact medical control

Transport for medical evaluation.



Key Points/Considerations

1. Law enforcement does not need to be notified.
2. Offer mother medical care and treatment.
3. Acrocyanosis may be normal in the infant.
4. Notify Division of Child and Family Services (DCFS).
5. If the newborn has evidence of neglect or abuse, ask the mother to stay, but do not make an attempt to detain or restrain her.

Recipe for D10W

Draw up 10 mL of D50 and mix with 40 mL of sterile water. NS should be used in place of sterile water for infants and children >30 days.

Medication/Treatments Table

Medication	Dose	Route	Max Dose	EMT	Advanced EMT	Paramedic
D10W	2ml/kg	IV/IO	Call for repeated doses		ST	ST
Oral Glucose D5W	30 mL	PO	Call for repeated doses	DO	ST	ST

DO: Direct order from online medical control

ST: Standing order

Sudden Infant Death Syndrome (SIDS)

Definition: Sudden Infant Death Syndrome is the unexpected death of an infant under one year of age which remains unexplained after a thorough case investigation, including performance of a complete autopsy, examination of the death scene, and review of the clinical history.

Important Information: In a typical situation, parents check on their supposedly sleeping infant to find him or her dead. This is the worst tragedy parents can face, and leaves them with sadness and a feeling of vulnerability lasting throughout their lives. Since medicine is unable to tell them why their baby died, they often blame themselves.

1. Refer to Pediatric General Assessment Guidelines.
2. Assess airway and breathing, confirm apnea.
3. Assess circulation and perfusion, confirm absent pulse
 - a. If ALS provider, place on cardiac monitor and confirm absence of cardiac electrical activity.
4. Determine whether to perform further resuscitation measures.
 - a. If infant does not exhibit lividity or rigor, proceed with cardiopulmonary resuscitation, following protocol for **Asystole/PEA** and transport.
 - b. If infant exhibits lividity and rigor, do not resuscitate as permitted by medical direction.
5. Observe, assess, and document accurately and objectively.
 - a. Document time of arrival, initial assessment and basis for resuscitation decision, and time of resuscitation decision.
6. Maintain scene integrity for investigative purposes.
7. Await for law enforcement to assist with scene and family.
8. Provide supportive measures for parents and siblings.
 - a. Explain the resuscitation process, transport decision, and further actions to be taken by hospital personnel and or medical examiner.
 - b. Reassure parents there was nothing they could have done to prevent the death.
 - c. Allow the parents to see the child and say goodbye.
 - d. Maintain a supportive, professional attitude no matter how the parents react.
 - e. Whenever possible, be responsive to parental requests. Be sensitive to ethnic and religious needs or responses and make allowances for them.



Key Points/Considerations

1. There is no normal parental reaction to the death of a child or SIDS.
2. **It is important for rescuers to not make any assumptions or judgments.**
3. Take comprehensive history and perform physical exam and thorough scene assessment.
4. Do not restrain parents or request that they be restrained unless scene safety and integrity is **clearly** threatened.
5. Contact medical control for consultation on initiation of resuscitation measures as needed.

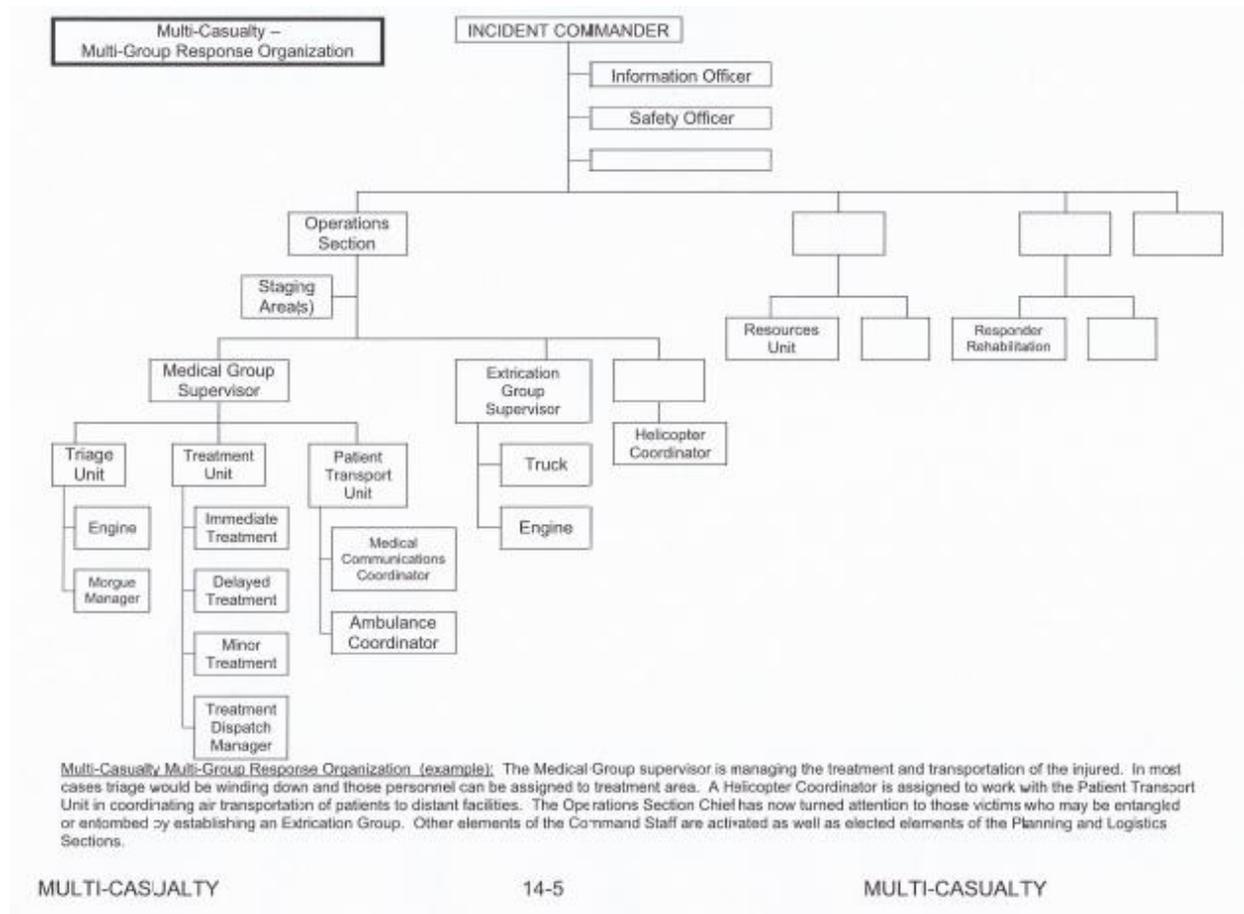


Section VII: Preparedness

Disaster/Mass Casualty Incident

Definition: Mass Casualty Incidents are events incurring casualties large enough to disrupt the normal deployment of the emergency healthcare services of the affected community. A disaster event includes natural occurrences such as tornados, earthquakes, floods and man-made occurrences such as intentional harm or destruction inflicted on a group of people.

Incident Management System: it is imperative that first responders set up an incident management system. EMS responders will likely be assigned to a medical group that will be responsible for triage, treatment or transport of victims.



Decontamination

First responders to incidents involving toxic substances will likely be responsible for decontamination of all victims.

Special considerations for pediatric victims:

Avoid separating children from their families

Older children may have fear, peer pressure or modesty issues

If water temperature is below 98 degrees it may cause hypothermia as children get younger and smaller

Airway management is still a priority through decontamination process

Families will need assistance for both adults and their children to be decontaminated

Use large volume low pressure water systems "child friendly"

The smaller the child the bigger these problems may become:
Hypothermia, airway management, separation of families, effective decontamination

General guidelines for decontamination of Pediatric victims

All clothing, diapers, items to be removed from all children.

Items should be bagged and labeled.

Decontamination personnel should accompany and assist or advise child's caregiver in decontamination process to ensure complete decontamination.

Child and caregiver will proceed to "cold zone", personnel will assist caregiver and child in drying off and child and caregiver will then be given clothing and blankets/sheets.

All persons leaving decontamination and into cold zone will be checked with appropriate monitoring equipment for thoroughness of decontamination.

Child will then be given an identifying wristband indicating they have been decontaminated.

Patient will be triaged if not already done so and will be taken to appropriate area for medical evaluation.

In general soap and water should be used to decontaminate children.

Non-Ambulatory Children of all ages

Placed on a stretcher by "hot zone" personnel and disrobed.

All clothing is removed.

Special attention should be paid to child's airway during decontamination process.

Decontamination personnel to assist child's caregiver with moving child to ensure all areas of child are decontaminated.

Decontamination personnel will assist child's caregiver in drying child and providing covering and blankets for warmth.

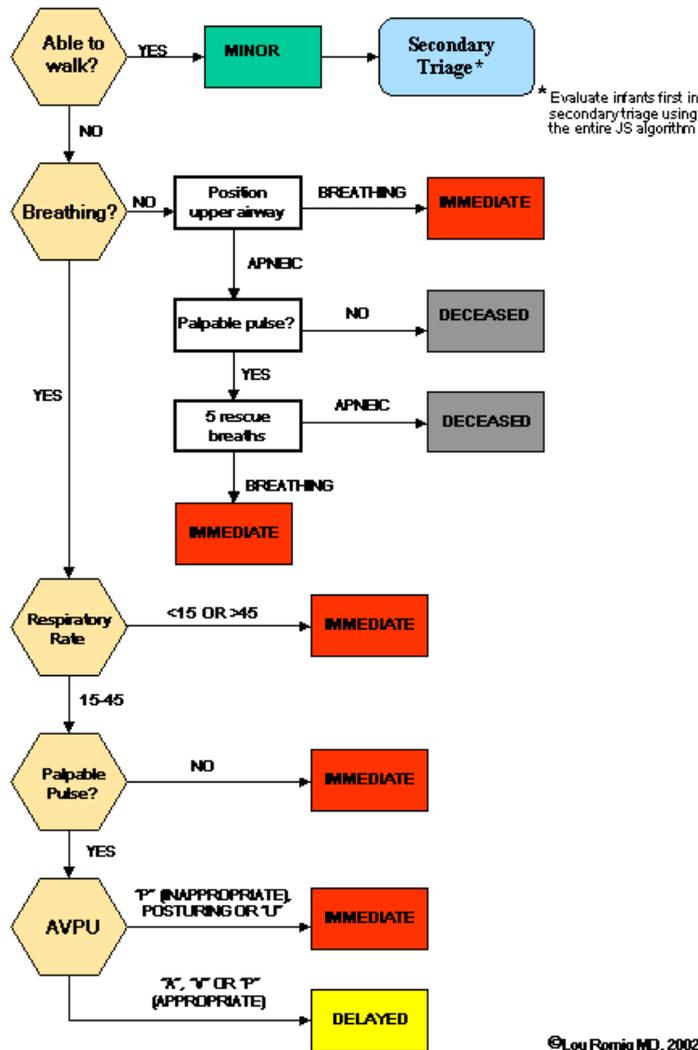
Place a blue arm band on the patient indicating they have been decontaminated.

For more information/training consult Utah Bureau of EMS Pediatric Disaster Module Part 1 and ARHQ video "The Decontamination of Children."

Triage

First responders will be responsible for immediate triage of all patients. For Pediatric patients it is recommended that the Jump START triage system is used.

JumpSTART Pediatric MCI Triage®



For more information and practice CD refer to: Utah Bureau of EMS—Jump Start Triage. Additional website: www.jumpstarttriage.com

Treatment

Consider type of injury and exposure and refer to appropriate treatment protocol:

Nerve Agent

Vesicants

Radiological/Nuclear

Toxic Exposures

Burn

Blunt Trauma

Penetrating Trauma

Traumatic Brain Injury

Transport

Transport of pediatric victims may require additional personnel than that of adult patients.

Adults may be reluctant to leave their child(ren) and may be injured as well.

Every effort should be made to transport parents with children. During a MCI the Transport Officer will determine which facility patients are transported to. Transport Officer should utilize hospital communication system and Utah Department of Health Surge Capacity System.

Transporting pediatric patients to pediatric facilities is preferred if those facilities are able to accept patients.

References

FIRESCOPE California, Field Operations Guide, Incident Command System Publication-ICS-1, June 2004, Page 14-5.

JumpSTART MCI Pediatric Triage. www.jumpstarttriage.com.

Nerve Agents

Definition: Nerve agents are very toxic relatives of some commonly used insecticides and drugs. They cause biological effects by disrupting the way nerves communicate with muscles, glands, and other nerves. This causes hyperactivity of muscles, glands and nerves resulting in: **S**alivation, **L**acrimation, **U**rination, **D**efecation, **G**astrointestinal distress, **E**mesis (SLUDGE), before they fatigue and stop functioning. Often the nerve agents work so quickly, these symptoms may not be present and therefore their absence can not exclude nerve agent exposure. Important nerve agents are: GA (Tabun), GB (Sarin), GD (Soman), GF, and VX.

Clinical presentation:

Mild Symptoms:

- blurred vision, pupil constriction
- excessive teary eyes
- excessive runny nose
- increased salivation, drooling
- chest tightness or difficulty breathing
- tremors or muscular twitching
- nausea and/or vomiting, stomach cramps
- wheezing or coughing
- tachycardia or bradycardia

Severe Symptoms:

- strange or confused behavior
- severe difficulty breathing or severe secretions from lungs/airway
- severe muscle twitching and general weakness
- Involuntary urination and defecation
- convulsions
- unconsciousness

Basic Life Support

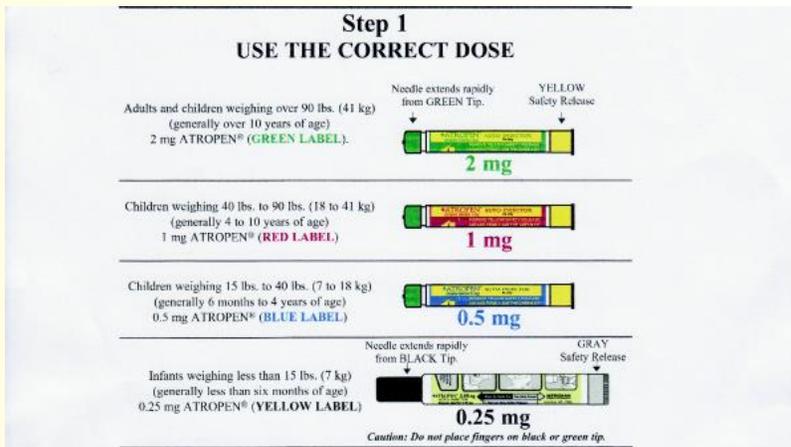
1. Secure scene, ensure safety of responders
2. Initiate Mass Casualty guidelines if a disaster situation
3. **AABC**
 - a. **Antidote**
 - b. **Airway**
 - c. **Breathing**
 - d. **Circulation**
4. Administer Atropine auto-injector (Atropen®) if available for mild to severe symptoms
 - a. Atropine auto-injector is available in various pediatric doses

See chart for proper dose with color coding below:

BLS

BLS

Weight	Atropen® Size/Dose
3 – 5 kg	0.25 mg
6 – 9kg	0.5 mg
10 – 11 kg	0.5 mg
12 – 14 kg	0.5 mg
15 – 18 kg	0.5 mg
19 – 23 kg	1 mg
24 – 29 kg	1 mg
30 – 36 kg	1 mg
> 36 kg	2mg



5. Administer Pralidoxime Chloride (2PAM) Auto-Injector
 - a. Auto injector only available in one dose-600mg see chart for dosing

Weight	2Pam Dose
3 – 5 kg	1 *
6 – 9kg	1 *
10 – 11 kg	1 *
12 – 14 kg	1
15 – 18 kg	1
19 -23 kg	1
24 – 29 kg	1 – 2
30 – 36 kg	2
> 36 kg	2

*Use only for the severely symptomatic child and only when no other treatment options are available.

6. Administer entire Duodote or Mark 1 kit (Atropine 2mg *and* Pralidoxime 600mg) if auto-injector available and if patient is over 10 years old or weighs more than 50 pounds
- 7.
8. Apply orange wrist band indicating patient has been given an antidote
9. Remove patient from area of exposure
10. Remove patient's clothing, decontaminate patient if liquid exposure, and apply blue arm band indicating patient has been decontaminated
11. Follow General Pediatric Assessment Guidelines
12. Assess and maintain airway patency, oxygen 10-15 lpm via non-rebreather
 - a. If respirations are ineffective, begin BVM ventilation with 100% oxygen
 - b. Suction airway as needed
13. Two additional doses of the Atropen and or Duodote/Mark 1 kit may be administered every 2-5 minutes if symptoms persist
14. Transport for medical evaluation

Advanced Life Support

1. Follow BLS guidelines
2. Place on cardio-respiratory monitor and continuous pulse oximeter
3. Administer Antidotes: see chart for dosage, -may use auto-injectors consider previous doses that may have been given by BLS personnel
4. Atropine IV/IM
 - a. 0.05mg/kg may repeat every 2-5 minutes up to 3 doses
 - b. Look for decrease in secretions, decreased airway resistance

Atropine IV/IM

Weight	0.1mg/ml
3 – 5 kg	0.2 ml
6 – 9 kg	0.35 ml
10 – 11 kg	0.5 ml
12 – 14 kg	0.65 ml
15 – 18 kg	0.8 ml
19 – 23 kg	1 ml
24 – 29 kg	1.3 ml
30 – 36 kg	1.6 ml

5. Pralidoxime Chloride (2-PAM) IV/IM
 1. 25mg/kg should be given along with Atropine in severe cases

Weight	IV 50mg/ml	IM 300mg/ml
3 – 5 kg	2 ml	0.33 ml
6 – 9 kg	3.8 ml	0.63 ml
10 – 11 kg	5.3 ml	0.9 ml
12 – 14 kg	6.5 ml	1.1 ml
15 – 18 kg	8.3 ml	1.4 ml
19 – 23 kg	10.5 ml	1.8 ml
24 – 29 kg	13.3 ml	2.2 ml
30 – 36 kg	16.5 ml	2.8 ml

6. Benzodiazepines give Lorazepam OR Midazolam
 - a. Give to children with severe symptoms whether convulsing or not

Lorazepam IV/IM 0.1mg/kg (1)

Weight	2mg/ml	4mg/ml
3 – 5 kg	0.2 ml	0.1 ml
6 – 9 kg	0.38 ml	0.19 ml
10 – 11 kg	0.5 ml	0.25 ml
12 – 14 kg	0.65 ml	0.32 ml
15 – 18 kg	0.8 ml	0.4 ml
19 – 23 kg	1 ml	0.5 ml
24 – 29 kg	1.3 ml	0.66 ml
30 – 36 kg	1.7 ml	0.83 ml

7. Midazolam IV 0.1mg/kg

Midazolam IV—0.1mg/kg

Weight	1mg/ml	5mg/ml
3 – 5 kg	0.4 ml	0.08 ml
6 – 9 kg	0.75 ml	0.15 ml
10 – 11 kg	1 ml	0.2 ml
12 – 14 kg	1.3 ml	0.26 ml
15 – 18 kg	1.6 ml	0.33 ml
19 – 23 kg	2 ml	0.4 ml
24 – 29 kg	2.6 ml	0.52 ml
30 – 36 kg	3.3 ml	0.66 ml

Midazolam IM/IN—0.2mg/kg

Weight	5mg/ml
3 – 5 kg	0.16 ml
6 – 9 kg	0.3 ml
10 – 11 kg	0.4 ml
12 – 14 kg	0.52 ml
15 – 18 kg	0.66 ml
19 – 23 kg	0.84 ml
24 – 29 kg	1.1 ml
30 – 36 kg	1.3 ml

8. Monitor airway, may improve after antidote administration
 - a. Suction secretions
 - b. If BVM ventilation is not effective, intubation may be required
9. Start IV/IO if not already in place for antidote administration
10. Reassess frequently for effects of antidotes, request to administer additional doses of antidote through medical control if needed
11. Transport for medical evaluation

Key Points/Considerations

1. Multiple patients with similar symptoms will require mass casualty response and decision making and may have resulted from an act of terror.
2. Patients who have been decontaminated need to have a blue arm band placed on their wrist.
3. Patients who have received antidotes need to have an orange arm band placed on their wrist for each antidote administered.
4. Atropine- antagonizes nerve agent effects, reverses bronchoconstriction and excessive secretions. The half life of Atropine varies with the age of the patient, but can be expected to be between 1 and 7 hours.
5. Pralidoxime Chloride (2 PAM)- decreases the effect of the nerve agent at the neuromuscular junction reducing muscle twitching and allows the patient to breathe easier. The half-life of 2PAM is 1-1½ hours.
6. Benzodiazepines (Ativan and Versed)-Decrease seizure activity, reduce seizure induced brain injury, and are given to patients with severe symptoms whether convulsing or not.

7. Antidotes are available in Chemical Stockpile Emergency Preparedness Program (CSEPP) areas, State of Utah CHEMPACK containers and through the Strategic National Stockpile (SNS) program to access contact DOH hotline-1-866-364-8824.
8. Poison Control Center can also be used as a resource: **(800) 222-1222**.

Medication/Treatments Table

Medication	Dose	Route	Max Dose	EMT	Advanced EMT	Paramedic
Duodote/ Mark 1 Auto- Injector	Standard injection every 15 minutes	IM	3 doses	*ST	ST	ST
Atropen Auto Injector	Standard injection every 15 minutes	IM	3 doses	*ST	ST	ST
Pralidoxime (2PAM)	25 mg/kg every 15 minutes	IV/IM	3 doses	-	ST*	ST*
Midazolam	0.1 mg/kg	IV/IO	5mg	-	ST	ST
	0.2 mg/kg	IM/IN	10 mg	-	ST	ST
Lorazepam	0.1 mg/kg	IV/IM	4 mg	-	ST	ST

DO: Direct order from on line medical control

ST: Standing Order *In some areas

References

BROSELOW Pediatric Antidotes for Chemical Warfare Tape, 2006 Edition

Pediatric Exposure: Radioactive Agents

Definition: Exposure to radiologic agents can occur in the case of release from an explosive combined with radioactive agents, a “dirty bomb.” Exposure to nuclear agents could occur in the case of a nuclear plant problem or a nuclear attack.

- External contamination by radioactive debris can be removed through the decontamination process.
- Internal contamination is when a patient inhales, ingests or absorbs radioactive debris through open wounds.
- Patients contaminated, even at very high levels pose no threat to emergency response or medical personnel.(1) **therefore:**
 - i. Treat life threatening injuries before decontaminating patients.
 - ii. Pediatric Advanced Life Support Protocols take precedence over radiation issues.
 - iii. Normal body substance isolation-gloves, mask, gown; protect medical providers.
- Patients may also have traumatic injuries; consult **Blunt Trauma, Penetrating Trauma, Traumatic Brain Injury,** and **Burn** protocols if needed.
- Radioactive contamination can be detected with Geiger counters or dose-rate meters.
- If unable to decontaminate a patient before medical treatment wrap patient in a blanket to contain contamination.
- Other than burn injuries, signs and symptoms of radiation injuries occur hours to days later. If a patient has nausea and vomiting shortly after the exposure, they have probably received a lethal dose (1).

Basic Life Support

1. Secure scene; ensure safety of responders, appropriate protective PPE required
2. Initiate Mass Casualty guidelines if a disaster situation
3. Remove patient(s) from area of exposure
4. Remove patient’s clothing, this removes 90% of the contamination (2)
5. EMS Personnel wearing Respirators, or N95 mask and goggles with Tyvek™ suit and gloves is sufficient for decontamination PPE
6. Decontaminate patient by showering with soap and water, avoid letting water from contaminated areas run into mouth, eyes, ears, or open wounds
7. Use sponges or washcloths to wash patient, especially contaminated areas-dispose of these as radioactive waste
8. Flush open wounds with saline solution
9. Reassess patient for contamination with Geiger counter or dose rate meter, if still contaminated and patient is stable decontaminate patient again
10. Attach blue armband after decontamination
11. Follow General Pediatric Assessment Guidelines and other protocols as they apply
12. Transport patient for medical evaluation



BLS

ALS

Advanced Life Support

Follow BLS guidelines

Place on cardio-respiratory monitor and continuous pulse oximeter

Treat patient's injuries per pertinent protocols if traumatic injuries or burns are sustained

If it is necessary to start an IV on a patient ensure the area of the IV start has been cleaned and rinsed in order to not introduce contamination under the skin

Reassess frequently and transport patient for medical evaluation

Key Points/Considerations

1. Multiple patients with similar symptoms will require mass casualty response and decision making and may have resulted from an act of terror.
2. Triage patients based on injuries, not contamination.
3. Time, Distance, and Shielding are the best protection from radioactive exposures.
4. A Radiological Dispersal Device (RDD) "dirty bomb" can lead to widespread contamination, medical response should focus on injuries related to the explosion.
5. Another possible scenario for terrorists would be a high dose irradiator, patients that have been exposed are not radioactive themselves, therefore posing no threat to responders.
6. The release of radioactive iodine (power plant accident or nuclear explosion) can be treated with Potassium iodide which binds to the receptor sites in the thyroid preventing it from being absorbed by the thyroid. This is usually recommended for children and young adults and will be recommended by state or federal government if appropriate (3).
7. Patients who have been decontaminated need to be banded with a blue arm band.
8. Poison Control Center can also be used as a resource: **(800) 222-1222**.
9. State of Utah Department of Health Disaster Hotline-1-866-364-8824.



References

Disaster Nursing and Emergency Preparedness for Chemical, Biological and Radiological Terrorism and Other Hazards. (1) page 531, (2) page 532, (3) page 532

Advanced Disaster Medical Response Manual for Providers. Page 87

BROSELOW Pediatric Antidotes for Chemical Warfare Tape, 2006 Edition.

Vesicants Chemical Exposure

Definition: Substances that cause redness and blisters (vesicles) on the skin as well as injury to the eyes, airways or other organs. Examples: sulfur mustard, Lewisite:

Sulfur Mustard: a yellow/brown oily liquid, enters the cells of skin or mucous membranes and causes damage within seconds to minutes. Contact with mustard does not immediately cause pain or other noticeable effects. Redness and blistering may not be seen for up to 8 hours after exposure. Clinical Presentation includes: red and blistering skin, irritation and other damage to eyes, damage to the lining of the airways causing airway edema, and vomiting and diarrhea

Lewisite: An oily colorless liquid with the scent of geraniums that causes damage to skin, eyes and airways by direct contact. Causes pain on contact. Clinical presentation includes damage and blistering of skin in minutes, eye irritation and lid edema, airway damage with airway edema, and non-cardiogenic pulmonary edema.

BLS

Basic Life Support

Secure scene; ensure safety of responders, chemical protective PPE required

Initiate Mass Casualty guidelines if a disaster situation

Remove patient(s) from area of exposure

Remove patient's clothing, decontaminate patient with soap and water, keep patient warm

Rinse eyes with large amounts of water or normal saline for 5-10 minutes

Follow General Pediatric Assessment Guidelines

Maintain airway; administer 100% oxygen with NRB

Begin BVM ventilation with 100% oxygen for ineffective respiratory effort

Suctioning for nasal and/or oral secretions as needed

Transport patient for medical evaluation

ALS

Advanced Life Support

1. Follow BLS guidelines
2. Place on cardio-respiratory monitor and continuous pulse oximeter
3. Monitor airway, watch for signs of airway edema
4. Administer nebulized saline for minor throat irritation and cough
5. Administer nebulized epinephrine as indicated for airway edema
6. Intubate patient if BVM ventilations are not effective, if patient is unconscious or not responding to nebulized epinephrine treatment
7. Establish IV / IO access and give 20mL/kg NS if indicated
8. Reassess frequently and transport patient for medical evaluation



Key Points/Considerations

Multiple patients with similar symptoms will require mass casualty response and decision making.

May have resulted from an act of terror.

Patients who have been decontaminated need to be banded with a blue arm band.

There is an antidote for Lewisite; British-Anti-Lewisite that is usually administered in a hospital setting.

Poison Control Center can also be used as a resource: **(800) 222-1222**.

Medication / treatments table



Medication	Dose	Route	Max Dose	EMT	Advanced EMT	Paramedic
Epinephrine 1:1000	2mL in 3 mL saline	Neb	Call for additional doses		ST	ST

ST: Standing Order

DO: Direct order from on line medical control

PART VI. APPENDICES TO THE EMS PROTOCOLS

Appendix A - Endotracheal & Nasotracheal Intubation

Candidates:

The following categories of patients, both adult and pediatric, are potential candidates for endotracheal (ET) intubation in the Davis County EMS System:

- Cardiac arrest (non-traumatic)
- Traumatic cardiac arrest
- Respiratory arrest
- Patients with decreased level of consciousness (i.e., Glasgow Coma Score < 8) - trauma and non-trauma
- Conscious patients with respiratory distress who are unable to ventilate adequately - trauma and non-trauma

Equipment:

- Endotracheal tubes various sizes (3 to 9) with soft high volume, low pressure cuffs
- Laryngoscope with adult and pediatric straight and curved blades and spare batteries and bulbs
- McGill forceps
- Bag/valve/mask apparatus capable of delivering 100% oxygen with pediatric and adult masks
- 10 cc syringe
- 1" adhesive tape, cloth tracheal tape, or commercially designed securing device, for securing tube
- Stylette for endotracheal tube
- Oral and nasal airways of pediatric and adult sizes
- Good suction with both tonsillar suction and suction catheters available
- Intubation monitoring device (bulb, syringe, or capnograph)

Procedure – Oral Intubation:

- 1) Maintain airway and ventilation prior to intubation with oral airway and positive pressure ventilation.
- 2) Assemble equipment; select appropriate size tube and blade; check operation of key elements, including suction equipment. Put on personal protective equipment.
- 3) Position patient supine with head in "sniffing" position. If cervical spine injury suspected, have second person maintain neutral position with in-line manual stabilization and performs Sellick's maneuver throughout procedure. Remove all potential airway obstructions.
- 4) Hyperventilate patient with Bag Valve Mask (BVM) with 100% O₂ for a minimum of 3 minutes before attempting intubation. Hyperventilation should be repeated for a minimum of one minute anytime 30 seconds without ventilation has elapsed for an intubation attempt.
- 5) Holding the laryngoscope blade in the left hand, insert it into the right side of the mouth. Advance the blade along the curvature of the tongue, moving the tongue to the left, out of the field of view.
- 6) Lift the laryngoscope straight up and slightly towards the patient's feet to expose and visualize the epiglottis and vocal cords. Do not pry back on the blade. With a straight blade, the blade is inserted so the tip lifts the bottom edge of the epiglottis. With a curved blade, the blade tip is

inserted into the vallecula just above the epiglottis, indirectly raising the epiglottis when lifted. It may be necessary to slowly withdraw the blade until the epiglottis and vocal cords come into view. Suction as needed for visibility. If unable to view identifiable structures, have assistant place slight downward pressure on the patient's cricoid cartilage (Sellick's maneuver).

- 7) Stop and ventilate the patient if more than 30 seconds has elapsed for the intubation attempt.
- 8) While directly visualizing the vocal cords, pass the tip of the ET tube between the cords until the proximal end of tube cuff is 1/2-1 inch beyond.
- 9) Manually secure position of the ET tube while removing the laryngoscope, then the stylet.
- 10) Inflate the cuff with 5-10 ml of air and check the pilot balloon. Suction the tube and oropharynx as needed.
- 11) Continue to manually stabilize the tube and ventilate the patient with 100% O₂ with a bag-valve device.
- 12) Immediately assess tube placement by auscultating breath sounds bilaterally then auscultating over the epigastrium. A second method to verify tube placement is required and may include use of an end-tidal CO₂ detector, a endotracheal tube detector device, an aspirator syringe, or revisualization of the cords and ET tube. Remove or reposition tube as necessary.
- 13) If proper tube placement is confirmed, hyperventilate the patient for at least three minutes.
- 14) Mark tube depth and stabilize the ET tube with tape or other device. Repeat lung auscultation to check position of the tube after taping procedure is completed. The patient should also be reassessed for proper tube position after any significant movement of the patient (onto the stretcher, down stairs, into the ambulance, etc.) This responsibility belongs to the paramedic and may not be delegated to a First Responder.
- 15) May consider sedation of intubated patients with Versed.

Procedure – Nasal Intubation:

- 1) Steps 1 - 4 as above.
- 2) Inspect nares for visible obstructions and select the larger or least obstructed. Insert the lubricated ET tube and advance through the naris and along the floor of the nasal passage through the nasopharynx. If resistance is encountered, gently retry to advance the ET tube. If resistance persists, abandon the attempt.
- 3) As the ET tube approaches the glottic opening, pause to listen for exhaled air coming from the proximal end of the ET tube. Pass the ET tube through the glottic opening during inhalation. If no air movement is heard at the end of the tube, withdraw the ET tube until air movement is heard, and reattempt passage into the trachea.
- 4) Steps 11 - 15 as above.

Complications:

- Esophageal intubation
- Intubation of right mainstem bronchus
- Upper airway trauma due to excess force with laryngoscope or to traumatic tube placement
- Vomiting and aspiration during traumatic intubation or intubation of patient with intact gag reflex
- Hypoxia due to prolonged intubation attempt
- Cervical cord damage in trauma victim with unrecognized spine injury
- Dental trauma
- Tension pneumothorax

Appendix B - Surgical Airways

Percutaneous Transtracheal Ventilation (PTV) Protocol

Candidates:

Adult and pediatric patients who require ventilation but whose airways cannot be maintained using any nonsurgical approach. Examples are patients with:

- upper airway obstruction
- severe facial trauma
- heavy oropharyngeal bleeding

Equipment:

- 12 or 14-gauge over-the-needle catheter
- 5 or 10 cc syringe
- Alcohol/betadine preps
- Adhesive tape and/or cloth securing tape
- Bag valve mask

Procedure:

- 1) Prepare equipment, including a 10-14 gauge catheter-over-needle, suction equipment, oxygen and put on protective eye wear, mask and sterile gloves;
- 2) Position patient with neck in neutral, midline position.
- 3) Hyperventilate patient if any ability to ventilate.
- 4) Quickly prep anterior neck with antiseptic.
- 5) Locate the cricothyroid membrane; the notch just below the "Adam's apple" (thyroid cartilage) and just above the next cartilage (cricoid cartilage).
- 6) Stabilize trachea and insert needle at 45 degree angle towards feet through cricothyroid membrane while aspirating with syringe. Stop advancing the needle as soon as air is aspirated.
- 7) Advance catheter over needle, angling downward and placing well into trachea. Withdraw the needle, then re-aspirate to confirm placement.
- 8) Attach the bag valve mask to the catheter using a 3.0 ET tube adapter and ventilate.
- 9) Observe chest rise and auscultate breath sounds bilaterally.
- 10) Stabilize catheter.

Complications:

- High pressure during ventilation and air entrapment may cause pneumothorax
- Esophagus and/or thyroid perforation if the needle is advanced to far
- Hemorrhage at the insertion site
- It does not allow direct suctioning of secretions
- Subcutaneous emphysema may occur

Cricothyrotomy Protocol

Candidates:

Any adult patient who requires ventilation but whose airway cannot be maintained using any nonsurgical approach. Examples are patients with:

- upper airway obstruction
- severe maxillofacial trauma
- heavy oropharyngeal bleeding

Contraindications:

- children under 10 yrs. of age
- tracheal transection
- inability to identify anatomical landmarks

Procedure:

- 1) Prepare equipment: scalpel (#20 or #15), tracheal hook, 4.0 mm ET or tracheostomy tube, syringe, hemostat, suction equipment, oxygen and bag-valve device.
- 2) Put on protective eye wear, mask and sterile gloves;
- 3) Position patient with neck in neutral, midline position.
- 4) Hyperventilate patient if any ability to ventilate.
- 5) Quickly prep anterior neck with antiseptic.
- 6) Position yourself at head of patient
- 7) Locate the cricothyroid membrane; the notch just below the "Adam's apple" (thyroid cartilage) and above the next cartilage (cricoid cartilage).
- 8) If anatomy is fully defined through skin, stabilize trachea with non-operating hand and with other hand make a single horizontal incision of approximately 1.5cm in length through both the skin and cricothyroid membrane. If the anatomy is not readily and unambiguously identified through the skin, an initial vertical incision should be created to allow more precise palpation of the anatomy and identification of cricothyroid membrane.
- 9) Maintain scalpel in airway while a tracheal hook is placed parallel to the scalpel on the caudad side of the blade. The hook is rotated to orient it in a caudad direction to put gentle traction on the cricoid ring.
- 10) The scalpel is then removed from the airway leaving the tracheal hook in place.
- 11) The tracheal hook is now used to lift the airway toward the skin incision providing modest stoma dilation. Use a motion similar to the up and away direction used with laryngoscopy.
- 12) With adequate control of the airway using the hook placed on the cricoid ring, an ETT or tracheostomy tube is readily placed into the airway directing the tip down the trachea until the cuff is completely in the trachea. Confirm placement with confirmation device.
- 13) Ventilate patient with bag-valve device and supplemental oxygen or with oxygen-powered demand valve.
- 14) Observe chest rise and auscultate breath sounds bilaterally.
- 15) Control any bleeding with direct pressure and dress incision site.

Complications:

- Prolonged execution time
- Hemorrhage
- Aspiration
- Possible misplacement
- False passage
- Perforation of the esophagus
- Injury to the vocal cords and carotid and jugular vessels lateral to the incision
- Subcutaneous emphysema

Appendix C – Needle Thoracostomy

Candidates:

Needle thoracostomy may be indicated for patients in PEA or in respiratory distress, either spontaneous or as a result of trauma, where there is strong evidence of tension pneumothorax. Evidence of a tension pneumothorax may include the following signs and symptoms:

- progressive respiratory distress
- Indications of developing shock, including: weak, rapid pulse; hypotension, due to ↓ cardiac output; and cyanosis
- uneven chest wall movement
- decreased or absent breath sounds on affected side
- hyperexpanded chest on affected side
- neck vein distension (may not be present)
- tracheal shift away from affected side (late sign)
- presence of subcutaneous emphysema or air in tissues

Equipment:

- Supplemental oxygen for patient
- Betadine prep
- 14 gauge over the needle catheter (3 ¼" long)
- 35 or 50 cc syringe (optional)
- Band-Aid or small dressing

Procedure:

- 1) There are two sites that can be used:
 - a) The 2nd intercostal space in the anterior mid-clavicular line.
 - b) The 4th or 5th intercostal space in the mid-axillary line or anterior axillary line.
- 2) Clean area at midclavicular line with alcohol and/or Betadine.
- 3) Select appropriate needle. Adults: 14g. 3 1/4" needle through catheter. Peds: 14-16 g. 1 3/4" needle through catheter.
- 4) Position needle at midclavicular line in the middle of the 3rd rib and puncture the skin.
- 5) Insert the needle into the pleuritic cavity by hitting the rib with the needle and sliding over the top. This avoids the blood vessels and nerves, which are located on the bottom of the ribs.
- 6) Advance the catheter over the needle and then remove needle.
- 7) Dress area and secure catheter to chest.
- 8) Do not clamp tubing. Reassess patient and observe for change or relief of signs and symptoms.
 - a) trachea returns to midline
 - b) decrease in respiratory distress
 - c) decrease in distended neck veins
 - d) improvement in patient's color.

Complications:

- Laceration of intercostal blood vessels
- Creation of pneumothorax if none existed previously
- Laceration of trachea
- Laceration of esophagus
- Laceration of superior vena cava
- Infection

Appendix D – Peripheral IV Access

Candidates:

Adult and pediatric patients determined to need fluid administration for volume expansion or as a route for medication administration.

Equipment:

- Assorted over the needle catheters
- IV fluid, Normal saline (NS) or Lactated ringers (LR)
- IV tubing (Select Set, microdrip, or blood set)
- IV extension tubing
- Alcohol Wipes
- Bioclusive dressing and tape

Procedure:

- 1) Apply tourniquet proximal to proposed site. Alternatively, use blood pressure cuff blown up to 40 mm Hg.
- 2) Clean insertion site with alcohol prep.
- 3) Hold vein in place by apply gentle traction on vein distal to point of entry.
- 4) Puncture the skin with the bevel of the needle upward, about 0.5 to 1 cm from the vein and enter the vein from the side or from above.
- 5) Note blood return and advance the catheter either over or through the needle (depending on tip).
- 6) Release tourniquet.
- 7) Remove needle and connect tubing. Immediately dispose of needle in sharps container.
- 8) Open IV tubing clamp full to check flow and placement, then slow rate to TKO or as directed.
- 9) Secure tubing with tape, making sure of at least one 180 degree turn in the taped tubing to be sure any traction on the tubing is not transmitted to the cannula itself.
- 10) Anchor with arm board or splint as needed to minimize chance of losing line with movement.

Complications:

- Infiltration with formation of hematoma and pain at insertion site
- Infection (phlebitis)
- Thrombosis
- Catheter shear and pulmonary embolus
- Cannulation of artery

Considerations:

- Antecubital veins are useful access sites for patients in shock, but if possible, avoid areas near joints (or splint well)
- Start distally and, if successive attempts are necessary, you will be able to make additional proximal attempts on the same vein without extravasating IV fluid.

Appendix E – Intraosseous Access

Pediatric Intraosseous

Candidates:

Children who are less than 8 years old for whom IV access is unobtainable. The child must be in cardiopulmonary arrest, impending arrest or in critical condition characterized by evidence of clinical shock and unresponsiveness to verbal stimuli. Intraosseous infusion may be instituted after two IV attempts have been unsuccessful or if no peripheral veins are readily apparent or obtainable or if peripheral attempts take longer than 90 seconds.

Contraindications:

- Recently fractured bone at the site;
- Cellulitis, infection, osteomyelitis, trauma, or burns at site;
- Previous intraosseous attempt in same bone;
- If history known, bone disorders such as osteogenesis imperfecta and osteopetrosis;

Equipment:

- Arm board
- Tape or Kerlix
- Needle (15g & 18g IO needles)
- Alcohol wipe
- Betadine
- IV set up with tubing and fluid (Volutrol or Metriset)
- Syringe 3-5 cc

Procedure:

- 1) Prepare equipment: NS/LR IV solution and IV administration set (Volutrol or Metriset), intraosseous needle, 10 ml syringe filled with normal saline, skin prep materials, protective eye wear, mask and gloves;
- 2) Position patient; support the child's leg and externally rotate to expose medial aspect of leg;
- 3) Select site: Palpate the proximal tibia to find the tibial tuberosity, then locate a point on the flat aspect of the tibia 1-2 finger-breaths (child's) or 2-3 cm below the tuberosity.
- 4) Put on gloves and prep site as for IV start.
- 5) Using the selected device, angle the needle at approximately 90 degrees off surface away from the growth plate of the selected bone and insert the needle with firm downward pressure using a twisting or screwing motion to penetrate the skin and subcutaneous tissues, then the periosteum and bone cortex. Expect moderate resistance. Entrance into the medullary cavity will be heralded by a "pop" or a sudden loss of resistance. Only 2-4 mm insertion depth necessary.
- 6) Manually stabilize needle. Remove the stylet from the needle and aspirate with a 10 ml syringe filled with NS/LR. Marrow, which appears as dark old blood, may or may not aspirate into the syringe. Inject entire contents of aspirate and NS/LR into the bone marrow. If marrow cannot be aspirated but fluid flushes easily without evidence of swelling, the needle can be considered properly placed. Lastly, the IO needle should stand, unsupported if in the intraosseous space.

- 7) If initial attempt fails, may make one additional attempt on other tibia using new needle. Transport immediately if second attempt unsuccessful. Physician verbal orders must be obtained for further attempts.
- 8) Attach IV tubing and infuse IV solution full flow. Observe for continuous, free flow of IV fluid without significant subcutaneous infiltration (characterized by swelling and redness) around intraosseous site.
- 9) Secure needle. If appropriate to device, screw down the needle depth guard until it is flush to the skin. Dress site and tape needle securely in place using a gauze dressing for support, as necessary.
- 10) Set drip rates for fluid as you would for any peripheral IV. Flow rates of up to 1200 ml/hr can be achieved with pressure infusion. All medications designated for IV use can be administered by the intraosseous route.
- 11) Medical Control contact should be established following initiation of intraosseous infusion.

Complications:

- Infiltration at insertion site if improperly inserted
- Slow infusion from clotting of marrow
- Osteomyelitis & Infection
- Fracture

Adult Intraosseous – F.A.S.T. I Device

Candidates:

- Patients in critical need of vascular access for volume replacement or medication administration **and**
- Delay in obtaining or unable to obtain vascular access via peripheral IV techniques after 2 attempts **and**
- Decreased level of consciousness (GCS < 6 with no purposeful movement) due to medical or traumatic insult or injury.

Contraindications:

- Weight < 110 lbs. (50 kg) or pathological small size patient
- Previous sternotomy
- Suspected fractured manubrium/sternum or significant tissue/vascular damage at insertion site
- Obvious congenital sternal malformations
- Severe osteoporosis or other bone softening conditions
- Very small sternum

Procedure:

- Assemble and prepare equipment
- Prep the site with Betadine and clean with alcohol using sterile procedure
- Locate the sternal notch with your finger and apply the patch using your finger as a guide
- Verify the patch is over the Target Zone, midline of the manubrium and inferior to (5/8" or 1.5cm below) the suprasternal notch
- Remove the sharp protector from the device and position the Introducer in the target zone perpendicular to the skin/manubrium
- Push the Introducer with increasing force until a distinct release of the Introducer handle is heard and felt
- Remove the Introducer and dispose of it properly
- Connect the Infusion Tube to the male connector on the patch
- Aspirate with a syringe for free flow of marrow
- Attach female connector to IV set and begin to run fluids
- Check for infiltration
- Apply protector dome to site
- Insure Remover Package remains with the patient (unopened) and is forwarded to the ED along with removal instructions. Suggest attaching to patient.
- Accurately document the procedure on patient care report, including justification for using the device
- Removal of the device is to be preformed by a physician

Complications

- Improper insertion site (for use in adult manubrium only)
- Insufficient depth of needle insertion

- Infiltration/Extravasation (soft tissue infusion from penetration of the posterior wall)
- Infection at insertion site

Additional Considerations

- If drip rate is slow, flush with 10cc normal saline. If slow drip continues, consider inflating BP cuff on bag to 300mm/Hg
- For bleeding around the site, apply pressure around the catheter
- All medications and blood or blood products that are given via the IV route may be given IO.
- Device may be left in place for up to 24 hours
- In cases on non-penetration on the first attempt at insertion, a second attempt with a new device can be made.

F.A.S.T. I Removal Procedure

- Stop IV flow
- Remove the plastic dome
- Disconnect the infusion line under the dome
- **Gently** align the infusion tube **perpendicular** to the manubrium
- Insert the removal tool into the infusion tube
- Locate the infusion port (needle) by **gently** probing the port with the removal tool threaded tip
- Proper position and alignment is ascertained when a grating feeling is palpated
- Snugly tighten the removal tool onto the infusion port
- Extract firmly with the removal tool handle, pulling **perpendicular** to the manubrium.
- Remove the patch
- Place pressure to the exit site – sterile dressing

Make sure that the infusion port and infusion tube are removed completely

Adult Intraosseous - EZ-IO Device (Adult & Pediatric)

Candidates

- The EZ-IOTM may be attempted only on the critically ill or injured adult patient when IV fluids and/or medications must be immediately administered to prevent the patient's death.
- It is not to be used when routine IV access is unsuccessful or difficult to establish.

Indications

- Adult patients (Greater than 35 kg or 16 years of age) who:
 - a. Need IV fluids or medications and a peripheral IV cannot be established in 2 attempts or 90 seconds AND exhibit 1 or more of the following:
 - i. An altered mental status (GCS of 8 or less)
 - ii. Respiratory compromise (SpO₂ < 80 after appropriate oxygen therapy, respiratory rate < 10/min or > 40/min)
 - iii. Hemodynamic instability (Systolic BP < 90mmHg)
 - b. EZ-IO may be considered PRIOR to peripheral IV attempts in the following situations:
 - i. Cardiac arrest (medical or traumatic)
 - ii. Profound hypovolemia with alteration of mental status

Contraindications

- Fracture of the tibia or femur (consider alternate tibia)
- Previous orthopedic procedures (10 within 24 hours, knee replacement, consider alternate tibia)
- Pre-existing medical condition involving that extremity
- Infection at insertion site (consider alternate tibia)
- Inability to locate landmarks (significant edema)
- Excessive tissue at insertion site (obesity)

Insertion Location:

- Identify insertion site: Proximal tibia one finger breadth medial to tibial tuberosity (anteromedial)
 - For tibial site: Insert the needle through the skin at a 90-degree angle of the transverse plane on the tibial plateau. This is located on the medial anterior surface, 2-3 cm distal to the tibial tuberosity. Use a slight downward angle (towards the foot) to avoid hitting the epiphyseal plate.
- Proximal Humerus
 - Insertion site is located directly on the most prominent aspect of the greater tubercle. Slide thumb up the anterior shaft of the humerus until you feel the greater tubercle, this is the surgical neck. Approximately 1 cm (depending on patient anatomy) above the surgical neck is the insertion site.
 - Ensure that the patient's hand is resting on the abdomen and that the elbow is adducted (close to the body).

Considerations

Flow rates:

- a. Due to the anatomy of the intraosseous space, flow rates will be slower than those achieved with IV catheters.
- b. Initially infuse a rapid bolus of 10mL of normal saline.
- c. Use a pressure bag to ensure continuous infusion.

Pain:

- a. Insertion of the Vidacare™ EZ-IOTM in conscious patients causes mild to moderate discomfort but is usually no more painful than a large bore IV.
- b. 10 infusion can cause severe discomfort for conscious patients.
- c. Prior to 10 flush on alert patients, SLOWLY administer 40mg (or 2mLs) 2 IV Lidocaine through the EZ-IOTM hub.

Procedure

If the patient is conscious, advise them of the EMERGENT NEED for this procedure and obtain consent.

- Locate and cleanse insertion site using aseptic technique.
- Prepare the EZ-IO driver and needle set.
- Stabilize leg.
- Insert EZ-IO needle set. (Consider insertion complete when less resistance is encountered from driver)
- Remove EZ-IO driver from needle set while stabilizing catheter hub.

- Remove stylet from needle set and dispose in sharps container.
- Confirm placement (Aspiration of marrow, stands w/o support, ease of flushing)
- If the patient is conscious, administer 40mg (2mLs) 2 Lidocaine 10 and wait 15 seconds.
- Bolus the EZ-IO catheter with 10ml of normal saline.
- Connect the IV tubing.
- Place a pressure bag on solution being infused and adjust the flow rate, as desired.
- Monitor EZ-IO site and patient condition and document use of EZ-IO in the patient care report.

Appendix F - Cardioversion

Candidates:

Used only in emergency situations when there is a rapid rhythm associated with inadequate cardiac output and signs of poor perfusion (confusion, unconsciousness/coma, angina, systolic BP < 100mmHg, dyspnea)

- Ventricular Tachycardia with pulses
- Supraventricular Tachycardia
- Unknown wide complex tachycardia

Equipment:

- Cardiac monitor with defibrillator
- Defibrillation/pacing pads or defibrillation gel

Procedure:

- 1) If practical, start IV prior to procedure
- 2) IV Versed may be used if time permits in conscious patients prior to cardioversion
- 3) Attach defibrillation pads and extremity leads. Select lead that gives upright QRS complex (usually Lead II)
- 4) Press synchronizer button
- 5) Set energy level according to ACLS protocols
- 6) Press charge button
- 7) Verbalize "clear" and visually ensure that the patient area is clear
- 8) When completed charged, hold shock button until defibrillator delivers counter shock.
- 9) If the rhythm remains unchanged, increase energy levels according to ACLS and continue at the direction of medical control.
- 10) If the rhythm cardioverts into or progresses to ventricular fibrillation, immediately increase the energy to 200j and defibrillate without synchronization of the monitor. Follow appropriate ACLS protocols.

Complications:

- Ventricular fibrillation and asystole occur rarely
- Muscle pain and cramps in the conscious patient

Appendix G - Cardiac Defibrillation

Manual Defibrillation:

Patients found in cardiac arrest and determined to be in ventricular fibrillation (V-fib) or ventricular tachycardia (V-tach) without pulses.

Equipment:

- Cardiac monitor/defibrillator
- Defibrillation pads/electrode gel

Procedure:

- 1) Establish ABC's, continue/begin CPR
- 2) Place defibrillation pads on patient's chest *or* place electrode gel on paddles and place on patient's chest
- 3) Determine rhythm to be ventricular fibrillation or unstable ventricular tachycardia
- 4) Select energy level at 200j and press charge button
- 5) Recheck rhythm, confirm shockable rhythm, and "clear" area
- 6) Press shock button and deliver defibrillation attempt
- 7) Watch for evidence that shock was delivered (Muscle contractions)
- 8) Assess for pulses and reassess rhythm after each defibrillation attempt
- 9) If VF/VT persists, increase joule setting, and immediately defibrillate again according to protocols and ACLS recommendations

Complications:

- Rescuer defibrillation may occur if you forget to "clear" the area or lean against metal stretcher or patient during the procedure
- Skin burns from poor contact with defibrillation pads/paddles

Automatic External Defibrillator (AED) Candidates:

Patients found in cardiac arrest and determined to be in ventricular fibrillation (V-fib) or ventricular tachycardia (V-tach) without pulses. **Only** those patients receiving CPR will be attached to the AED. The AED is to be used in all patients in cardiac arrest who are viable enough to receive CPR other than children under 9 yrs old or 25 kg, or cardiac arrest caused by trauma.

Equipment:

- Automatic External Defibrillator (AED) ***Monophasic or biphasic***
- Defibrillation/pacing pads

Procedure:

- 1) With body substance isolation (BSI) precautions donned, establish unresponsiveness, stop CPR, check for spontaneous pulses and spontaneous respirations
- 2) Resume/begin CPR
- 3) Attach defibrillation pads to patient and turn on defibrillator
- 4) Stop CPR, "clear" the patient and analyze rhythm
- 5) If defibrillator advises shock
 - a) "clear" patient, visualize that no one is touching the patient
 - b) deliver shock at 360j (or biphasic equivalent)
- 6) Resume/begin CPR
- 7) After 2 min CPR re-analyze rhythm
- 8) If machine advises shock, deliver second shock at 360j (or biphasic equivalent) ***after*** "clearing" patient
- 9) Resume/begin CPR
 - a) After 2 min CPR re-analyze rhythm
- 10) If machine advises shock, deliver third shock at 360j (or biphasic equivalent) ***after*** "clearing" patient
- 11) Resume/begin CPR
- 12) If pulses return, manage patient's airway and breathing appropriately. Transport immediately.
- 13) If no pulse, resume CPR for two minutes then repeat defibrillation at 360j (or biphasic equivalent).
- 14) If, after any rhythm analysis, the defibrillator advises no shock, check carotid pulses
 - a) If pulses are present, manage patient's airway and breathing appropriately. Transport immediately.
 - b) If no pulses are present, resume CPR for two minutes then repeat analysis of rhythm.
- 15) Only six shocks are allowed. Should the patient not convert, transport immediately
- 16) Should the patient lose pulses or fibrillate during transport to the hospital following a successful defibrillation, begin CPR. Pull the ambulance to the side of the road and turn off the motor. Analyze rhythm and deliver up to two additional sets of three stacked shocks according to protocols and/or medical control. Following defibrillation continue transport.

Internal Cardiac Defibrillator (ICD) General Guidelines:

- 1) Treat a patient with an implantable cardiac defibrillator (ICD) like any other patient.

- 2) If ICD discharges while you are touching the patient, you may feel a slight sensation. It will not harm you.
- 3) Do not wait for the device to fire in the presence of VT or VF. Begin CPR and defibrillate with external paddles/pads as necessary. This will not harm the device.
- 4) ICD's are implanted under the skin in the left lower abdominal area or left upper chest just below the clavicle.
- 5) Patients with and ICD will carry a wallet card or Medic-Alert bracelet with important data regarding cutoff rate.
- 6) ICD's will deliver the first shock within 10-30 seconds after recognizing the arrhythmia.
- 7) Subsequent shocks will be delivered every 10-30 seconds.
- 8) An ICD will generally only shock 4-5 times (depending on model), and requires 35 seconds of non-VT/VF rhythm, including asystole, to reset itself.

Appendix H -Transcutaneous/External Cardiac Pacing

Candidates:

Adult and pediatric patients with bradycardia who are clinically unstable, unconscious or unresponsive to atropine. Adult and pediatric patients in asystole. Must be done immediately in resuscitation sequence if considered.

Equipment:

- Cardiac monitor/defibrillator capable of external pacing
- Defibrillation/pacing pads

Procedure:

- 1) Place chest leads, if not already done, in Lead II position, attach to pacing machine and obtain hard copy recording of patient's baseline rhythm. Adjust gain to obtain tall QRS complexes.
- 2) Apply pacing electrodes to chest, to left of sternum and on left posterior chest wall.
- 3) Connect to pacing machine. In females, place the precordial electrode under the breast but not over the diaphragm. If authorized to pace pediatric patients, use pediatric pacing electrodes for patients < 15 kg.
- 4) Set pacing rate to 80 or 10-20 higher than the patient's intrinsic heart rate. If patient has no QRS complexes, set rate at 80.
- 5) Set milliamp setting at zero. Turn pacer power on and observe the pacing artifact on the ECG to assure it is well positioned during diastole. Slowly increase the milliamp setting while observing the ECG and feeling for a pulse to determine if capture is achieved (usually at a setting of between 40 to 80 mA). A pulse oximeter, if available, may be helpful to monitor the patient's pulse. Once capture is obtained, set milliamp setting 10% higher. If capture cannot be obtained, try moving the precordial pacing electrode around to a more effective location.
- 6) Contact a medical control physician if orders are needed for sedation for the unconscious patient. Muscle fasciculations will typically be seen at about 50 mA and the patient will experience pain at levels above about 40-50 mA.
- 7) Obtain an ECG tracing of the patient's paced rhythm. Closely monitor the patient's ECG, pulse and, if applicable, pulse oximeter during packaging and transport to assure pacing capture if maintained.

Appendix I – Pain Management

Adult Pain Management:

To provide relief of pain when indicated. This protocol is **NOT** to be used in cases where the patient:

- has systolic blood pressure less than or equal to 90,
- has pain determined to be cardiac in origin (see chest pain protocol page),
- is in active labor.
- patient has sustained a head injury.

Pain Management	
Standing Orders	Medical Control Options
1. Assess pain on 0-10 scale.	
2. Inform patient that pain is an important diagnostic parameter and the goal of this protocol is to relieve suffering not totally eliminate pain.	
3. Administer Morphine Sulfate 2-10 mg IV/IM (Maximum total dose 10 mg) OR Fentanyl 50-100mcg IV/IM	** Advanced EMT providers require medical control approval before administration of Morphine**
4. Reassess pain scale and titrate additional doses of pain medication as needed to maximum dosage as above.	
5. Monitor vital signs. If respiratory depression or hypotension occurs after administration of Morphine ventilate patient as necessary and administer Narcan 0.4 - 2 mg IV. Notify a medical control physician.	
6. Contact medical control physician for orders if: <ul style="list-style-type: none"> a. patient has SBP \leq 90, b. if further pain medication is required. 	
	7. Consider additional pain medication as appropriate.

Pediatric Pain Management:

To provide relief of pain when indicated for pediatric patients. This protocol is **NOT** to be used in cases where the patient:

- is hypotensive (i.e. clinical signs of poor perfusion, capillary refill >2 seconds),
- complains of abdominal pain,
- has sustained a head injury,
- has pain determined to be cardiac in origin,

Pediatric Pain Management	
Standing Orders	Medical Control Options
1. Assess pain on 0-10 scale if possible.	
2. Inform patient and/or guardians that pain is an important diagnostic parameter and the goal of this protocol is to relieve suffering, not totally eliminate pain.	
3. Administer Morphine Sulfate x 1 at 0.1 mg/kg IV/IM (up to maximum dose of 5 mg) OR Fentanyl 0.5-1 mcg/hg slowly IV/IM. Max dose: 50mcg's	** Advanced EMT providers require medical control approval before administration of Morphine**
	<i>Note: Refer to pediatric reference e.g., Broselow Tape, if assistance is needed with pediatric vital signs or drug dosage calculations.</i>
4. Monitor vital signs. If respiratory depression or hypotension occurs after administration of Morphine, ventilate patient as necessary and administer Narcan 0.01 mg/kg IV (up to a maximum dose of 0.4 mg). Notify a medical control physician.	
5. Contact a medical control physician for orders if: <ol style="list-style-type: none"> a. patient is hypotensive, b. head injured, c. complains of abdominal pain, d. further pain medication is required. 	
	6. Consider initial or additional pain medication as appropriate.

Appendix J – Nasogastric Tube Placement

Candidates:

Placement of nasogastric tubes is indicated to relieve gastric distention, to relieve vomiting during transport, to relieve abdominal pain caused by solid organ disease, and to empty stomach contents in GI bleeds.

Equipment:

- Nasogastric tubes of appropriate size
- Emesis basin
- 30cc syringe
- Lidocaine or lubricating jelly

Procedure:

- 1) Have patient sitting or semi-upright if possible. Keep head in midline. Lay infants on right side
- 2) Measure tube length before insertion; nose to ear to xiphoid process (usually corresponds to second black line on standard adult tube).
- 3) Lubricate tube.
- 4) Gently insert through one nostril (left is most useful if not occluded by septal deformity). Apply tube horizontally or slightly downward.
- 5) Have patient swallow as he feels the tube in the back of the throat. Slight flexion with the patient sitting forward produces best positioning.
- 6) Continue passage to correct length.
- 7) After insertion, listen over epigastrium as air is injected through the tube via irrigation syringe. If bubbling is heard, apply suction.
- 8) If patient chokes, cannot talk, or becomes cyanotic, tube is in the trachea. Remove, allow patient to ventilate and start again.
- 9) Secure tube with tape to nose or cheek.

Complications:

- Insertion into cranial vault in patient with cribiform plate fracture. Do not place in patients with suspected facial fractures.
- Tracheal intubation
- Vomiting and aspiration of gastric contents

Contraindications:

- Facial fractures or nasal bleeding
- If endotracheal tube is in place, cuff may need to be released before tube will pass into esophagus
- Tube is not indicated if transport time is short

Appendix K – Medications

Medication profiles given in this section are for guidance and informational purposes only. This section is not intended to provide specific orders for patient care. See protocols for approved system practice.

Activated Charcoal

<u>Generic Name:</u>	Activated Charcoal
<u>Trade Name:</u>	SuperChar, InstaChar, Actidose, Liqui-Char
<u>Classification:</u>	Absorbent/Antidote
<u>Action/Kinetics:</u>	Absorbs poison compounds to its surface, which reduces the poisons absorption by the body. Very effective in binding ASA, amphetamines, Strychnine, Dilantin, Theophylline and Phenobarbital.
<u>Indications:</u>	Poisoning and oral overdose in a conscious patient with an intact gag reflex
<u>Contraindications:</u>	<ul style="list-style-type: none">• Special consideration of patients with decreased level of consciousness.• Of no value in poisoning due to methanol, acids/alkalis, iron tablets, or lithium.• Cyanide poisoning• Should not be given before ipecac.
<u>Adverse Effects:</u>	Nausea/vomiting. Diarrhea. Black stools.
<u>How supplied:</u>	Pre-mixed in water, frequently available in plastic bottle containing 12.5 gram of activated charcoal.
<u>Dosage:</u>	1 gram/kg for adults and children. Usual adult dose 25-50g. Usual pediatric dose 12.5-25g.
<u>Precautions:</u>	None

Adenosine

<u>Generic Name:</u>	Adenosine
<u>Trade Name:</u>	Adenocard
<u>Classification:</u>	Antiarrhythmics
<u>Action/Kinetics:</u>	A naturally occurring nucleoside that acts on the AV node to slow conduction and inhibit reentry pathways. Useful in PSVT. Rapidly metabolized—Half-life is <5 seconds.
<u>Indications:</u>	To convert acute PSVT to normal sinus rhythm. Diagnostic agent for distinguishing supraventricular from ventricular tachycardia, as well as broad QRS complex tachycardias.
<u>Contraindications:</u>	Patients with hypersensitivity to the drug. Those in second or third degree heart block, sick sinus syndrome, or symptomatic bradycardia. Unstable patient with SVT is treated with synchronized cardioversion.
<u>Adverse Effects:</u>	Chest pain, PVC's, dizziness, dyspnea and or shortness of breath, facial flushing, headache, lightheadedness, blurred vision, nausea, metallic taste, and numbness. More serious symptoms are persistent arrhythmias, bronchospasm, and hypotension.
<u>How supplied:</u>	6mg/2ml and 12mg/2ml in pre-loaded syringes ready to be administered.
<u>Dosage:</u>	The initial dose is 6-mg. rapid bolus over 1-3 seconds. The dose should be followed quickly by a 20-ml saline flush. Then elevate the extremity. Repeat 12mg. in 1-2 minutes if needed.
	Pediatric 0.1mg/kg rapid IV push with saline flush.
<u>Precautions:</u>	Could produce bronchoconstriction in-patients with asthma. Patients who develop high level heart block after a single dose should not receive additional doses. Use with caution in-patients receiving digoxin and verapamil in combination. Therapeutic levels of theophylline and methylxanthines affect the response of adenosine Dipyridamole potentiates its effect.

Albuterol

<u>Generic Name:</u>	Albuterol Sulfate Inhalation Solution, 0.083%
<u>Trade Name:</u>	Ventolin, Proventil
<u>Classification:</u>	Bronchodilators
<u>Action/Kinetics:</u>	Relaxes bronchial, uterine, and vascular smooth muscle by stimulating beta2-adrenergic receptors.
<u>Indications:</u>	Indicated for the relief of bronchospasm in patients two years of age and older with reversible obstructive airway disease and acute attacks of bronchospasm.
<u>Contraindications:</u>	Hypersensitivity to the drug.
<u>Adverse Effects:</u>	Tachycardia, hypertension, bronchospasm, bronchitis, nasal congestion, tremors, dizziness, nervousness, headache, and sleeplessness.
<u>How Supplied:</u>	Unit dose plastic vial containing albuterol sulfate inhalation solution 0.083%, 2.5mg/3ml. Usual dose for adults and children weighing at least 15 kg is one vial 2.5 mg of albuterol administered by nebulization. Inhalation solution will be delivered over approximately 5 to 15 minutes.
<u>Precautions:</u>	Used with caution in patients with cardiovascular disorders, especially coronary insufficiency, cardiac arrhythmia's and hypertension. MAO inhibitors, tricyclic antidepressants, may potentiate action on CV system. Propranolol, and other beta blockers inhibit the effect of albuterol

Albuterol – Patient Assisted Inhalers

<u>Generic Name:</u>	Albuterol Sulfate Inhalation Solution, 0.083%
<u>Trade Name:</u>	Ventolin, Proventil, Bronkosol, Bronkometer, Alupent, Metaprel
<u>Classification:</u>	Bronchodilators
<u>Action/Kinetics:</u>	Beta agonist bronchodilator dilates bronchioles reducing airway resistance
<u>Indications:</u>	<ul style="list-style-type: none">• Patient exhibits signs and symptoms of respiratory emergency• Patient has physician-prescribed hand-held inhaler• Medical control gives specific authorization for use.
<u>Contraindications:</u>	<ul style="list-style-type: none">• Patient is unable to use device (not alert, responsive)• Inhaler is not prescribed for patient• No permission has been given by medical control.• Patient has already taken maximum prescribed dose prior to EMS arrival.
<u>Adverse Effects:</u>	Tachycardia, hypertension, bronchospasm, bronchitis, nasal congestion, tremors, dizziness, nervousness, headache, and sleeplessness.
<u>How Supplied:</u>	Hand-held metered dose inhaler. Dosage: Number of inhalations dependant on medical control orders.
<u>Precautions:</u>	Used with caution in patients with cardiovascular disorders, especially coronary insufficiency, cardiac arrhythmia's and hypertension. MAO inhibitors, tricyclic antidepressants, may potentiate action on CV system. Propranolol, and other beta blockers inhibit the effect of albuterol

Amiodarone Hydrochloride

<u>Generic Name:</u>	Amiodarone Hydrochloride
<u>Trade Name:</u>	Cordarone
<u>Classification:</u>	Antiarrhythmic
<u>Action/Kinetics:</u>	Blocks sodium channels at rapid pacing frequencies, causing an increase in the duration of the myocardial cell action potential and refractory period, as well as alpha- and beta-adrenergic blockade. The drug decreases sinus rate, increases PR and QT intervals, results in development of U waves, and changes T-wave contour. After IV use, amiodarone relaxes vascular smooth muscle, reduces peripheral vascular resistance (afterload), and increases cardiac index slightly.
<u>Indications:</u>	Used in a wide variety of atrial and ventricular tachyarrhythmias and for rate control of rapid atrial arrhythmias in patients with impaired LV function when digoxin has proven ineffective
<u>Contraindications:</u>	Marked sinus bradycardia due to severe sinus node dysfunction, second- or third-degree AV block, syncope caused by bradycardia (except when used with a pacemaker). Cardiogenic shock. Lactation.
<u>Adverse Effects:</u>	Cough and progressive dyspnea. Worsening of arrhythmias, symptomatic bradycardia, sinus arrest, SA node dysfunction, CHF edema, hypotension, cardiac conduction abnormalities, cardiac arrest, abnormal involuntary movements, headache, N&V, abdominal pain, flushing, and shock.
<u>How Supplied:</u>	Injection: 50 mg/mL
<u>Dosage:</u>	Cardiac Arrest: 300mg IV push. Consider repeating 150 mg IV push in 3-5 minutes. Maximum cumulative dose 2.2 g IV/24 hours. Wide complex tachycardia (stable): 150 mg rapid infusion IV (15 mg/min) over first 10 minutes. May repeat 150 mg rapid infusion IV every 10 minutes as needed.
<u>Precautions:</u>	May produce vasodilation and hypotension. May have negative inotropic effects. May prolong QT interval. Do not routinely use with other drugs that prolong QT interval. Use with caution if renal failure is present.

Aspirin (ASA)

<u>Generic Name:</u>	Acetylsalicylic acid
<u>Trade Name:</u>	Aspirin ASA, Ecotrin,
<u>Classification:</u>	Antiplatelet effect, nonnarcotic analgesic, antipyretic
<u>Action/Kinetics:</u>	To reduce risk of death and/or nonfatal MI in patients with a previous MI or unstable angina pectoris. Impedes clotting by blocking prostaglandin synthesis, which prevents formation of the platelet-aggregating substance thromboxane A ₂ .
<u>Indications:</u>	Dose for cardiac patients fitting criteria, even if absence of chest pains, is a 160-325mg. Aspirin given orally if patient has no history of allergy.
<u>Contraindications:</u>	Hypersensitivity to drug. Patients with active ulcer disease
<u>Adverse Effects:</u>	Bleeding gums, signs of GI bleeding, and petechiae. Aspirin will increase bleeding time.
<u>How Supplied:</u>	160 mg, 325mg tablets. (May also use 4 baby aspirin chewable 81 mg ea., for a total of 324 mg)
<u>Dosage:</u>	Give one aspirin 325mg. or 4 baby aspirin chewable (chewing is preferable to swallowing) give within minutes of arrival.
<u>Precautions:</u>	Use with caution in patients with GI lesions, impaired renal function, hypoprothrombinemia, vitamin K deficiency, thrombocytopenia, or severe hepatic impairment.

Atropine

<u>Generic Name:</u>	Atropine Sulfate
<u>Trade Name:</u>	Atropine
<u>Classification:</u>	Antiarrhythmic, anticholinergic, antidote, cardiac stimulant
<u>Action/Kinetics:</u>	Anticholinergic that inhibits acetylcholine at the parasympathetic neuroeffector junction, blocking vagal effects on the SA and AV nodes; this enhances conduction through the AV node and speeds heart rate, increases heart contractility, improves automaticity, and dilates peripheral vessels.
<u>Indications:</u>	Treatment of symptomatic sinus bradycardia, second and third degree heart block, or ventricular asystole. Second drug for asystole or PEA. Antidote in organophosphate poisoning.
<u>Contraindications:</u>	Hypersensitivity to the drug, unstable cardiovascular status, myocardial ischemia, glaucoma, and COPD
<u>Adverse Effects:</u>	Postural hypotension, Blurred vision, dryness of the mouth, GI reflux, nausea, vomiting, tachyarrhythmias, and urinary retention. May also cause ventricular tachycardia or ventricular fibrillation.
<u>How Supplied:</u>	0.1mg/ml total of 10ml to equal 1mg of atropine.
<u>Dosage:</u>	Adult For bradycardia, 0.5mg to 1mg. IV every three to five minutes as needed, up to a total of 3mg. In asystole give 1mg. IV, repeat every 3 to 5 minutes up to a total of 0.04 mg/kg. Pediatric 0.02 mg/kg or 0.2 cc/kg IV/IO/ET up to 5cc for child or 10cc for adolescent (minimum dose 0.1mg or 1cc). May be repeated once in 5 minutes.
<u>Precautions:</u>	Use with caution in presence of myocardial ischemia and hypoxia. Avoid in hypothermic bradycardia. Usually not effective in second degree block type II and third degree blocks with wide QRS complexes. Antacids decrease absorption of med.

Atrovent

<u>Generic Name:</u>	Ipratropium bromide
<u>Trade Name:</u>	Atrovent
<u>Classification:</u>	Bronchodilator
<u>Action/Kinetics:</u>	Inhibits vagally mediated reflexes by antagonizing acetylcholine at muscarinic receptors on bronchial smooth muscle.
<u>Indications:</u>	Either Alone or with other bronchodilators, especially beta adrenergics, is used for treatment of bronchospasm associated with chronic obstructive pulmonary disease, including asthma chronic bronchitis and emphysema.
<u>Contraindications:</u>	Hypersensitivity to the drug, atropine and its derivatives, and those with a history of hypersensitivity to soy lecithin or related food products such as soybeans and peanuts.
<u>Adverse Effects:</u>	Dizziness, headache, nervousness, palpitations, hypertension, cough, blurred vision, rhinitis, epistaxis, GI distress, chest pain, flu-like symptoms.
<u>How Supplied:</u>	In a unit dose vial containing 2.5 ml (0.5 mg)
<u>Dosage:</u>	One unit dose vial added to the nebulized albuterol. May repeat neb of albuterol 2.5 mg. with atrovent 0.5mg. x1.
<u>Precautions:</u>	Used cautiously in patients with angle-closure glaucoma, prostatic hyperplasia, and bladder-neck obstruction. Avoid leakage around the face mask, temporary blurring of vision or eye pain may occur.

Benadryl

<u>Generic Name:</u>	Diphenhydramine hydrochloride
<u>Trade Name:</u>	Benadryl
<u>Classification:</u>	Antihistamine, CNS depressant, antiemetic, antvertigo agent, sedative-hypnotic
<u>Action/Kinetics:</u>	Competes with histamine for H1-receptor sites on effector cells. Prevents, but does not reverse, histamine-mediated responses. It also has anticholinergic (antispasmodic), antiemetic, and sedative effects. It has a rapid onset and is widely distributed throughout the body.
<u>Indications:</u>	Supplemental therapy to epinephrine in anaphylaxis and other uncomplicated allergic reactions requiring prompt treatment. Is an antidote specific to phenothiazine medications (Dystonia).
<u>Contraindications:</u>	Hypersensitivity to the drug, during acute asthmatic attacks, in newborns, premature neonates, or breast feeding women. Avoid use in patients taking MAO inhibitors. Also patients with glaucoma, peptic ulcer, and COPD
<u>Adverse Effects:</u>	Palpitations, hypotension, tachycardia, confusion, decreased level of consciousness, insomnia, headache, vertigo, restlessness, tremor, seizures, blurred vision, nausea and vomiting, thickened bronchial secretions, and anaphylactic shock.
<u>How Supplied:</u>	Vial 50mg/ml for injection IV or IM
<u>Dosage:</u>	25mg. IV or 50mg IM (See protocol)
	Pediatric 1mg/kg IM. Children may be more prone to paradoxical responses than adults.
<u>Precautions:</u>	Use with extreme caution in patients with asthma or COPD, increased intraocular pressure, hyperthyroidism, CV disease, hypertension. Drug to drug and alcohol use causes increased CNS depression.

Dextrose

<u>Generic Name:</u>	D-glucose or glucose
<u>Trade Name:</u>	Dextrose
<u>Classification:</u>	Nutritional (carbohydrate)
<u>Action/Kinetics:</u>	Dextrose and water provide calories and increases blood glucose concentrations.
<u>Indications:</u>	<ul style="list-style-type: none">• Diabetics who are unable to take oral fluids due to altered level of consciousness and low blood glucose.• Unknown, unconsciousness
<u>Contraindications:</u>	Delirium tremens with hydration, diabetic coma while blood sugar is excessive, intracranial or intraspinal hemorrhage.
<u>Adverse Effects:</u>	Pulmonary edema, exacerbated hypertension, heart failure, Hyperglycemia, (during infusion), hyperosmolar syndrome (mental confusion, loss of consciousness), hypokalemia, reactive hypoglycemia (after infusion).
<u>How Supplied:</u>	50 ml prefilled syringe of D ₅₀ W IV
<u>Dosage:</u>	Adult One prefilled syringe of 50ml D50W IV—may repeat as appropriate. Pediatric Give D ₅₀ W, 1cc/kg up to 50 cc to patients four years and older with a blood glucose <60 mg/dl. For patients three years and younger, use D ₂₅ W, 2cc/kg IV.
<u>Precautions:</u>	Use with caution in patients with cardiac or pulmonary disease, hypertension, renal insufficiency, urinary obstruction, or hypovolemia. Avoid extravasation may cause tissue sloughing, necrosis, and phlebitis.

Diazepam

<u>Generic Name:</u>	Diazepam
<u>Trade Name:</u>	Valium
<u>Classification:</u>	CNS depressant; anticonvulsant, antianxiety, skeletal muscle relaxant
<u>Action/Kinetics:</u>	Depresses/decreases the excitability and functional activity of four areas of the CNS: <ul style="list-style-type: none">• Limbic system (Emotions and behavioral responses)• Reticular formation (Wakefulness and alertness)• Cerebral cortex (origin of seizures and convulsions)• Spinal cord (skeletal muscle tone and activity)
<u>Indications:</u>	<ul style="list-style-type: none">• Status epilepticus• Sedation prior to cardioversion• Relief of nervous anxiety and tension• Moderate skeletal muscle spasms
<u>Contraindications:</u>	Pregnancy, patients with respiratory depression, hypotension
<u>Adverse Effects:</u>	Drowsiness, dizziness, ataxia, respiratory depression and arrest, hypotension, decreased level of consciousness.
<u>How Supplied:</u>	10mg/1cc vial or 10mg/1cc pre-loaded syringe.
<u>Dosage:</u>	Adult 5-10mg IV/IM slow IV push, maximum dose 40mg. Pediatric 0.1mg/kg IM/IV slow IV push, 0.5mg/kg rectally
<u>Precautions:</u>	Drug dependence.

Dopamine

<u>Generic Name:</u>	Dopamine
<u>Trade Name:</u>	Intropin
<u>Classification:</u>	Vasopressor
<u>Action/Kinetics:</u>	<ul style="list-style-type: none">• Increases cardiac output by improving heart rate, contractility, and stroke volume• In high doses, can cause vasodilation of the heart, kidney, and GI tract
<u>Indications:</u>	To increase cardiac output and blood pressure in shock states not caused by hypovolemia. Is especially effective in cardiogenic shock.
<u>Contraindications:</u>	Hypotension due to hypovolemia and presence of tachyarrhythmias or ventricular fibrillation
<u>Adverse Effects:</u>	Nausea/vomiting, hypertension, ventricular irritability, headache, tissue necrosis with infiltration, may cause fixed and dilated pupils in high doses
<u>How Supplied:</u>	800mg mixed in 500cc's of dextrose
<u>Dosage:</u>	Adult Titrate to systolic blood pressure of 100mmHg or adequate perfusion. Set drip rate at 1/2 patients weight in kilograms. Pediatric Rarely used in prehospital situation. Use with extreme caution under direction of medical control.
<u>Precautions:</u>	Do not mix with Sodium Bicarbonate

Epinephrine

<u>Generic Name:</u>	Epinephrine Hydrochloride
<u>Trade Name:</u>	Adrenalin
<u>Classification:</u>	Cardiac stimulant, bronchodilator, antiallergic, and vasopressor
<u>Action/Kinetics:</u>	Stimulates alpha and beta-adrenergic receptors within the sympathetic nervous system. A potent cardiac stimulant, it strengthens the myocardial contraction (positive inotropic effect) and increases cardiac rate (positive chronotropic effect). Increases myocardial and cerebral blood flow during CPR.
<u>Indications:</u>	Cardiac arrest: VF, pulseless VT, asystole, pulseless electrical activity. Anaphylaxis, severe allergic reactions, and profound bradycardia or hypotension after other drugs tried maybe used as a gtt.
<u>Contraindications:</u>	Patients with angle-closure glaucoma, shock (other than anaphylactic shock), organic brain damage, cardiac dilation, coronary insufficiency, cerebral arteriosclerosis or labor and delivery. Do not use to treat overdose of adrenergic blocking agents.
<u>Adverse Effects</u>	Nervousness, tremor, headache, agitation, dizziness, weakness, cerebral hemorrhage, palpitations, hypertension, tachycardia, anginal pain, nausea and vomiting, and dyspnea.
<u>How Supplied:</u>	Prefilled syringe 0.1mg/ml (1:10,000), total of 10cc = 1 mg.-vial 1 mg/ml (1:1,000) total of 1 cc
<u>Dosage:</u>	Adult Cardiac arrest: 1 mg (10 ml of 1:10,000 solution) administered every 3-5 minutes during resuscitation. Tracheal route: 2 mg. diluted in saline. Anaphylaxis: 0.3 mg (1,1000) SC Pediatric Cardiac arrest: (1:10,000) Give 0.1mg/kg or 0.1 cc/kg up to 10cc. Tracheal route: (1:1000) Give 0.1 mg/kg or 0.1 cc/kg up to 10cc. Anaphylaxis: (1:1000) 0.01 mg/kg (0.01 cc/kg) SC or IM up to 0.3 cc if patient was exposed to commonly recognized allergen and has respiratory distress or hypotension.
<u>Precautions:</u>	High doses do not improve survival or neurologic outcome and may contribute to postresuscitation myocardial dysfunction. Raising blood pressure and increasing heart rate may cause myocardial ischemia, angina and increased myocardial oxygen demand. Higher doses maybe required to treat poison/drug-induced shock. The effects of the drug maybe potentiated by tricyclic antidepressants.

Epinephrine – Patient Assisted Auto-Injector

Generic Name: Epinephrine

Trade Name: Adrenalin, Epi-pen

Classification: Cardiac stimulant, bronchodilator

Action/Kinetics:

- Dilates bronchioles
- Constricts blood vessels

Indications: Patient meets all of the following criteria:

- Patient exhibits signs of a severe allergic reaction, including either respiratory distress or shock (hypoperfusion)
- Medication is prescribed for this patient by a physician
- Medical control gives specific authorization for its use.

Contraindications: None when used in a life-threatening situation

Adverse Effects Increased heart rate, pallor, dizziness, chest pain, headache, nausea/vomiting, excitability, anxiety

How Supplied: Liquid administered by an auto-injector (an automatically injectable needle-and-syringe system).

Dosage:

Adult
One adult auto-injector (.3mg)

Pediatric
One infant/child auto-injector (.15mg)

Precautions: If patients condition continues to worsen (decreasing mental status, increasing breathing difficulty, decreasing blood pressure) obtain medical direction to administer additional dose of epinephrine, treat for shock (hypoperfusion) and prepare to initiate basic life support measures (CPR, AED)

If patient's condition improves, provide oxygen and treat for shock.

Transport immediately. Request ALS response early if not initially dispatched. Continually monitor patients airway, breathing, and circulatory status.

Fentanyl

Generic Name: Sublimaze

Trade Name: Fentanyl

Classification: Narcotic Analgesic

Action/Kinetics: Fentanyl is a potent synthetic narcotic with similar actions to those of Morphine and Demerol, but action is more prompt (<5min) and less prolonged (half-life 90 min). Fentanyl exhibits less hemodynamic effects than does Morphine or Demerol. Fentanyl is also less likely to cause nausea/vomiting.

Indications:

- Patients with significant pain due to injury or medical condition.
- Pre-treatment agent for rapid sequence intubation (RSI).

Contraindications:

- Known allergy to Fentanyl or hypersensitivity to opiates.
- Major trauma to head, chest, abdomen or pelvis.
- Airway compromise, respiratory depression/insufficiency.
- Evidence of shock (hypotension).
- Myasthenia Gravis

Adverse Effects Sedation/decreased level of consciousness, respiratory depression/arrest, bradycardia, hypotension or hypertension, mild nausea and/or vomiting, increased intracranial pressure.

How Supplied: 100mcg/2cc's pre-filled syringe/unit dose vial

Dosage:

Adult
1-2 mcg/kg slowly IV/IM. Expected dose: 25-50 mcg's.
Max Dose: 100 mcg's

Pediatric
0.5-1 mcg/kg slowly IV/IM. Max Dose: 50 mcg's.

Precautions: Rule out significant trauma prior to administration. Continuously monitor vitals, oximetry, and mental status before and after administration.

Fentanyl should be administered SLOWLY (over 2 minutes).

High doses may cause chest wall and jaw muscular rigidity with resultant difficult ventilation.

Respiratory depression may outlast pain control effects.

Furosemide

<u>Generic Name:</u>	Furosemide
<u>Trade Name:</u>	Lasix
<u>Classification:</u>	Diuretic and antihypertensive
<u>Action/Kinetics:</u>	Restricts reabsorption of sodium and water in the kidney tubule and promotes increased urine formation and excretion. Extremely potent and has a rapid onset of action of 5 minutes and may last for 2 hours.
<u>Indications:</u>	Acute pulmonary edema, in patients with systolic blood pressure >90 (without signs and symptoms of shock), edema associated with congestive heart failure, hypertensive emergencies, and post-cardiac arrest cerebral edema (increased intracranial pressure).
<u>Contraindications:</u>	Hypovolemic states, hypokalemia, hypersensitivity to the drug, and is rarely used in children, pregnancy, and breast-feeding mothers.
<u>Adverse Effects</u>	Vertigo, headache, dizziness, paresthesia, restlessness, dehydration, orthostatic hypotension, transient deafness (with too-rapid IV infusion), blurred or yellow vision. Abdominal pain, nausea and vomiting, muscle spasm, and electrolyte imbalance.
<u>How Supplied:</u>	Vials of 40mg/4cc's
<u>Dosage:</u>	Adult 40 mg IV for pulmonary edema (per protocol) or amount designated by medical control MD. Pediatric 1mg/kg IV administered slowly.
<u>Precautions:</u>	Use cautiously in patients with hepatic cirrhosis. If patient is taking antihypertensives, or is at increased risk of hypotension.

Glucagon

<u>Generic Name:</u>	Glucagon
<u>Trade Name:</u>	GlucaGen
<u>Classification:</u>	Antihypoglycemic, antidote, and diagnostic agent
<u>Action/Kinetics:</u>	Induces liver glycogen breakdown, releasing glucose from the liver. Blood glucose is raised within 10 minutes. Has a half-life of 8 to 18 minutes.
<u>Indications:</u>	Treatment of severe hypoglycemia, Helpful in reversing adverse beta-blockade of beta-adrenergic blocking agents and calcium channel blockers.
<u>Contraindications:</u>	known hypersensitivity to drug, and in patients with pheochromocytoma or with insulinoma (tumor of pancreas).
<u>Adverse Effects</u>	Hyperglycemia (excessive dosage), nausea and vomiting hypersensitivity reactions (anaphylaxis, dyspnea, hypotension, rash), increased blood pressure, and pulse; this maybe greater in patients taking beta-blockers.
<u>How Supplied:</u>	One vial containing 1 mg. (1 IU) powder and one vial containing 1/ml of sterile water to be reconstituted.
<u>Dosage:</u>	Give 1 mg. IM, after reconstituting powder and sterile water, for symptomatic diabetic patient whose IV access has been difficult. For beta-blocker overdose also give 1 mg. IV.
<u>Precautions:</u>	Give with caution to patients that have low levels of releasable glucose (e.g., adrenal insufficiency, chronic hypoglycemia, and prolonged fasting). Potentiates oral anticoagulants. Depletes glycogen stores especially in children and adolescents.

Glucose – Patient Assisted Medication

<u>Generic Name:</u>	Glucose, oral
<u>Trade Name:</u>	Glucose, Insta-glucose
<u>Classification:</u>	Carbohydrate
<u>Action/Kinetics:</u>	Increases blood sugar levels
<u>Indications:</u>	Patient meets all of the following criteria: <ul style="list-style-type: none">• Altered mental status• Known history of diabetes mellitus
<u>Contraindications:</u>	<ul style="list-style-type: none">• Unconsciousness• Known diabetic who has not taken insulin for days• Patient who is unable to swallow
<u>Adverse Effects</u>	None when given properly. May be aspirated by the patient without gag reflex.
<u>How Supplied:</u>	Gel, in toothpaste type tube
<u>Dosage:</u>	Administer one tube between the patients cheek and gums.
<u>Precautions:</u>	None. Monitor patient for improvements in mental status.

Haloperidol

<u>Generic Name:</u>	Haloperidol
<u>Trade Name:</u>	Haldol
<u>Classification:</u>	Anti-psychotic/tranquilizer
<u>Action/Kinetics:</u>	Depresses cerebral cortex, hypothalamus, and limbic system, which control activity and aggression.
<u>Indications:</u>	Management of psychotic disorders, combative, explosive, and aggressive patients.
<u>Contraindications:</u>	Patients with severe CNS depression, Parkinson's Disease, pregnancy, and seizure patients.
<u>Adverse Effects</u>	Over sedation, tachycardia, orthostatic hypotension, hypertension, EKG changes, nausea/vomiting, laryngospasm, bronchospasm, seizure, involuntary movements of the neck and facial muscles, hyperpyrexia (elevated body temperatures).
<u>How Supplied:</u>	One vial containing 5mg
<u>Dosage:</u>	Adult 5-10mg IM Pediatric Not to be used in pediatric pre-hospital patients.
<u>Precautions:</u>	None

Lidocaine Hydrochloride

<u>Generic Name:</u>	Lidocaine Hydrochloride
<u>Trade Name:</u>	Xylocaine
<u>Classification:</u>	Antiarrhythmic
<u>Action/Kinetics:</u>	Decreases ventricular excitability without depressing the force of ventricular contractions by increasing the stimulation threshold of the ventricle during diastole. Onset of action should occur within 2 minutes and last approximately 10 to 20 minutes. Metabolized in the liver and excreted in the urine.
<u>Indications:</u>	Cardiac arrest from VF/VT (class II B) Stable VT, wide-complex tachycardias of uncertain type, wide-complex PSVT (class IIB). Used to stabilize patients converted from VT/VF. Occasionally used in control of symptomatic criteria PVC's.
<u>Contraindications:</u>	Hypersensitivity to the drug. Stokes-Adams syndrome, Wolff-Parkinson-White syndrome, severe degrees of SA, AV, or intraventricular block (when no pacemaker is present.).
<u>Adverse Effects</u>	Anaphylaxis, bradycardia, hypotension, cardiovascular collapse, seizures, malignant hyperthermia, respiratory depression, tremors, lightheadedness, confusion, tinnitus, blurred or double vision, and vomiting
<u>How Supplied:</u>	5 ml prefilled syringe (100 mg. total)
<u>Dosage:</u>	Adult V tach - Lidocaine 100 mg. (1.0-1.5 mg/kg) IV over two minutes. Use 1/2 dose, i.e., 50 mg. if patient is over age 70 or if CHF or hepatic failure present. Repeat 0.5 to 0.75 mg/kg every 5 to 10 minutes; maximum total dose: 3 mg/kg. Cardiac arrest from VF/VT - Lidocaine 100 mg. (1.5 mg/kg) may repeat lidocaine 100mg. IV or 200 mg. ET followed by defib. Drip – 2gm/500cc's administered 1-4mg/min. Always preceded by a bolus. Pediatric Cardiac Arrest – 1mg/kg IV/ET/IO Drip – 120mg/100cc's at 1-2.5cc's/kg/hr IV
<u>Precautions:</u>	Do not administer with sinus bradycardia, second or third degree AV blocks and idioventricular rhythms. Prophylactic use in AMI patients is not recommended. Discontinue infusion immediately if signs of toxicity develop. Elderly clients who have hepatic or renal disease or who weigh less than 45.5 kg. Should be watched closely for adverse side effects. Toxicity can occur due to reduced metabolism of lidocaine.

Lorazepam

<u>Generic Name:</u>	Lorazepam
<u>Trade Name:</u>	Ativan
<u>Classification:</u>	Benzodiazepine, sedative-hypnotic, anticonvulsant
<u>Action/Kinetics:</u>	Though the drug is still widely used as an anticonvulsant, it is relatively weak and of shorter duration than diazepam. Rapid IV administration may be followed by respiratory depression and excessive sedation. Lorazepam is frequently used to treat anxiety and stress. In emergency care, it is used to treat alcohol withdrawal and grand mal seizure activity. Benzodiazepines act on the limbic, thalamic, and hypothalamic regions of the CNS to potentiate the effects of inhibitory neurotransmitters, raising the seizure threshold in the motor cortex. It may also be used in conscious patients during cardioversion to induce amnesia and sedation.
<u>Indications:</u>	<ul style="list-style-type: none">• Status epilepticus• Acute anxiety states• Acute alcohol withdrawal• Procedural (cardioversion) sedation
<u>Contraindications:</u>	<ul style="list-style-type: none">• Hypersensitivity to the drug• Acute narrow & Open angle glaucoma• Hypotension• Head injury• CNS depression• Respiratory depression
<u>Adverse Effects</u>	<ul style="list-style-type: none">• Hypotension• Reflex tachycardia• Respiratory depression• Ataxia• Psychomotor impairment• Confusion• Nausea/Vomiting
<u>Dosage:</u>	Adult Status Epilepticus: 2 mg slow IV (<2 mg/min) or IM. Agitation / Anxiety Relief: 0.5 - 2 mg slow IV (<2 mg/min) or IM Pediatrics Status Epilepticus: 0.1 mg / kg (max 2 mg per dose) slow IV (<2 mg/min) or IM
<u>Precautions:</u>	Lorazepam may precipitate CNS depression and psychomotor impairment when the patient is taking CNS depressant medications. Should not be administered with other drugs because of possible precipitation (incompatible with most fluids; should be administered into an IV of normal saline solution).
<u>Special Considerations</u>	<ul style="list-style-type: none">• Pregnancy safety: Category D - dangerous to fetus, but benefits to mother MAY outweigh risks• Must be diluted 1:1 with normal saline prior to IV administration, and given not more than 2mg/minute• Has short duration of anticonvulsant effect• Reduce dose by 50 in elderly patients

- Resuscitation equipment should be readily available, monitor respirations carefully
- Antidote; Flumazenil (Ramazicon)
- Refrigerate at 36-46EF

Meperidine

<u>Generic Name:</u>	Meperidine HCL
<u>Trade Name:</u>	Demerol
<u>Classification:</u>	Narcotic Analgesic
<u>Action/Kinetics:</u>	<p>An addictive narcotic analgesic used for relief of pain. Will rarely be ordered for trauma situations, and only if hypotension is not a complication</p> <p>Depresses CNS but does not alter mood perception, as well as Morphine for the AMI patient.</p>
<u>Indications:</u>	<ul style="list-style-type: none">• Relief of pain from trauma, kidney stones, etc...• Relief of pain from AMI, but not the drug of choice
<u>Contraindications:</u>	<ul style="list-style-type: none">• Marked hypotension• Head injury• Undiagnosed abdominal pain
<u>Adverse Effects</u>	<ul style="list-style-type: none">• Nausea/vomiting• Depressed respirations and blood pressure• Tremor, incoordination• Confusion
<u>How Supplied:</u>	50, 75, or 100mg pre-loaded syringes
<u>Dosage:</u>	<p>Adult Dosage range is 25-100mg. Expected dose is 75mg/IM or 50mg/IV (slow push). Maximum dose is 100mg.</p> <p>Pediatric 0.5-2.0mg/kg IV (slow push)</p>
<u>Precautions:</u>	None

Morphine Sulfate

<u>Generic Name:</u>	Morphine Sulfate
<u>Trade Name:</u>	Morphine Sulfate (names may vary if preservative free)
<u>Classification</u>	Narcotic analgesic, pulmonary edema
<u>Actions/Kinetics:</u>	<p>An opium-derivative, narcotic analgesic, which is a CNS depressant. Induces sleep and inhibits perception of pain by binding to opiate receptors, decreasing sodium permeability, and inhibiting transmission of pain pulses.</p> <p>Causes peripheral vasodilation, thereby decreasing venous blood return to the heart.</p> <p>Relieves pulmonary congestion, and lowers myocardial oxygen need. Detoxified in the liver and excreted in the urine. Onset 2-3 minutes, peak 30 minutes, and duration is 3-6 hours.</p>
<u>Indications:</u>	<p>Analgesic of choice in pain associated with myocardial infarction that is unresponsive to nitrates. Treatment of acute pulmonary edema associated with left ventricular failure, (if blood pressure is adequate). Used for sedation, to decrease anxiety and facilitate induction of anesthesia. Used for management of pain in trauma, kidney stones, etc...</p>
<u>Contraindications:</u>	<p>Hypersensitivity to opiates, acute bronchial asthma, heart failure secondary to lung disease, upper airway obstruction, acute alcoholism, convulsive states, and paralytic ileus.</p>
<u>Adverse Effects</u>	<p>Seizures (with large doses), hypotension, bradycardia, cardiac arrest, or may see tachycardia, and hypertension. Nausea and vomiting, rash, itching, urine retention, respiratory depression and arrest, hypothermia, and increased intracranial pressure may also be seen.</p>
<u>How Supplied:</u>	Vial 10 mg/ml = 1ml or 10mg/1ml pre-filled syringe
<u>Dosage:</u>	<p>For persistent pain, give Morphine sulfate 2-10 mg IV titrated to obtain pain relief. (Use caution in presence of COPD).</p> <p>Pediatric dose: 0.1-0.2mg/kg IV/IM</p>
<u>Precautions:</u>	<p>Causes hypotension in volume-depleted patients. Administer slowly and titrate to effect. May cause apnea in asthmatic patients. May also cause increase ventricular response rate in presence of supraventricular tachycardias. Use with caution in the elderly, head injuries with increased intracranial pressure, COPD, severe hepatic or renal disease.</p>

Midazolam HCl

<u>Generic Name:</u>	Midazolam HCl
<u>Trade Name:</u>	Versed
<u>Classification:</u>	Short-acting benzodiazepine CNS depressant, anxiolytic, amnestic, anticonvulsant, and anesthetic induction agent
<u>Action/Kinetics:</u>	A short-acting benzodiazepine and CNS depressant 3-4 times as potent as diazepam. Depressant effects are dependent on dose, route of administration, presence of other medications, and age of patient. It can depress the ventilatory response to CO ₂ stimulation. It diminishes patient recall. Onset of action is 1-5 min with IV dosing, 5-15 min with IM dosing, and 10 min with IN dosing. Duration of action is generally less than 2 hours.
<u>Indications:</u>	Midazolam HCL can be given IV/IM/IN for: <ul style="list-style-type: none">• Procedural sedation / anxiolysis / amnesia• Sedation of intubated and mechanically ventilated patients• Anticonvulsant effect in status epilepticus
<u>Contraindications:</u>	<ul style="list-style-type: none">• Hypersensitivity to the benzodiazepines• Acute narrow-angle glaucoma• Not recommended in pregnancy, childbirth, breastfeeding, shock, coma, and acute alcohol intoxication with depressed vital signs
<u>Adverse Effects:</u>	<p>WARNING: Serious cardiac and respiratory events have been associated with the use of IV Midazolam HCl.</p> <p>These include airway obstruction, apnea, hypotension, depressed saturations, respiratory and cardiac arrest.</p> <p>Risk increases with patients over age 55, concomitant use of opioid analgesics, and rapid administration. It should only be given in the setting of continuous respiratory and cardiac monitoring.</p> <p>Other effects can include paradoxical behavior, excitement, coughing, headache, hiccups, nausea, vomiting, and nystagmus (especially in children)</p>
<u>How Supplied:</u>	Vial 2ml (total 10mg) -- 5 mg/ml
<u>Dosage:</u>	<p>Adult status seizure (>5min duration):</p> <ul style="list-style-type: none">• IV -- 2.5 - 5 mg slowly(1-2 min)• IM -- 5 - 10 mg• IN -- 10 mg, divide dose between nostrils (use atomizer) <p>Child status seizure (>5min duration):</p> <ul style="list-style-type: none">• IV -- 0.1 mg/kg with max 5 mg• IM -- 0.2 mg/kg with max 10 mg• IN -- 0.2 mg/kg, divide dose between nostrils (use atomizer) <p>Agitation (intubated patient, behavioral emergencies):</p> <ul style="list-style-type: none">• administer 2.5 – 5 mg IV or 5 – 10 mg IM <p>Cardioversion:</p> <ul style="list-style-type: none">• administer 2.5 - 5 mg IV if patient alert
<u>Precautions:</u>	Use cautiously in patients with uncompensated acute illness and in elderly or debilitated patients. Administer slowly over at least 2 minutes. Use with caution in neonates. Versed does not protect against the intracranial pressure or against the pulse and blood

pressure rise associated with intubation. Erythromycin may alter the metabolism of Versed. Oral contraceptives prolong the half-life. Sedatives effects may be antagonized by theophylline.

Narcan

<u>Generic Name:</u>	Naloxone Hydrochloride
<u>Trade Name:</u>	Narcan
<u>Classification</u>	Narcotic (opioid) antagonist, Antidote
<u>Actions/Kinetics</u>	Overcomes effects of narcotic overdose including respiratory depression, sedation, and hypotension. It does not have any narcotic effect itself. It exhibits essentially no pharmacologic activity. Diagnostic agent in unconsciousness of unknown origin. Onset of action is within 2 minutes. Duration of action is dependent on dose and route of administration
<u>Indications:</u>	Indicated for complete or partial reversal of known or suspected narcotic-induced respiratory depression and overdose. Antidote for natural and synthetic narcotics.
<u>Contraindications:</u>	Hypersensitivity to the drug.
<u>Adverse Effects</u>	May see VF, tachycardia, hypertension, nausea, vomiting, and diaphoresis, in higher doses. Tremors and withdrawal symptoms in narcotic-dependent patients.
<u>How Supplied:</u>	2mg/2cc's pre-loaded syringe
<u>Dosage:</u>	If suspected narcotic overdose consider 2 mg Narcan IV. For physical findings consistent with narcotics overdose, may give 2 mg. Narcan IV. Pediatric dose: .01 mg/kg IV/IM
<u>Precautions:</u>	May precipitate acute withdrawal symptoms in narcotic addicts. Effects of drug may not outlast effects of narcotics. Use with caution in patients with cardiac disease or those receiving cardiotoxic drugs. It is ineffective against respiratory depression caused by barbiturates, anesthetics, other nonnarcotic agents, or pathologic conditions.
<u>Precautions:</u>	May precipitate acute withdrawal symptoms in narcotic addicts. Effects of drug may not outlast effects of narcotics. Use with caution in patients with cardiac disease or those receiving cardiotoxic drugs. It is ineffective against respiratory depression caused by barbiturates, anesthetics, other nonnarcotic agents, or pathologic conditions.

Nitroglycerin, Tablets – Patient Assisted Medications

<u>Generic Name:</u>	Nitroglycerin
<u>Trade Name:</u>	Nitrostat
<u>Classification</u>	Antianginal, coronary vasodilator, antihypertensive
<u>Actions/Kinetics</u>	Primary action is relaxation of the vascular smooth muscle and dilatation of peripheral arteries and veins. Although venous effects predominate, nitro produces dilation of both arterial and venous beds. Promotes peripheral pooling of blood and decreases venous return to the heart, reducing left ventricular pressure (preload). Arteriolar relaxation reduces systemic vascular resistance and arterial pressure (afterload). Also increases blood flow through the collateral coronary vessels. Onset: 1-2 minutes Duration: 3-5 minutes.
<u>Indications:</u>	Patient must meet all of the following criteria <ul style="list-style-type: none">• The patient complains of chest pain• The patient has a history of heart problems• The patients physician has prescribed nitroglycerin• The systolic blood pressure is greater than 100 systolic• Medical control gives specific authorization for its use.
<u>Contraindications:</u>	<ul style="list-style-type: none">• The patient has hypotension, or a systolic blood pressure below 100.• The patient has a head injury• The patient is an infant/child• The patient has already taken the maximum prescribed dose
<u>Adverse Effects</u>	Headache, transient episodes of light-headedness related to blood pressure changes, hypotension, syncope, crescendo angina, rebound hypertension, and anaphylactoid reactions. Abd pain and vomiting may also be seen.
<u>How Supplied:</u>	Tablets 0.4mg S.L. (1/150).
<u>Dosage:</u>	One tablet S.L. 0.4 mg (gr. 1/150). May repeat same dosage for chest pain patient every 5 minutes x 3 if SBP remains 100 or greater if medical control gives authorization.
<u>Precautions:</u>	If patient is wearing a nitroglycerin patch or paste, an additional administration may not be appropriate. If patient is taking prescribed Viagra, consult medical control regarding nitro administration.

Nitroglycerin

<u>Generic Name:</u>	Nitroglycerin
<u>Trade Name:</u>	Nitrostat
<u>Classification</u>	Antianginal, coronary vasodilator, antihypertensive
<u>Actions/Kinetics</u>	Primary action is relaxation of the vascular smooth muscle and dilatation of peripheral arteries and veins. Although venous effects predominate, nitro produces dilation of both arterial and venous beds. Promotes peripheral pooling of blood and decreases venous return to the heart, reducing left ventricular pressure (preload). Arteriolar relaxation reduces systemic vascular resistance and arterial pressure (afterload). Also increases blood flow through the collateral coronary vessels. Onset: 1-2 minutes Duration: 3-5 minutes.
<u>Indications:</u>	<ul style="list-style-type: none">• Control of pain associated with angina pectoris/myocardial infarction.• Relief of pulmonary edema caused by left-sided heart failure.
<u>Contraindications:</u>	<ul style="list-style-type: none">• The patient has hypotension, or a systolic blood pressure below 100.• The patient has a head injury• The patient has already taken the maximum prescribed dose
<u>Adverse Effects</u>	Headache, transient episodes of light-headedness related to blood pressure changes, hypotension, syncope, crescendo angina, rebound hypertension, and anaphylactoid reactions. Abd pain and vomiting may also be seen.
<u>How Supplied:</u>	Tablets 0.4mg S.L. (1/150).
<u>Dosage:</u>	One tablet S.L. 0.4 mg (gr. 1/150). May repeat same dosage for chest pain patient every 5 minutes x 3 if SBP remains 100 or greater if medical control gives authorization.
<u>Precautions:</u>	<p>If patient is wearing a nitroglycerin patch or paste, an additional administration may not be appropriate.</p> <p>If patient is taking prescribed Viagra, consult medical control regarding nitro administration.</p>

Ondansetron

<u>Generic Name:</u>	Ondansetron
<u>Trade Name:</u>	Zofran
<u>Classification</u>	Anti-emetic
<u>Actions/Kinetics</u>	Prevention and control of severe nausea. Can be used in adult and pediatric patients.
<u>Indications:</u>	<ul style="list-style-type: none">• When non-sedating anti-emetic is desirable• Prevention and treatment of severe nausea
<u>Contraindications:</u>	<ul style="list-style-type: none">• Known hypersensitivity/allergy to Zofran• Patient's <2 yrs of age – ABSOLUTE contraindication
<u>Adverse Effects</u>	Headache, dizziness, diarrhea, may cause pain at injection site.
<u>How Supplied:</u>	4mg/2ml (2mg/ml) single dose vial
<u>Dosage:</u>	Adult 4mg IV (over 2-5 minutes) OR 4mg IM injection. May repeat up to 8 mg with medical control approval. Pediatric 0.1 mg/kg IV/IM. Max dose 4mg. NOT TO BE USED IN PATIENT'S UNDER 2 YRS OF AGE
<u>Precautions:</u>	Use with caution in patients with impaired liver function. Rate of administration should not be less than 30 seconds. NOTE: Zofran has no effect on motion sickness.

Oxytocin

<u>Generic Name:</u>	Oxytocin
<u>Trade Name:</u>	Pitocin
<u>Classification:</u>	Hormone
<u>Action/Kinetics:</u>	Stimulates contraction of the smooth muscles in the uterus, thereby constricting uterine blood vessels and controlling excessive bleeding or hemorrhage.
<u>Indications:</u>	Control of post-partum hemorrhage
<u>Contraindications:</u>	In the field oxytocin should not be used until after the baby is fully delivered. Be sure there is only one baby.
<u>Adverse Effects</u>	<ul style="list-style-type: none">• Fetal bradycardia (should not be administered prior to delivery of the infant)• Uterine rupture• Maternal hypotension, bradycardia and cardiac arrhythmia• Nausea/vomiting• Anaphylaxis
<u>How Supplied:</u>	10 units/1ml ampule or vial
<u>Dosage:</u>	10 units IM or 10-40 units added to 500cc LR/NS. Titrate IV administration to control bleeding and uterine tonus.
<u>Precautions:</u>	None

Promethazine

<u>Generic Name:</u>	Promethazine HCL
<u>Trade Name:</u>	Phenergan
<u>Classification:</u>	CNS depressant/antihistamine/antiemetic
<u>Action/Kinetics:</u>	One of a group of drugs (phenothiazines) with antipsychotic, antihistaminic, antiemetic, and anticholinergic effects. The drug can produce both CNS stimulation or CNS depression but its precise mechanism of action is not known.
<u>Indications:</u>	<ul style="list-style-type: none">• Useful to relieve anxiety and for sedation• For control of nausea and vomiting or motion sickness• Potentiates sedative effects of analgesics and other CNS depressants
<u>Contraindications:</u>	Comatose states
<u>Adverse Effects</u>	<ul style="list-style-type: none">• Pronounced sedation• Tissue irritation if given subcutaneously• Hypotension if given too rapidly
<u>How Supplied:</u>	25 or 50mg/ml ampule
<u>Dosage:</u>	Adult 12.5 - 50 mg IV/IM Pediatric 0.5 mg/kg IV/IM
<u>Precautions:</u>	None

Sodium Bicarbonate

<u>Generic Name:</u>	Sodium bicarbonate
<u>Trade Name:</u>	Sodium bicarbonate
<u>Classification</u>	Electrolyte replenisher, alkalizing agent
<u>Actions/Kinetics</u>	Neutralizes excess acids, returning blood and body fluid to a more normal pH, in which metabolic processes and medications work more effectively.
<u>Indications:</u>	Metabolic acidosis caused by circulatory insufficiency resulting from shock or severe dehydration, severe renal disease, cardiac arrest w/prolonged CPR, tricyclic overdoses, and hyperkalemia.
<u>Contraindications:</u>	None
<u>Adverse Effects</u>	Gastric distention, belching, flatulence, hypokalemia, metabolic alkalosis, hypernatremia, hyperosmolarity, hyperirritability or tetany. Extravasation of IV sodium bicarbonate may cause chemical cellulitis with tissue necrosis.
<u>How Supplied:</u>	Prefilled syringe 8.4% sodium bicarbonate solution (50-mEq/50 ml)
<u>Dosage:</u>	Adult Drug overdose: Consider Na Bicarb 50 mEq IV in tricyclic ingestions. Symptomatic renal patient: Consider Na Bicarb 50 mEq IV. Cardiac arrest-asystole-PEA: Consider Na Bicarb 50 mEq (1 amp) or 1 mEq/kg if arrest interval long or return of circulation after prolonged resuscitation. All subsequent doses ½ dose every 10 minutes. Pediatrics Cardiac arrest asystole-PEA: Consider (1 mEq/cc) if arrest interval long or upon spontaneous circulation. Give 1 mEq/kg or 1cc/kg IV/IO up to 50 cc.
<u>Precautions:</u>	Not recommended for routine use in cardiac arrest patients. Sodium bicarbonate inactivates norepinephrine, and dopamine, and forms a precipitate with calcium. Use with caution in the elderly with renal or cardiovascular insufficiency with or without CHF.

Succinylcholine (Anectine)

- Drug name:** Succinylcholine (Anectine)
- Classification:** Neuromuscular blocker- Depolarizing
- Description:** Competes with the acetylcholine receptor of the motor end plate on the muscle cell resulting in muscle paralysis.
- Onset and Duration:** 30 seconds to 1 minute, lasting 3 to 5 minutes.
- Indications:** To induce neuromuscular blockade for the facilitation of endotracheal intubation.
- Contraindications:** A history of malignant hyperthermia (MH), burns greater than 24 hours. Use with caution in children, cardiac disease, hepatic disease, renal disease, peptic ulcer disease, rhabdomyolysis, hyperkalemia.
- Adverse Reactions:** Anaphylactoid reactions, respiratory depression, apnea, bronchospasm, cardiac arrhythmias, MH, muscle fasciculation.
- Drug Interactions:** None noted.
- Dosage and Administration:**
Adult: 1.5mg/kg
Pediatric: 2.0mg/kg

Special Considerations: IV administration in infants and children can potentially result in profound bradycardia and, in some cases, asystole. The incidence of bradycardia is greater after the second dose. The occurrence of bradycardia can be reduced with the pretreatment of atropine. Phase 2 blocks--Following infusion or repeated doses of succinylcholine, phase 2 block may occur. The receptor blockade takes on characteristics of a non-depolarising neuromuscular block.

Vecuronium (Norcuron)

- Drug name:** Vecuronium (Norcuron)
- Classification:** Nondepolarizing neuromuscular blocker
- Description:** Operates by competing for the cholinceptors at the motor end plate thereby producing skeletal muscle paralysis.
- Onset and Duration:** One minute, lasting 30-40 minutes
- Indications:** To induce neuromuscular blockade for the facilitation of endotracheal intubation.
- Contraindications:** Use with caution in heart disease, liver disease, and myasthenia gravis.
- Adverse Reactions:** Muscle paralysis, apnea, dyspnea, respiratory depression, sinus tachycardia, urticaria.

Dosage and Administration:

Adult: 0.1mg/kg IV/IO

Pediatric: .01mg/kg IV/IO. Pediatric patients (10 to 16 years of age) have approximately the same dosage requirements (mg/kg) as adults and may be managed the same way. Younger pediatric patients (1 to 10 years of age) may require a slightly higher initial dose and may also require supplementation slightly more often than adults.

Infants under 1 year of age but older than 7 weeks are moderately more sensitive to Vecuronium bromide on a mg/kg basis than adults and take about 1 1/2 times as long to recover.

Special Considerations: Pregnancy class C. No studies done.

Etomidate (Amidate)

Drug name: Etomidate (Amidate)

Classification: Non-barbiturate hypnotic, Anesthetic

Description: A short acting sedative and anesthetic agent with no analgesic property

Onset and Duration: Onset: Within 15-45 seconds
Duration 3-12 minutes

Indications: Etomidate has become the induction agent of choice for most emergent RSIs because of its rapid onset, its hemodynamic stability, and cerebral perfusion pressure, and its rapid recovery.

Contraindications: Dose should be adjusted in hemodynamically compromised patients.

Adverse Reactions: Nausea and vomiting, dysrhythmias, breathing difficulties, hypotension, hypertension, involuntary muscle movement, pain at injection site.

Drug Interactions: Effects may be enhanced when given with other CNS depressants

Dosage and Administration:

Adult: 0.3mg/kg IV/IO push.

Pediatric: Same as adult

Special Considerations: Pregnancy Safety: Category C-no studies done. Carefully monitor vital signs. Can suppress adrenal gland production of steroid hormones which can cause temporary gland failure.

Appendix L – Removal of Taser Barbs

Indication:

To remove the remaining barb after use of a Taser by Law Enforcement agencies

Procedure:

1. Perform patient assessment. Always wear PPE.
2. Monitor vitals and LOC. Insure that vitals are in the normal limits for the situation.
3. Contact Medical Control if unsure whether to transport.
4. Expose the area where Taser barb has implanted under the skin.
5. Cut wires from the barb if they are still attached.
6. Make an "L" with your non-dominant had and stabilize the extremity (or area) in the general proximity of the probe. Keep your hand several inches away from the probe itself, and do not attempt to stretch the skin immediately around the probe.
7. Holding tension, use a needle-nose pliers (or similar tool) with gripping strength and grasp the end of the barb protruding out of the skin near the wire lead and firmly pull out the barb with one quick jerking motion.
8. Assess the skin where the barb was removed. Control any bleeding and dress the wound.

Precautions:

Patients should be in police custody and monitored by police for the safety of medical personnel. Do not remove Taser barbs from the face, neck or groin area, or imbedded in bone. These patients must be seen at the Emergency Department. Taser emit two barbs. Make sure both are removed. Treat all barbs as a bio-hazard and dispose as you would any other sharps. Some law enforcement agencies may direct you to place the probe back into the cartridge as evidence.

Caution:

Where both implanted barbs and wires are still connected to the Taser Gun, shock can still be delivered.

Do not forget the potential trauma that may have occurred before or after the patient was hit by the Taser (i.e. falls, bean bagged, mace ect).

Remember that the process of removing a Taser probe is not a time-critical emergency. Calm and decisive actions by the EMS provider will deliver the best patient care and help prevent biohazard exposure.

Appendix M – Pelvic Sheet or Other Commercial Pelvic Splint (T-POD, or Pelvic Binder)

A simple sheet, folded on the diagonal, can be used to stabilize the pelvis. When wrapped around the pelvis and tied in front, this device can align the pelvic bones and stabilize the pelvis. T-POD is the Trauma Pelvic Orthotic Device, the pelvic binder and a sheet used as a pelvic splint all surround the pelvis and bring the iliac crests into a normal alignment without encumbering the legs, the perineal area or the upper abdomen. Indications Suspected pelvic fracture. Precautions Placement of any of these devices under the patient must be done carefully to minimize unnecessary movement of the patient. Unnecessary movement may exacerbate internal bleeding.

Techniques Sheet:

- Fold the sheet on the diagonal and opposite ends to center to create a 20-24in. width.
- Place the folded sheet under the patient, on a backboard or pram prior to moving patient.
- Place sheet so that the top edge of the sheet is even with the top of the iliac crest.
- Tie the sheet in a square knot, pulling both ends simultaneously to minimize movement of the patient.

T-POD or Pelvic Binder:

- Unwrap the device and disconnect the front connector.
- Place the device under the patient, on a backboard or pram prior to moving patient.
- Place the device so that the top edge is even with the top of the iliac crest.
- Wrap the edges around the pelvis and secure the edges with the Velcro of the front connector
- The T-POD requires tightening by use of the strings in the front. Assess vital signs frequently.

Complications and Special Notes When assessing the pelvis, DO NOT rock the pelvis; apply gentle inward pressure on the iliac crests and downward pressure on the iliac crest of each side, placing one hand under the buttock and the other on the iliac crest. Assessment of distal circulation, sensation and movement both before and after application of the splint. If possible, use two people to apply and tighten the devices. This will help minimize any unnecessary movement of the patient.

Appendix N - Laryngeal Mask Airway (LMA)

Indication

- Inability to place ETT for airway management

Contraindications

- Intact gag reflex
- Pulmonary Fibrosis
- Airway burns/swelling

Procedure

1. Check tube for proper inflation/deflation.
2. Lubricate the back of the mask with a water-soluble jelly.
3. Pre-oxygenate the patient.
4. Insert the LMA into the hypopharynx until resistance is met. Inflate the cuff until a seal is obtained. (Note: This airway does not prevent aspiration of stomach contents.)
5. Connect the LMA to a bag-valve device and ventilate the patient.
6. Assess for adequate placement by auscultation (equal breath sounds over the chest and lack of sounds over the epigastrium with bagging), condensation in the LMA, symmetrical chest wall rise and at least one additional method: colorimetric end-tidal CO₂ detector, capnography, or esophageal tube detector (note: this device should be used prior to ventilation to be accurate).
7. Secure the device.

Appendix O - Continuous Positive Airway Pressure (CPAP)

CONTINUOUS POSITIVE AIRWAY PRESSURE (CPAP)

Continuous Positive Airway Pressure has been shown to rapidly improve vital signs, gas exchange, the work of breathing, decrease the sense of dyspnea, and decrease the need for endotracheal intubation in the patients who suffer from shortness of breath from congestive heart failure and acute cardiogenic pulmonary edema. CPAP is also shown to improve dyspnea associated with pneumonia, chronic obstructive pulmonary disease (asthma, bronchitis, emphysema). In patients with CHF, CPAP improves hemodynamics by reducing preload and afterload.

Indications:

Dyspnea / Hypoxemia secondary to congestive heart failure, acute cardiogenic pulmonary edema, pneumonia, chronic obstructive pulmonary disease (asthma, bronchitis, emphysema) and:

- A. Any patient who is complaining of shortness of breath for reasons other than pneumothorax or chest trauma
- B. Is awake and oriented
- C. Has the ability to maintain an open airway (GCS>10)
- D. Has a respiratory rate greater than 25 breaths per minute
- E. Has a systolic blood pressure above 90 mmHg
- F. Uses accessory muscles during respirations

Contraindications:

1. Pneumothorax
2. Respiratory arrest
3. Agonal respirations
4. Unconscious
5. Shock associated with cardiac insufficiency
6. Penetrating chest trauma
7. Persistent nausea/vomiting
8. Facial anomalies / stroke obtundation / facial trauma
9. Has active upper GI bleeding or history of recent gastric surgery

Procedure:

1. Assess patient for signs / symptoms of pneumothorax
2. Place patient in a sitting position
3. Assess vital signs and SpO₂ frequently
4. Attach ECG monitor
5. If BP <90 systolic contact Medical Control prior to beginning CPAP
6. Begin at lowest level of positive pressure available
7. Explain the procedure to the patient:
 - i. Patient requires reassurance to be used effectively.
 - a. Example: "You are going to feel some pressure from the mask but this will help you breath easier."
 - ii. Place delivery device over mouth and nose.

- iii. Instruct patient to breathe in through their nose slowly and exhale through their mouth as long as possible (count slowly and aloud to four then instruct to inhale slowly).
8. For CHF/Pulmonary Edema, titrate to 10cm/H₂O. For all other SOB, titrate to 5cm/H₂O
9. Check for air leaks
10. Treatment should be given continuously throughout transport to ED.
11. Continue to coach patient to keep mask in place and readjust as needed
12. If respiratory status / level of consciousness deteriorate, remove device and begin bag valve mask ventilation.
13. Documentation on the patient care record should include:
 - a. CPAP level
 - b. Frequent SpO₂ and Vital Sign assessment
 - c. Response to treatment
 - d. Any adverse reactions
 - e. End Tidal CO₂

Special Notes:

1. CPAP should be used with an appropriate size mask that fits the patient face snugly
2. Advise receiving hospital as soon as possible so they can prepare for the patient's arrival
3. Do not remove CPAP until transfer of care has taken place at receiving hospital
4. Continuous reassessment of patient airway
5. A nebulizer may be used to administer medications in the treatment of asthma

Appendix P – Therapeutic Hypothermia

Therapeutic Hypothermia	
<p>Purpose/Objective: To improve mortality & neurologic outcome of survivors of cardiac arrest through the use of induced hypothermia conditions. The immediate pre-hospital goal is to initiate mild therapeutic hypothermia, seeking a reduction in body temperature of at least 1.5°C, in all eligible comatose post arrest patients.</p> <p>Overview: Induced Therapeutic Hypothermia consists of three phases: induction, maintenance, & re-warming. While most aspects of all three phases will occur at the receiving hospital, when practical to do so, EMS personnel will initiate the induction phase while on scene or during transport to an appropriate receiving center.</p>	
Inclusion Criteria Patient must meet all of the following criteria	Contraindications Therapeutic hypothermia shall not be initiated if ANY of the following are present
<ol style="list-style-type: none"> 1. Cardiac arrest w/return of spontaneous circulation (ROSC) 2. 18 yrs. of age or older 3. CPR started within 15 minutes of arrest 4. Initial body temperature of >34°C 5. GCS of 8 or less 6. Pt. intubated with confirmed patent airway 	<ol style="list-style-type: none"> 1. DNR order or terminal condition 2. Coma unrelated to cardiac arrest (ie.. OD/intoxication, trauma, CVA, epilepsy) 3. Uncontrolled bleeding 4. Pregnancy (ie... known pregnancy or female with gravid uterus) 5. Mean Arterial Pressure (MAP) <80, (Use fluid &/or EPI drip to maintain MAP > 80) 6. Unable to establish endotracheal intubation 7. EtCO₂ < 20mmHg
Procedure	
1. Confirm patient eligibility and lack of contraindications as described above.	
2. Confirm ET tube placement via A) Visualization, B) Chest rise & fall, C) Appropriate breath sounds, & D) Confirmation device.	
3. Maintain EtCO ₂ at > 20mmHg. Do <u>not</u> hyperventilate the patient. Target EtCO ₂ is 40mmHg	
4. Establish bilateral large bore IV / IO access	
5. Obtain 12 lead EKG	
6. Maintain MAP at >80. Target MAP is 90-100. If necessary use Epi Drip at a rate of 2-10 mcg/kg/min to maintain target MAP.	
7. To maintain appropriate sedation, administer Versed 0.1 mg/kg IV/IO push; total amount not to exceed 10mg	
8. If patient shivering develops, administer Vecuronium at a rate of 0.1mg/kg IV/IO push; total not to exceed 10mg.	
9. Rapidly infuse cold (4°C/40°F) NS at 30ml/kg; bolus not to exceed 2L / 2000cc's	
10. Remove outer clothing. To protect patient modesty, undergarments should be left in place	
11. Place several ice packs in the patient's groin & axilla (armpits)	
12. Closely monitor patient & discontinue cooling if patient awakens or develops unstable arrhythmia, sustained MAP < 80mmHg, or severe bleeding	

Therapeutic Hypothermia
Transport Decision
1. Do not delay transport to initiate therapeutic hypothermia
2. All cardiac arrest patient who are receiving therapeutic hypothermia treatment, shall be transported, based on patient condition, either by ground ambulance or helicopter, to appropriate receiving facility capable of continuing therapeutic hypothermia / post arrest care.
3. Notify receiving facility of initiation of therapeutic hypothermia care & other necessary/appropriate patient care information. Recommend activation of STEMI alert protocols.
Documentation Requirements
In addition to regular documentation requirements, the following therapeutic specific information will be included in the patient care report / narrative
1. Vital signs including initial temperature as well as patient temperature upon arrival at the receiving center.
2. Signs of shivering
3. IV fluid administration
4. Medications administered (Name, time, dose & route)
5. EtCO ₂ value at time of initiation & at arrival at receiving center
6. Any change in responsiveness, improvement in level of consciousness
7. 12 lead EKG impression / results
8. EKG changes / dysrhythmias

Appendix Q – Influenza

Influenza

Patient Assessment:

If there HAS NOT been an influenza outbreak reported in the geographic area EMS providers should assess all patients as follows:

1. EMS personnel should stay more than 6 feet away from patients and bystanders with symptoms and exercise appropriate routine respiratory droplet precautions while assessing all patients for suspected cases of swine-origin influenza.
2. Assess all patients for symptoms of acute febrile respiratory illness (fever plus one or more of the following: nasal congestion/rhinorrhea, sore throat, or cough).
 - If no acute febrile respiratory illness, proceed with normal EMS care.
 - If symptoms of acute febrile respiratory illness, then assess all patients for travel to a geographic area with confirmed cases of swine-origin influenza within the last 7 days or close contact with someone with travel to these areas.
 - If travel exposure, don appropriate PPE for suspected case of swine-origin influenza.
 - If no travel exposure, place a standard surgical mask on the patient (if tolerated) and use appropriate PPE for cases of acute febrile respiratory illness without suspicion of swine-origin influenza (as described in PPE section).

If the CDC confirmed an influenza outbreak in the geographic area:

1. Address scene safety:
 - If PSAP advises potential for acute febrile respiratory illness symptoms on scene, EMS personnel should don PPE for suspected cases of swine-origin influenza prior to entering scene.
 - If PSAP has not identified individuals with symptoms of acute febrile respiratory illness on scene, EMS personnel should stay more than 6 feet away from patient and bystanders with symptoms and exercise appropriate routine respiratory droplet precautions while assessing all patients for suspected cases of swine-origin influenza.
2. Assess all patients for symptoms of acute febrile respiratory illness (fever plus one or more of the following: nasal congestion/rhinorrhea, sore throat, or cough).
 - If no symptoms of acute febrile respiratory illness, provide routine EMS care.
 - If symptoms of acute febrile respiratory illness, don appropriate PPE for suspected case of swine-origin influenza if not already on.

Personal protective equipment (PPE):

- When treating a patient with a suspected case of swine-origin influenza as defined above, the following PPE should be worn:
 - Fit-tested disposable N95 respirator and eye protection (e.g., goggles; eye shield), disposable non-sterile gloves, and gown, when coming into close contact with the patient.
- When treating a patient that is not a suspected case of swine-origin influenza but who has symptoms of acute febrile respiratory illness, the following precautions should be taken:
 - Place a standard surgical mask on the patient, if tolerated. If not tolerated, EMS personnel may wear a standard surgical mask.
 - Use good respiratory hygiene – use non-sterile gloves for contact with patient, patient secretions, or surfaces that may have been contaminated. Follow hand hygiene including hand washing or cleansing with alcohol based hand disinfectant after contact.
- Encourage good patient compartment vehicle airflow/ ventilation to reduce the concentration of aerosol accumulation when possible.

Infection Control:

EMS agencies should always practice basic infection control procedures including vehicle/equipment decontamination, hand hygiene, cough and respiratory hygiene, and proper use of FDA cleared or authorized medical personal protective equipment (PPE).

Interim recommendations:

- Pending clarification of transmission patterns for this virus, EMS personnel who are in close contact with patients with suspected or confirmed swine-origin influenza A (H1N1) cases should wear a fit-tested disposable N95 respirator, disposable non-sterile gloves, eye protection (e.g., goggles; eye shields), and gown, when coming into close contact with the patient.
- All EMS personnel engaged in aerosol generating activities (e.g. endotracheal intubation, nebulizer treatment, and resuscitation involving emergency intubation or cardiac pulmonary resuscitation) should wear a fit-tested disposable N95 respirator, disposable non-sterile gloves, eye protection (e.g., goggles; eye shields), and gown, unless EMS personnel are able to rule out acute febrile respiratory illness or travel to an endemic area in the patient being treated.
- All patients with acute febrile respiratory illness should wear a surgical mask, if tolerated by the patient.

Inter-facility Transport

EMS personnel involved in the inter-facility transfer of patients with suspected or confirmed swine-origin influenza should use standard, droplet and contact precautions for all patient care activities. This should include wearing a fit-tested disposable N95 respirator, wearing disposable non-sterile gloves, eye protection (e.g., goggles, eyeshield), and gown, to prevent conjunctival exposure. If the transported patient can tolerate a facemask (e.g., a

surgical mask), its use can help to minimize the spread of infectious droplets in the patient care compartment. Encourage good patient compartment vehicle airflow/ventilation to reduce the concentration of aerosol accumulation when possible.

Interim Guidance for Cleaning EMS Transport Vehicles After Transporting a Suspected or Confirmed Influenza Patient

The following are general guidelines for cleaning or maintaining EMS transport vehicles and equipment after transporting a suspected or confirmed influenza patient. This guidance may be modified or additional procedures may be recommended by the Centers for Disease Control and Prevention (CDC) as new information becomes available.

Routine cleaning with soap or detergent and water to remove soil and organic matter, followed by the proper use of disinfectants, are the basic components of effective environmental management of influenza. Reducing the number of influenza virus particles on a surface through these steps can reduce the chances of hand transfer of virus. Influenza viruses are susceptible to inactivation by a number of chemical disinfectants readily available from consumer and commercial sources.

After the patient has been removed and prior to cleaning, the air within the vehicle may be exhausted by opening the doors and windows of the vehicle while the ventilation system is running. This should be done outdoors and away from pedestrian traffic. Routine cleaning methods should be employed throughout the vehicle and on non-disposable equipment.

For additional detailed guidance on ambulance decontamination EMS personnel may refer to "[Interim Guidance for Cleaning Emergency Medical Service Transport Vehicles during an Influenza Pandemic](#)" on the CDC website.

EMS Transfer of Patient Care to a Healthcare Facility

When transporting a patient with symptoms of acute febrile respiratory illness, EMS personnel should notify the receiving healthcare facility so that appropriate infection control precautions may be taken prior to patient arrival. Patients with acute febrile respiratory illness should wear a surgical mask, if tolerated. Small facemasks are available that can be worn by children, but it may be problematic for children to wear them correctly and consistently. Moreover, no facemasks (or respirators) have been cleared by the FDA specifically for use by children.

