Davis County Emergency Medical Services System

Emergency Medical Services Reference Guidelines

Updated: June 2022
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ATTACHMENTS

1) Davis County Medical Incident Response Plan (MCI Plan)
   Source: Davis County Government - Sheriff’s Office Website
   www.daviscountyutah.gov/docs/librariesprovider10/Sheriffs/mci-plan.pdf

2) Utah Administrative Rules EMS R426
   Source: Utah Bureau of Emergency Medical Services
   Website http://BEMSP.utah.gov

3) Advance Care Directives; Utah Provider Order for Life Sustaining Treatment (POLST) “Life with Dignity/DNR”
   Note: STATE LAW
   Source: Utah Bureau of Emergency Medical Services
   Website http://BEMSP.utah.gov

4) 2020 Utah EMS Protocol Guidelines
   Note: DAVIS COUNTY EMS Revised 11/11/2020
   Page 11; Death Determination and Termination of Resuscitation > Trauma Abuse Guidelines> “closes” revised to “closest”
   Page 23; Cardiac Arrest> Paramedic> D50 chloride revised to reflect calcium chloride
   Page 111; Fentanyl adult dose revised to "Fentanyl 20-50mcg q10 minutes IV/IO/IM/IN, Max dose 100mcg."
   Page 112; Ketamine adult dose revised to "Ketamine 30mg diluted in 100mL of normal saline IV/IO infused over 15 minutes OR until analgesia is attained. May repeat x 1. Max dose 60mg."
   Page 187-227; EMS Medications, Appendix 1 Revised to incorporate Davis County EMS Medications.
   Changed:
   TXA p.140, Adult>Transexamic Acid (TXA) revised to "1 gram IV if within 3 hours of delivery for post-partum hemorrhage as per criteria noted in medication appendix."
   Ketamine p.196, Adult>Pain or Procedural-related Anxiety> "IV/IO – 0.1-0.3 mg/kg (max e0mg) diluted in 100ML of normal saline IV/IO drip over 15 minutes" revised to "IV/IO – 30mg diluted in 100mL of normal saline infused over 15 minutes OR until analgesia is attained. May repeat x 1. Max dose 60mg."
   Added:
   Diazepam (Valium) p. 198
   Etomidate (Amidate) p. 201
   Fentanyl p. 202
   Haloperidol (Haldol) p. 205
   Hydroxycobalamin (Cyanokit) p. 206
   Tranexamic Acid/TXA (Cyklokapron) p. 213, "Dose: Mix 1g/1000 ml of TXA in 100ml NS. Infuse over 10 min." revised to "Dose: Mix 1g/10 ml of TXA in 100ml NS. Infuse over 10 min."
   Promethazine p. 222
   Rocuronium Bromide (Zemuron) p. 223
   Succinylcholine (Anectine) p. 225
   Vecuronium (Norcuron) p. 227

   Source: Utah Bureau of Emergency Medical Services
   Website http://BEMSP.utah.gov
Page 111; IV added as source of administration for Acetaminophen
Page 181; Removed from indication paragraph “or ventricular asystole. Second drug for asystole for PEA.”
Page 236; Updated pages to label each model’s instructions. Added instructions for Taser 7 model. Included a Taser 7 barb removal illustration.
Page 240-241; Appendix M – Therapeutic Hypothermia instructions removed.
Page 242; Removed “Adult and pediatric patients in asystole” from Candidates paragraph.
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. Efficient and effective EMS Dispatch.
3. Basic Life Support response in less than five minutes from dispatch, 90% of the time.
4. Advanced Life Support in less than eight minutes from dispatch, 90% of the time.
5. Efficient and Effective 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 National Association of State EMS Officials-NASEMSO)

Emergency Medical Services (EMS) is the integrated system of medical response established and designed to respond, assess, treat, and facilitate the disposition of victims of acute injury or illness and those in need of medically safe transportation. (National Association of State EMS Officials-NASEMSO)

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,

DEFINITIONS

**Davis County Advanced Life Support Response: (Beginning January 1, 2023)**

Emergency response consisting of a State of Utah, Bureau of EMS licensed vehicle staffed with at least two State of Utah licensed paramedics.

**Davis County Basic Life Support Response:**

Emergency response consisting of a State of Utah, Bureau of EMS licensed vehicle staffed with at least two State of Utah licensed EMTs, AEMTs, or paramedics, or any combination thereof.

**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, and facilities.

MEMBERSHIP

Council membership will follow the guidelines of the Resolution by the County Commissioners (Resolution 88-175). 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.
GENERAL GUIDELINES

A. Remember: Courtesy to the patient, the patient’s family and other emergency care personnel is of utmost importance.

B. An approved patient care report (PCR) must be completed on all patients. This form may be electronic or hard copy and made accessible to the receiving 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).

F. Paramedic providers shall deploy two paramedics to the scene of 911 calls for service requiring Advanced Life Support response, unless otherwise determined by local selective medical dispatch system protocols.

G. Whenever feasible, the closest Advanced Life Support Response Unit shall be dispatched to the scene of 911 calls for service requiring Advanced Life Support response regardless of geopolitical boundaries.

REFERENCES


- Utah Administrative Code R426 Health, Family Health and Preparedness, Emergency Medical Services, Section 4, Operations.

- Utah Emergency Medical Services System Act, Utah Code (26-8a-4)
4. COUNCIL MEMBERS

Chief Dave Olsen
Clinton City Fire Department

Battalion Chief Dave Youngberg
North Davis Fire District

Chief Mark Becraft
North Davis Fire District

Chief Aaron Byington
Syracuse City Fire Department

Chief Paul Erickson
Kaysville City Fire Department

Chief Daniel Gallegos
Hill Air Force Base Fire

Chief Richard Love
Farmington City Fire Department

Chief Dane Stone
South Davis Metro Fire Agency

Chief Derek Tolman
South Weber Fire Department

Chief Kevin Ward
Layton City Fire Department

Sheriff Kelly Sparks
Davis County Sheriff's Office

EMS Medical Directors

Dr. Christine Anderegg, Medical Director
Syracuse City Fire Department

Dr. Matthew Feil, Medical Director
Clinton City Fire Department

Dr. Scott Fredrickson, Medical Director
Farmington City Fire Department

Dr. Summer Grace, Medical Director
South Weber Fire Department

Dr. Shay Holley, Medical Director North
Davis Fire District

Dr. Mark Oraskovich, Medical Director
Layton City Fire Department

Dr. Bill Swiler, Medical Director
South Davis Metro Fire

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

Dr. Blake Yerman, Medical Director
Kaysville City Fire Department

At-Large Non-Voting Attendees

Commissioner Lorene Kamalu
Davis County Commission

Brian Hatch, Director
Davis County Health Department

Tami Goodin
Utah EMS Bureau

Scott Zigich, Risk/Safety Compliance Mgr.
Davis School District

Davis Hospital Representative

IHC Layton Hospital Representative

Lakeview Hospital Representative

McKay-Dee Hospital Representative

Ogden Regional 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, 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 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 lifesaving 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 trauma victim with an altered level of consciousness is considered to be so critically injured as to have given implied consent to be treated and transported as per this protocol.

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. 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.
   - Retarded or mentally deficient patients are not included in the above provision.
   - Patients who are intoxicated and conscious are considered incapable of making their own decisions.
   - 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.
   - 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.
   - 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.
7. 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


8. **PSYCHIATRIC PATIENTS**

The purpose of this suggested policy is to establish procedures that law enforcement officers, ambulance workers, mental health workers, and hospital personnel should 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 considered dangerous to himself or others.

1. **LAW ENFORCEMENT RESPONSE.** When a law enforcement officer comes in contact with a suspected 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 in mental health crisis, the officer should transport the person to a hospital for a medical clearance evaluation. The jail will require one prior to the person being accepted into the jail.

         The jail does have Crisis Workers from Davis County Behavioral Health most days during the day time hours, the law enforcement officer should call the jail's booking desk at 801-451-4222 and see if a Crisis Worker is on duty and available.

      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 a hospital for evaluation.

         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. In most, but not all cases, transport via the appropriate EMS transport agency is preferred.

         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 transport and/or arrange transport to a hospital for evaluation. An additional option for law enforcement/EMS is to transport the subject to the Receiving Center in Farmington. (See accompanying document "Receiving Center Model Policy."

2. MENTAL HEALTH AND AMBULANCE RESPONSE TO MENTALLY ILL PERSONS

Davis Hospital & Medical Center, IHC Layton Hospital and Lakeview Hospital, have established procedures for the evaluation of mentally ill persons for possible involuntary admission to a hospital or mental health facility.

A. Law enforcement agencies should transport their mentally ill persons for evaluation to Davis Hospital & Medical Center, IHC Layton Hospital or Lakeview Hospital. Once it is determined that a mental health crisis exists and immediate safety concerns have been addressed, responding EMS transport should consider the following:

- Introduce themselves and attempt to obtain the person’s name.
- Be patient, polite, calm, courteous and avoid overreacting.
- Speak and move slowly and in a non-threatening manner.
- Moderate the level of direct eye contact.
- Remove distractions or disruptive people from the area.
- Demonstrate active listening skills (e.g., summarize the person’s verbal communication).
- Determine if previous mental health diagnosis has been made, and if so, what diagnosis.
- Determine if the individual has been prescribed medications for diagnosed mental health conditions and if they have been compliant.
- Provide for sufficient avenues of retreat or escape should the situation

First responders generally should not:

- Use stances or tactics that can be interpreted as aggressive.
- Allow others to interrupt or engage the person.
- Corner a person who is not believed to be armed, violent or suicidal.
- Argue, speak with a raised voice or use threats to obtain compliance.

B. 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 a psychiatric evaluation, will stay with the person until they are involuntarily admitted to a hospital or mental health facility. The law enforcement officer will fill out the state form, "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. In the case of ambulance transport
of mental subjects, the law enforcement officer will provide a copy of the state form to the ambulance personnel for their records.

C. Transportation of Mentally Ill Persons. Mentally ill persons should preferentially be transported by ambulance to the hospital or Receiving Center. Mentally ill persons can be transported in law enforcement vehicles at the discretion of the law enforcement officer who has jurisdiction.

1) Ambulance response. Ambulance personnel may transport non-violent mentally ill persons at the request of family members, law enforcement, hospitals, or mental health facilities. Ambulance personnel will request jurisdictional police assistance if the person considered violent or makes threats of violence.

2) Violent, out-of-control mentally ill. A law enforcement officer may request an ambulance to assist with transportation of mentally ill person. It will be the responsibility of the requesting law enforcement agency to provide protection and assistance to the ambulance personnel while the mentally ill person is being transported to the hospital or mental health facility.

3) Violent, out-of-control mentally ill persons who require restraints. If, the law enforcement officer determines that the patient is mentally ill, violent, and requires involuntary admission, and that this person is violent to the extent that they may be harmful to themselves, law enforcement, or EMS personnel, it will be deemed appropriate to restrain the individual as follows.

i) Mechanical restraints. Mechanical restraints should be attempted as the initial means to control a violent individual. These may include handcuffs, soft leather restraints, spit hoods 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 law enforcement officer and/or EMS personnel, the individual may be of further harm to themselves, or expose EMS personnel and law enforcement officers to risk, i.e. through blunt trauma by kicking or hitting, through biting, or through exposing EMS personnel and law enforcement officers to bodily fluids. Chemical restraint/sedation should be applied as outlined in the most current version of EMS protocols,
i.e. “Violent Patient/Chemical Sedation/Taser Barb Removal.” Once chemical sedation has been administered to the individual EMS personnel will transport the patient to the hospital will be notified that chemical restraint/sedation was necessary and provide an appropriate assessments, vitals, and outcomes of treatment administered.

D. Documentation. Whenever mechanical or chemical restraints are administered to facilitate transport of a mentally ill person; EMS personnel should document the reason for restraint, the method used to restrain the patient, the effectiveness, and any side effects or complications.

E. Law Enforcement Protection Requested at the Hospitals. The law enforcement officer who has jurisdiction over a mental subject that is being evaluated for involuntary admission to a hospital or mental health facility may be asked to stand by and provide public safety duties. Every effort by hospital staff to expedite the admitting and evaluation process so that the law enforcement officer may return to their respective service area and duties.

F. Other Transportation Requests. Transporting patients from one hospital to another hospital or in-patient mental health facility will be facilitated by local EMS agencies, as directed by their departmental policies/procedures. Mentally ill persons that remain violent or potentially violent will be transported by Davis County Sheriff’s Department personnel.
9. **MEDICAL INCIDENT RESPONSE PLAN**

Please refer to the Davis County Sheriff’s office Medical Incident Response plan. 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)
3. Mass Casualty Trailers (MCI Trailers)
DAVIS COUNTY
MEDICAL INCIDENT
RESPONSE PLAN

(MCI Plan)
ANNEX A

DAVIS COUNTY
MEDICAL INCIDENT RESPONSE PLAN

Davis County EMS

Davis County Sheriff
South Davis Metro Fire
Farmington Fire
Kaysville Fire
Hill Air Force Fire
Layton Fire
Clearfield Fire
Syracuse Fire
Clinton Fire
Sunset Fire
South Weber Fire
Davis Hospital
Lakeview Hospital
MEDICAL INCIDENT RESPONSE PLAN

This Plan identifies emergency medical response disaster protocols and procedures in Davis County. All EMS providers in Davis County should familiarize themselves with this plan through training and exercising. It is the purpose of this plan to formally standardize disaster medical operations within Davis County. This plan will follow the National Incident Management System (NIMS) command structure. By doing so, all jurisdictions that respond to a medical disaster in Davis County will do so in a fully integrated manner thus enhancing resource effectiveness and efficiency. The plan is divided into three Areas or Protocols: 1) On-scene, 2) Casualty Collection Points (CCP), and 3) Mass Casualty Trailers (MCI trailers).
MEDICAL PLAN OVERVIEW

This Plan is a joint effort between all EMS providers in Davis County. It identifies and outlines emergency medical response disaster protocols and procedures in Davis County. All EMS providers in Davis County should familiarize themselves with this plan through training and exercising.

The purpose of this plan is to formally standardize disaster medical operations within Davis County. By doing so, all jurisdictions that respond to a medical disaster in Davis County will do so in a fully integrated manner thus enhancing resource effectiveness and efficiency. This plan will follow the National Incident Management System (NIMS) command structure. The goal is to make response to a Mass Casualty Incident in Davis County, a standardized procedure complete with guidelines which all EMS providers are familiar with, and can subscribe to. This will decrease confusion at an incident because only one system will be used for response throughout the county, no matter the jurisdiction.

The plan is divided into three Areas or Protocols:

1) On-scene
2) Casualty Collection Points (CCP), and
3) Mass Casualty Trailers (MCI trailers).

The On-scene Protocol describes:

- 5 levels of MCI response
- Standard Operating Guidelines for resources on-scene ICS
- Medical Branch Positions
- Documentation Forms

The Casualty Collection Points (CCP) Protocol describes:

- Activation of the CCPs

The On-scene Protocol and the MCI trailers are used by EMS responders at a single site Mass Casualty Incident. The Casualty Collection Point Protocol is for use by a city or the county to gather injured victims from a widespread incident. The CCP Protocol is only activated by a city or county EOC. It is a location where citizens can gather wounded from all around the city(ies) or county, and have a single community site where citizens can transfer the wounded over to the EMS system.
ON-SCENE PROTOCOL

Introduction:

The “On-Scene Protocol” of the Davis County Medical Incident Response Plan outlines a specific on-scene management system. The Plan includes a triage system which will be consistently applied in all mass casualty incidents in the county, by all jurisdictions and agencies responsible for, or supportive of, emergency medical services. The On-Scene Protocol is comprised of five (5) levels:

- Level 1 - Medical Priority Dispatch 1 - 5 Patients
- Level 2 - Expanded Medical Emergency 6 - 15 Patients
- Level 3 - Major Medical Emergency 16 - 35 Patients
- Level 4 - Medical Disaster 36+ Patients
- Level 5 - CCP Activation EOC Activated

Level 1, Emergency Medical is a normal day-to-day operational response and is not a declaration of extraordinary circumstances. However, for clarity and consistency, normal day operational response needs to be defined within the on-scene protocol for comparison and to demonstrate where it fits operationally within the overall incident response plan. Level 2 - Expanded Medical Emergency, Level 3 - Major Medical Emergency, Level 4 - Medical Disaster protocols, and Level 5 - CCP Activation, are a declaration of an extraordinary medical situation requiring additional resources and formalized ICS medical branch positions.

Response levels 1 through 4 are protocols which are formally declared by on-scene commanders or medical supervisors to alert dispatch that additional resources will be required. Commanders will communicate the response level information to dispatch. The levels are determined by the number of casualties at an incident, and Commanders/Medical Supervisors will formally “declare” the incident.

Response Level 5, CCP Activation, is part of the on-scene protocol that denotes an extremely extraordinary medical incident that affects a large area, and possibly the entire county. However, this response level, is not declared by an on-scene commander, but rather, it is declared by a city or county Emergency Operations Center (EOC). The EM functional representative in the EOC should be able to declare level 5, but only after counseling with the Chief Elected Official.

Note: Refer to the appropriate response level on the following pages for resource guidelines.
Summary:

Level 1 – Medical Priority Dispatch
Level 2 - Expanded Medical Emergency
Level 3 - Major Medical Emergency
Level 4 - Medical Disaster
Level 5 - CCP Activation

Normal day-to-day operations. Declared by dispatch and confirmed by ICS
Declared by Incident Command, confirmed by dispatch. Extraordinary circumstances requiring additional resources, and notifications. Mass Casualty Incident trailers are deployable at these levels.
EOC Activated. Activates one or more Casualty Collection Points in the county.

Operational Guidelines

The following response levels have been developed for "Mass-Casualty Incidents" and correspond with all jurisdictional response plans within Davis County.

<table>
<thead>
<tr>
<th>Level # - Name of protocol</th>
<th>Number of patients/Who declares</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level 1 - Medical Priority Dispatch</td>
<td>1 - 5 Patients / Dispatch</td>
</tr>
<tr>
<td>Level 2 - Expanded Medical Emergency</td>
<td>6 - 15 Patients / On-scene command Level</td>
</tr>
<tr>
<td>Level 3 - Major Medical Emergency</td>
<td>16 - 35 Patients / On-scene command</td>
</tr>
<tr>
<td>Level 4 - Medical Disaster</td>
<td>36+ Patients / On-scene command</td>
</tr>
<tr>
<td>Level 5 - CCP Activation</td>
<td>Non-specific / City or CountyEOC</td>
</tr>
</tbody>
</table>

Declaration of a Response Level

First arriving responders must declare and communicate the response level to Dispatch. The level is dependent upon the number of casualties (for levels 1-4) and will guide resource allocation to the incident if the protocol is followed correctly. Responders and dispatchers should refer to the appropriate resource guidelines which will be outlined later.

Level 1
Dispatch will declare Level 1 emergencies. Level 1 emergencies are normal day-to-day operations and need only be dispatched following the guidelines established by the medical priority dispatch system. The “Level 1” emergency response need not be formally declared. It is normal day-to-day medical response.

Level 2 - 4
Dispatchers can and should indicate to first responders what level of incident that they may be responding to if the numbers of injured are greater than a Level 1 emergency. 911 call takers are generally the first to receive such information and should inform dispatchers of the potential for a higher level response if so indicated by the caller. On-scene command will declare levels 2 - 4. If dispatch notifies first responders while they are enroute that an incident may be a high level response, then those first responders, while enroute, have the option of requesting additional resources at that time. This will depend upon the
information coming from what they deem to be reliable sources. However, only upon arrival of the first responding units, will the actual level be officially declared. It is important to note that the actual response level is not officially declared until a trained public safety responder is on scene. *On-scene responders do not declare a Level 5.* Resources outlined in levels 1-4 are suggested. On-scene Commanders have the option of requesting more or fewer resources as outlined here-in.

<table>
<thead>
<tr>
<th>Level # - Name of protocol</th>
<th>Who declares</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level 1 - Medical Emergency</td>
<td>Dispatch</td>
</tr>
<tr>
<td>Level 2 - Expanded Medical Emergency</td>
<td>On-scene command</td>
</tr>
<tr>
<td>Level 3 - Major Medical Emergency</td>
<td>On-scene command</td>
</tr>
<tr>
<td>Level 4 - Medical Disaster</td>
<td>On-scene command</td>
</tr>
<tr>
<td>Level 5 - CCP Activation</td>
<td>City or CountyEOC</td>
</tr>
</tbody>
</table>
Level 5
A Level 5 emergency, Casualty Collection Point (CCP) Activation, will only be declared by a City or County
Emergency Operations Center. The determination for activation of a CCP is not “numbers” oriented; i.e.,
determined by the number of victims, but rather, it is determined by the severity of the incident. A Level 5
emergency will be characterized by an incident that 1) effects the entire county, 2) has overwhelmed the
EMS system and both hospitals in the county, 3) disrupts transportation of injured to the hospitals, and 4)
hinders ability of hospital workers to report to their duty stations at the hospitals. The activation of a Level 5
medical response would be due to a catastrophic event that basically effects the entire county. It would also,
more than likely, require the intervention of State resources and possibly federal response resources from the
U.S. Public Health Services.

If a Level 5 emergency is declared, then a CCP Commander will be dispatched to that site. This will usually
be an engine company or medic unit depending upon the availability of resources. Citizens who are C.E.R.T.
volunteers will assist at these CCPs and will be under the direction of a Branch Director. If such a director is
not available, then the most qualified C.E.R.T. volunteer will command the site until such time as a qualified
replacement arrives. A qualified replacement is an EMT or Paramedic who is familiar with and understands
the mission and capabilities of the C.E.R.T. program. CCPs are, but not limited to the pre-determined Points
of Distribution (PODs) which can be found on pages 56-60 in this plan.

On-scene Resources
The intent of the On-scene Protocol is to create an easy method whereby resources can be requested by on-
scene commanders. By creating this protocol, dispatch can easily anticipate additional resources that
Commanders will need by referring to the checklists provided for each response level. All that an on-scene
Commander need do, is to declare the type of incident and dispatch can automatically deploy an
additional predetermined number and type of resources as outlined in this plan unless otherwise
instructed by the IC. This is based upon the procedure that on any given call, dispatch will use the medical
priority system which does not delineate numbers of resources. Standard dispatch is “no more than, 1 engine,
1 rescue and 1 ambulance.” All response levels will take this “base” number, and will direct dispatch to
deploy “additional” resources. “Additional” resources are in addition to this initial Level 1 dispatch.
Therefore, for example, an “additional 2 engines” will mean that there will be 3 engines on site because of
the initial Level 1 dispatch. Commanders do retain the right to request additional or fewer resources than
outlined in this plan.

Additionally, the On-scene Protocol provides for the planning, maintenance, and use (deployment) of Mass
Casualty Incident (MCI) Trailers. These trailers will be staged strategically throughout the county and will be
a quick response support to an incident commander for medical supplies at an MCI. These trailers will be
stocked with supplies sufficient to handle 15 victims. There will be 3 trailers, all of which can be requested at
an incident if necessary.

Note: Refer to the appropriate response levels on the following pages for resource guidelines.
Summary - On-scene Resources

Level 1 - Medical Priority Dispatch (1-5)
- Medical Priority Dispatch
  - Usually this is 1 Engine Company, 1 Medic unit, 1 Ambulance
  - All subsequent levels listed below are based upon initial dispatch “plus” additional resources
  - All subsequent levels are based upon Level 1 resources being present
  - All subsequent levels assume initial dispatch of a complete Level 1 response
  - IC can request additional resources without moving to a higher level (i.e. request 1 ambulance)

Level 2 - Expanded Medical Emergency (6-15)
- Deploy an additional 1 Engine Company, 1 Medic Unit, 3 Ambulances, 3 Chief Officers
  - This will make a total deployment of 2 engines, 4 ambulances, 2 Medic Units, and 3 Chief Officers onsite.
- Deploy 1 EMS Helicopter (Designate a landing zone / Standby fire engine for safety)
- Notify Hospitals

Level 3 - Major Medical Incident (16-35)
- Deploy an additional 2 Engines, 2 Ambulances, and 1 Medic Unit, 1 Chief Officer,
  - This will make a total deployment of 4 engines, 6 ambulances, 3 Medic Units, and 4 Chief Officers onsite.
- Deploy 2 EMS Helicopters (Designate a landing zone / Standby fire engine for safety)
- Deploy 1 MCI Trailers
- Deploy 1 UTA/School Bus
- Deploy MCC Unit (Mobile Command Center)
- Notify out of County Hospitals and obtain a bed count if possible
  - Note:
    - Consider additional air ambulance and/or UTA/School buses
    - Notify Red Cross
    - Consider additional MCI Trailer (2nd trailer)

Level 4 - Medical Disaster (36+)
- Deploy an additional 3 Engines, 3 Ambulances, 3 Medic Units, 2 Chief Officers
  - This will make a total deployment of 7 Engines, 9 Ambulances, 6 Medic Units, 6 Chief Officers onsite.
- Deploy 4 EMS Helicopters (Designate a landing zone / Standby fire engine for safety)
- Deploy 2 MCI Trailers
- Deploy 2 UTA/School buses
- Deploy MCC (Mobile Command Center)
- Notify out of County Hospitals and obtain a bed count if possible
  - Note:
    - Place additional air ambulances on stand-by
    - Consider additional MCI trailer as necessary
    - Consider Scene Support units
    - Notify Red Cross
Level 5 - CCP Activation (Non-specific)
- EOC Activated (City or County)
-- Deploy EMS Resources as available to activated sites
-- Deploy at least one engine company and/or Medic Unit if possible to CCP
-- Establish a Branch Supervisor for the CPP

Recommended Triage Principles

RECOGNITION OF THE ADOPTION OF THE S.T.A.R.T. PROGRAM FOR TRIAGE

Davis County officially adopts the S.T.A.R.T. Triage system (Simple Triage and Rapid Transport) as the triage system to be used during a disaster situation. The objective of triage is to accomplish the greatest medical good for the greatest number of patients. S.T.A.R.T. is not used for normal daily protocol.

A primary goal of triage is to select the patients in greatest need of urgent care. It is recognized that triage in a mass casualty situation offers little time or resources for doing CPR, taking blood pressures, or even counting accurate pulse rates. However, minimal intervention to stabilize the airway or to control hemorrhage is done at the same time as the initial triage.

S.T.A.R.T. Triage allows the first responders to triage patients in 60 seconds or less, depending on three simple observations. These physical assessments are:

- Respiration;
- Pulse, and;
- Mental Status.

The S.T.A.R.T. plan does not attempt to make diagnoses.

Triage personnel must tag ALL patients. IT IS A TIME CONSUMING AND OFTEN FATAL MISTAKE TO TRIAGE IN THE FIELD WITHOUT TAGGING A PATIENT. Patients are tagged so that rescuers arriving later can immediately turn their attention to the patients most in need. A triage tag has been adopted by this jurisdiction in conjunction with the State Department of Health.

Triage personnel must rate or place the injured into one of four categories:

<table>
<thead>
<tr>
<th>Category</th>
<th>Tag</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Immediate</td>
<td>Red Surveyor Tape</td>
</tr>
<tr>
<td>2. Delayed</td>
<td>Yellow</td>
</tr>
<tr>
<td>3. Minor</td>
<td>Green</td>
</tr>
<tr>
<td>4. Deceased</td>
<td>Black or Black/White Stripe (non salvageable)</td>
</tr>
</tbody>
</table>

Immediate: Ventilation present only after positioning the airway; OR respirations over 30 per minute; OR radial pulse not present and/or perfusion greater than 2 seconds; OR patient fails to follow simple commands.

Delayed: Any patient who does not fit either the immediate or minor categories.

Minor: These patients are separated from the general group at the start of triage by ordering, "Anyone who can walk...," followed by an area assignment for the patients to walk to. These patients are ambulatory and can move out of the triage area into an assigned treatment area or they can even be asked to assist medical personnel.

Deceased: No ventilation present even after attempting to position the airway twice.
NOTE: There is only one Triage Officer per 10 victims. This is a very important concept.

“Immediate” Category

Patients designated as “Immediate,” are those that have life threatening injuries that are correctable, and with immediate definitive care, their life can be saved. These are the Golden Hour Patients.

Basic S.T.A.R.T. triage defines immediate as:

- Respiration: Greater than 30/min. or less than 10/min. and where the airway must be physically or mechanically maintained.
- OR:
- Pulse: Absent radial pulse.
- OR:
- Mental: Fails to follow simple commands.

NOTE: These patients are tagged “Red.”

“Delayed” Category

Patients designated as “Delayed,” are those requiring therapy, but can be delayed without significant risk to life or limb. In addition, where resources are truly overwhelmed, those patients whose chances of survival are not dependent on extensive and/or highly sophisticated procedures to sustain life.

Basic S.T.A.R.T. triage defines Delayed as:

- Ventilation: Between 10 and 30/min.
- AND:
- Radial Pulse: Radial pulse present.
- AND:
- Mental-Status: Follows simple commands - Non-ambulatory.

NOTE: These patients are tagged “Yellow.”
“Minor” Category

Patients classified as “Minor,” are those whose therapy, if required, can be delayed with little risk to life or limb. In addition, where the mechanism of injury warrants a complete physical assessment, patients should be offered, and, a complete physical performed. These patients may not require, or may refuse, transport to a hospital for a complete physical; however, documentation should be completed prior to release. These patients are also sometimes referred to as the “Walking Wounded.”

Basic S.T.A.R.T defines Minor as:

- Ventilation: Between 10 and 30/min.
- AND:
- Radial Pulse: Radial pulse present.
- AND:
- Mental Status: Follows simple commands - Ambulatory.

A simple triage methodology in a multi-casualty situation used to identify “minor” status victims, is to yell out to the victims, “Anyone who can hear me and walk, come to me.” Other quick methods to separate or sort the “greens” from the rest of the injured may be used. This example is just an illustration of one quick method to separate out the “walking wounded,” or “greens.”

**NOTE:** These patients are tagged **“Green.”**

Reverse Triage / Inverted Triage Situations

Although S.T.A.R.T is extremely effective in most triage situations, there are occasions were “Reverse Triage” or “Inverted Triage” may play a vital role in treating the most viable victims first that would otherwise be sorted less effectively.

This form of triage has regained much popularity in countries inflicted with terror incidents involving explosive devices such as IED’s and countries commonly impacted by pandemics and other disease outbreaks. Note: This form of triage does not follow a single set criteria, however, is dynamic in nature. Example: The reverse triage process for multiple victims involved in an “IED” incident is considerably different from the process used for multiple victims involved in a “Lightening Strike” incident. This process must be announced by the individual declaring “Reverse Triage” or “Inverted Triage”.

**In the event “Reverse Triage” or “Inverted Triage” is declared, it must be announced by Incident Command ASAP. Failure to declare this strategy early into an incident will compromise the effectiveness of the entire triage operations.**

IED / Explosives - Incidences involving explosives and/or suspected secondary devices designed to target rescue responders. Rapidly removing all ambulatory victims to a “Safe Zone” or “Treatment Area” away
from the scene as 1st priority will greatly increase the overall survivability of all victims. Non-ambulatory victims become secondary priority. This will aid in the reduction of potential secondary device victims, while allowing security forces establish a safer perimeter to protect victims and rescuers from additional attacks while providing ongoing searches for secondary devices. This form of Triage places priority on “mobility” of patients regardless of regular triage criteria.

**Pandemic** - Situations where medical personnel are potentially among affected population. Regardless of triage status, it may be advantageous to ensure medical personnel are treated as “Priority” so they may continue providing care. This especially applies when dispensing vaccines or other medications. Healthcare providers should receive priority treatment whenever possible, regardless of symptomatic status.

**Lightning Strikes** - Involving multiple victims – Victims without a pulse potentially have a higher chance of survival if treated immediately even though they would normally be classified as “Deceased” or meet “Black” triage criteria. This triage process would require treating “Pulseless” victims as first priority.

**Cold Water** - Involving multiple victims – Victims without a pulse potentially have a higher chance of survival when BLS treatment is rendered immediately even though they would normally be classified as “Deceased” or meet “Black” triaging criteria. This triage process would require treating “Pulseless” victims as first priority.
Mass-Casualty Incident Treatment Tag “Example”

Instruction / Sample

Note: The treatment tags are numbered. The numbers will be used for patient tracking and documentation. These tags are intended for use in the treatment areas.

Shade in injury site or sites.

Circle type of injury(s).

Other: Briefly write in explanation of injury(s).

Vital Signs:

Fill in the time vitals were taken. Blood pressure/Pulse/Respirations. Keep the stub you tear off so the patient can be tracked after transport.

The tags will be a single color. Patient triage is indicated by colored surveyor tape, not the tag.

Number on the tag is used for patient tracking. When a patient is moved through a treatment or transportation area, then a supervisor, or worker can remove the most bottom portion of the tag, and retain it for documentation.

Documentation will include, writing the time of patient transfer on the retained part of the tag. Other information could include transport name and number as well as destination.

Note: This will not replace official documentation on ICS forms, or upon the State MICU/Polaris form. But, it will help facilitate such documentation.
SAMPLE CONTINUED...
Information should be filled out by personnel at the Treatment Station

<table>
<thead>
<tr>
<th>Medicine Problems</th>
</tr>
</thead>
<tbody>
<tr>
<td>Allergies to medications</td>
</tr>
<tr>
<td>What medication is the patient taking?</td>
</tr>
<tr>
<td>What treatment is the patient being given?</td>
</tr>
</tbody>
</table>

Patient information if available

The tags will be a single color. **Patient triage is indicated by colored surveyor tape, not the tag.**

Number on the tag is used for patient tracking. When a patient is moved through a treatment or transportation area, then a supervisor, or worker can remove the most bottom portion of the tag, and retain it for documentation.

Documentation will include, writing the time of patient transfer on the retained part of the tag. Other information could include transport name and number as well as destination. Note: This will not replace official documentation on ICS forms or the State MICU/Polaris Form, but, it will help facilitate such documentation.

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### MEDICAL COMPLAINTS / HISTORY

<table>
<thead>
<tr>
<th>ALLERGIES:</th>
<th>PATIENT Rx:</th>
</tr>
</thead>
<tbody>
<tr>
<td>TIME</td>
<td>DRUG SOLUTION</td>
</tr>
<tr>
<td></td>
<td>DsW</td>
</tr>
</tbody>
</table>

### NOTES:

### PERSONAL INFORMATION

<table>
<thead>
<tr>
<th>NAME:</th>
<th>ADDRESS:</th>
</tr>
</thead>
<tbody>
<tr>
<td>CITY:</td>
<td>TEL., #:</td>
</tr>
<tr>
<td>MALE</td>
<td>FEMALE</td>
</tr>
<tr>
<td>AGE:</td>
<td>WEIGHT:</td>
</tr>
</tbody>
</table>

| No.354254 |
| No.354254 |
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| No.354254 |
Mortality Management Guidelines During Disaster Operations

In the event of a major disaster within the State of Utah, it may be some time before bodies can be collected and cared for by the Office of the Chief Medical Examiner.

Therefore, the following guidelines have been prepared to aid local agencies in handling the dead until the OME can relieve those agencies of that responsibility.

Handling the Dead

When it becomes necessary to remove bodies from disaster sites due to rescue work, or health and safety of others, a set of specific procedures must be followed:

1. **DO NOT** remove any personal effects from the body. The personal effects must remain with the body at all times.

2. Attach tag or label to the body with the following information:
   a. Date and time found
   b. Exact location where found, including floor/room number.
   c. Name/address of deceased, if known
   d. If identified, how and when
   e. Name/phone of the person making identity and/or filling out tag
   f. If the body is contaminated, so state

3. Place the body in a disaster pouch, or in plastic sheeting, and securely tie to prevent unwrapping. Attach a second tag to the sheeting or pouch.

4. If personal effects are found and are thought to belong to a body, place them in a separate container and tag. **Do not** assume any loose effects belong to a body. Document location where they were found.

5. Move the properly tagged body with their personal effects to one locale, i.e., garage or other cool building, preferably one with refrigeration.

   *Note: Portable air-conditioning may be obtained or self-contained refrigerated van/trucks or rail cars can be used. Do not use a vehicle or storage area with floors that can become permeated with body fluids or other liquids.*

6. Notify your local law enforcement agency of the location/identity of the body.

7. Keep insects and other animal life away from the body. In case of extreme heat or direct sunlight, move the body to a cool shaded area or refrigerated room as soon as possible.

8. Bodies must be secured or safeguarded at all times, even after the arrival of the OME or his authorized representative. Security at all times must be coordinated with local Law Enforcement and the OME.
Response Levels 1-5 Medical Branch Checklists

The following checklists are provided as initial guidelines for first arriving EMS units. These checklists also outline the initial resources that should be sent by dispatch once a “Level” is declared. Declaration should only take place once initial responders on-scene have “declared” the MCI Level. On-scene Commanders have the option of requesting additional or fewer resources as the incident requires.

The guidelines will be used automatically by dispatch to deploy or dispatch additional units once a level is declared, unless otherwise directed by the On-scene Command. The deployments for each level are based upon a full Level 1 deployment PLUS the additional units listed under EMS Response on each checklist. A full Level 1 deployment is 1 engine, 1 ambulance and 1 Paramedic Rescue. It is intended that the automatic dispatching of additional units based upon the level declared will assist the commander during an intense period of initial response.

The guidelines are initial actions only. On-scene command can request additional, or fewer resources as deemed necessary.

Level 1 - Medical Priority Dispatch ................................................................................................................. 18
Level 2 - Expanded Medical Emergency ......................................................................................................... 19
Level 3 - Major Medical Emergency ............................................................................................................... 20
Level 4 - Medical Disaster .............................................................................................................................. 21
Level 5 - CCP Activation ................................................................................................................................ 23
Level 1 - Medical Priority Dispatch
(1 - 5 Patients)

1. EMS RESPONSE
   – Medical Priority Dispatch
     – Baseline response is “usually” 1 Engine, 1 Ambulance, and 1 Medic Unit

2. ESTABLISH COMMAND
   – Upon arrival on-scene “declare command”
   – Radio the type of situation and ”confirm the incident”
     – Establish the total number of victims and categories
   – Radio the exact location of the incident and best access route for in-coming equipment

3. QUICKLY TRIAGE AND TAG ALL PATIENTS USING THE “S.T.A.R.T” TRIAGE CONCEPT
   – One (1) triage officer
     – Triage officer stays with victims (mother hen concept) until all are moved to an
       established treatment area at the scene or until he/she transitions to treatment officer role
   – Tag patients with treatment tag if requested or coordinated with Treatment Area. If Triage Officers
     tag patients in the triage area with treatment tags, then Triage Officers should retain one of the
     detachable sections of the tag and record times for documentation.

4. DETERMINE WHAT ADDITIONAL RESOURCES ARE NEEDED
   – Additional Response determined by Incident Commander
     – Rule of thumb (Personnel):
       – 1 firefighter/EMT/PM/Responder for each immediate patient
       – 1 firefighter/EMT/Responder for each 3 delayed patients
       – 2 firefighters/ for each hose line
       – 2-3 firefighters per rescue operation (air bag, jaws, etc.)

5. QUICKLY OVERVIEW SCENE SAFETY
   – Do you have adequate medical personnel and resources?
   – Are hose lines for fire safety in place with adequate personnel?
   – Is traffic or crowd situation under control or endangering medical operations?
   – Are patients and medical response staff in unsafe locations?
   – If Hazardous Material (Firefighting)
     – Note wind direction and weather
     – Work within appropriately established cold, warm and/or hot zones
     – Stay aware/briefed on all aspects of Haz-Mat operations/hazard
     – Consider medical operations/equipment that may affect hazardous condition

6. DIRECT INCOMING PERSONNEL AND EQUIPMENT

7. COORDINATE WITH ASSISTING AGENCIES (LAW, FIRE, EMS, ECT.)

8. OVERSEE THE SITUATION AND ADJUST RESOURCES AS NEEDED
1. EMS RESPONSE
   – Deploy an additional 1 Engine, 3 Ambulance, and 1 Medic Unit, 3 Chief Officers
     – This will make a total deployment of 2 engines, 4 ambulances, 2 Medic Units, 3 Chief Officers onsite
   – Notify Hospitals
   – Deploy 1 EMS air ambulance

2. ESTABLISH COMMAND
   – Upon arrival at scene “declare command.”
   – Radio the type of situation and “declare the incident level” (2-Expanded Medical Emergency)
     – Establish the total number of victims and categories
   – Radio the exact location of the incident and best access route for in-coming equipment
     – Establish staging and/or ingress and egress traffic plan

3. QUICKLY TRIAGE AND TAG ALL PATIENTS USING THE “S.T.A.R.T” TRIAGE CONCEPT
   – One (1) triage officer per ten (10) victims
     – Triage officer stays with 10 victims (mother hen concept) until all ten are moved to an established treatment area at the scene
   – Tag patients with treatment tag if requested or coordinated with Treatment Area. If Triage Officers tag patients in the triage area with treatment tags, then Triage Officers should retain one of the detachable sections of the tag and record times for documentation.

4. DETERMINE WHAT ADDITIONAL RESOURCES ARE NEEDED
   – Additional response determined by the Incident Commander or Medical Branch Director
     – Rule of thumb (Personnel):  
       – 1 Firefighter/EMT/PM/Responder for each immediate patient
       – 1 Firefighter/EMT/Responder for each 3 delayed patients
       – 2 firefighter per hose line
       – 2-3 firefighters per rescue operation (airbags, jaws, etc./)

5. QUICKLY OVERVIEW SCENE SAFETY
   – Do you have adequate medical personnel and resources?
   – Are hose lines for fire safety in place with adequate personnel?
   – Is traffic or crowd situation under control or endangering medical operations?
   – Are patients and medical response staff in unsafe locations?
   – If Hazardous Material (Firefighting)
     – Note wind direction and weather
     – Work within appropriately established cold, warm and/or hot zones
     – Stay aware/briefed on all aspects of Haz-Mat operations/hazard
     – Consider medical operations/equipment that may affect hazardous condition

6. CONSIDER DESIGNATING A MEDICAL BRANCH DIRECTOR
7. DIRECT INCOMING PERSONNEL AND EQUIPMENT
8. OVERSEE THE SITUATION AND ADJUST RESOURCES AS NEEDED. COORDINATE WITH ASSISTING AGENCIES (LAW, EMS, ETC.) CONSIDER UNIFIED COMMAND
9. CONTACT CRITICAL INCIDENT STRESS DEBRIEFING TEAM
10. CONDUCT AN INCIDENT DEBRIEFING AND CRITIQUE
Level 3 - Major Medical Incident  
16 - 35 Patients

1. EMS RESPONSE
   – Deploy an additional 2 Engines, 2 Ambulances, 1 Medic unit, 1 Chief Officer
     – This will make a total deployment of 4 Engines, 6 Ambulances, and 3 Medic Units, 4 Chief Officers onsite.
   – Deploy 2 EMS Helicopters (Designate a landing zone / Standby fire engine for safety)
   – Deploy 1 UTA/School Bus
   – Deploy 1 MCI Trailer
   – Deploy MCC (Mobile Command Center)
   – Notify out of County Hospitals and obtain a bed count if possible.
     – Note:
       – Consider additional air ambulance and/or UTA/School buses
       – Notify Red Cross
       – Consider additional MCI Trailer (2nd trailer)

2. ESTABLISH COMMAND
   – Upon arrival at scene “declare command.”
   – Radio the type of situation and “declare the incident level” (3-Major Medical Incident)
     – Establish the total number of victims and categories
   – Radio the exact location of the incident and best access route for in-coming equipment
     – Establish staging and/or ingress and egress traffic plan
     – Establish Communications Plan

3. QUICKLY TRIAGE AND TAG ALL PATIENTS USING THE “S.T.A.R.T” TRIAGE CONCEPT
   – One (1) triage officer per ten (10) victims
     – Triage officer stays with 10 victims (mother hen concept) until all ten are moved to an established treatment area at the scene
   – Tag patients with treatment tag if requested or coordinated with Treatment Area. If Triage Officers tag patients in the triage area with treatment tags, then Triage Officers should retain one of the detachable sections of the tag and record times for documentation.

4. REQUEST ADDITIONAL FIRE AND LOCAL EMS RESOURCES
   – Additional response determined by Incident Commander or Medical Branch Director
     – Rule of thumb (Personnel):
       – 1 EMT/PM 1 immediate patient - 1 EMT / 3 delayed patients
       – 2 firefighter per hose line - 2-3 firefighters per rescue operation

5. QUICKLY OVERVIEW SCENE SAFETY
   – Do you have adequate medical personnel and resources?
   – Are hose lines for fire safety in place with adequate personnel?
   – Is traffic or crowd situation under control or endangering medical operations?
   – Are patients and medical response staff in unsafe locations?
   – If Hazardous Material (Firefighting)
     – Note wind direction and weather
     – Work within appropriately established cold, warm and/or hot zones
     – Stay aware/briefed on all aspects of Haz-Mat operations/hazard
     – Consider medical operations/equipment that may affect hazardous condition

6. BUILD MEDICAL BRANCH AS APPROPRIATE
   Note: Position checklists for all categories are found on pages 27-44.

7. COORDINATE WITH ASSISTING AGENCIES (LAW ENFORCEMENT, EMS, ETC.)

8. ESTABLISH UNIFIED COMMAND

9. CONTACT CRITICAL INCIDENT STRESS DEBRIEFING TEAM

10. CONDUCT AN INCIDENT DEBRIEFING AND CRITIQUE

11. OVERSEE THE SITUATION AND ADJUST RESOURCES AS NEEDED.
Level 4 - Medical Disaster
36+ Patients

1. EMS RESPONSE
   – Deploy an additional 3 Engines, 3 Ambulances, 3 Medic Units, 2 Chief Officers
     – This will make a total deployment of 7 Engines, 9 Ambulances, 6 Medic Units, 6 Chief Officers onsite.
   – Deploy 4 EMS Helicopters (Designate a landing zone / Standby fire engine for safety)
   – Deploy 2 MCI Trailers
   – Deploy 2 UTA/School buses
   – Notify out of County Hospitals and obtain a bed count if possible.
     – Note: Place additional air ambulances on stand-by
     – Consider additional MCI trailers as necessary
     – Consider Scene Support units
     – Notify Red Cross

2. ESTABLISH COMMAND
   – Upon arrival at scene “declare command.”
   – Radio the type of situation and "declare the incident" (4-Medical Disaster)
     – Establish the total number of victims and categories
   – Radio the exact location of the incident and best access route for in-coming equipment
     – Establish staging and/or ingress and egress traffic plan
     – Establish Communications Plan

3. QUICKLY TRIAGE AND TAG ALL PATIENTS USING THE “S.T.A.R.T” TRIAGE CONCEPT
   – One (1) triage officer per ten (10) victims
     – Triage officer stays with 10 victims (mother hen concept) until all ten are moved to an established treatment area at the scene
   – Tag patients with treatment tag if requested or coordinated with Treatment Area. If Triage Officers tag patients in the triage area with treatment tags, then Triage Officers should retain one of the detachable sections of the tag and record times for documentation.

4. REQUEST ADDITIONAL FIRE AND LOCAL EMS RESOURCES
   – Additional response determined by the Incident Commander or Medical Branch Director
     – Rule of thumb (Personnel):
       – 1 EMT/PM/1 immediate patient - 1 EMT / 3 delayed patients
       – 2 firefighter per hose line - 2-3 firefighters for each rescue operation

5. QUICKLY OVERVIEW SCENE SAFETY
   – Do you have adequate medical personnel and resources?
   – Are hose lines for fire safety in place with adequate personnel?
   – Is traffic or crowd situation under control or endangering medical operations?
   – Are patients and medical response staff in unsafe locations?
   – If Hazardous Material (Firefighting)
     – Note wind direction and weather
     – Work within appropriately established cold, warm and/or hot zones
     – Stay aware/briefed on all aspects of Haz-Mat operations/hazard
     – Consider medical operations/equipment that may affect hazardous condition

6. BUILD MEDICAL BRANCH AS APPROPRIATE
   – Note: Position checklists for all categories found on pages 27-44

7. OVERSEE THE SITUATION & RESOURCES AS NEEDED

8. DIRECT INCOMING PERSONNEL & EQUIPMENT
9. COORDINATE WITH ASSISTING AGENCIES (LAW ENFORCEMENT, EMS, ETC.)
10. ESTABLISH UNIFIED COMMAND
11. CONTACT CRITICAL INCIDENT STRESS DEBRIEFING TEAM
12. CONDUCT AN INCIDENT DEBRIEFING AND CRITIQUE (OPERATIONAL)
Level 5 - Casualty Collection Point (CCP) Activation
Non-specific number of Patients

1. EMS RESPONSE
   – Deploy at least one Engine Company and/or Medic unit if possible to each CCP
   – Establish a Branch Supervisor for the CCP
     – Deploy available EMS personnel to CCP as needed. (prioritized)

2. ESTABLISH COMMAND
   – Upon arrival at scene “declare command.”
     – Use school name as tactical name for command
     – Establish the total number of victims and categories
   – Radio the exact location of the CCP and best access route for in-coming equipment
     – Establish staging and ingress and egress traffic plan
   – Establish Communications with C.E.R.T. team leadership if present.
     – Transfer command from C.E.R.T. to Fire/EMS
     – Establish Joint or Unified Command with C.E.R.T.

2. QUICKLY ASSESS ALL PATIENTS - VERIFY TRIAGE USING THE “ S.T.A.R.T " TRIAGE CONCEPT
   -- Quickly re-assess patients in “Red” treatment area first,
   – Assign Treatment Group Supervisor and develop Treatment Area organization

3. DEVELOP MEDICAL BRANCH ORGANIZATION
   – Assume Medical Branch Director position
     – Coordinate triage activities with C.E.R.T. Triage Group Supervisor
     – Develop appropriate Transportation Group
   – Liaison with C.E.R.T. Team Leader
     – Reassign C.E.R.T. members as necessary

4. REQUEST ADDITIONAL FIRE AND LOCAL EMS RESOURCES
   – Additional response determined by the Incident Commander or Medical Branch Director
     – Rule of thumb (Personnel):
       – 1 EMT/PM /1 immediate patient - 1 EMT/3 delayed patients OR
       – 1 C.E.R.T./1 immediate patient -1 C.E.R.T./3 delayed patients

5. DOCUMENTATION
   – Designate/assign aide to maintain logs, forms, and patient information.
   – Document patient destination

6. NOTIFICATION
   – Notify City or County EOC of on-scene information
     – Submit patient situation report to EOC
     – See pages 46-51 for information documentation forms
**ICS Medical Branch Position Description Checklist**

The ICS Medical Branch Position Description Checklists are intended to assist on-scene incident management with position responsibilities and tasks. They provide a clearer understanding of the coordination required at the scene between the different medical response personnel and helps to create an effective and efficient ICS Medical Branch.

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Positions titles (Branch Director, Group Supervisor) may change based upon size of operations. Branches may become Groups, Groups may become teams. Size of organization is based upon needs of the incident and the resource requirements.

This plan uses the above “Branch” model. Adapt titles (Branch Director, Group Supervisor) as necessary. This illustration also does not show a “Division” model, but is fully acceptable within the basic ICS principles.

- A Triage Team is comprised of one (1) Triage Officer who is also the Team Leader, and 2 - 4 Litter Bearers.
NOTE: This illustration is an attempt to assist the responder in visualizing the physical layout needed to facilitate the Medical Branch’s response. The Triage Group would likely be, in this illustration, to the left of the Entry Control Point, conducting triage and field transportation functions. The Treatment Group would be working within the barrier tape in their respective Treatment Areas, and the Transportation group would be working at the Exit Control Point. Notice the location of the Medical Branch Director and the Medical Supply Coordinator. Deceased should be left in place of death for investigation and scene management. Treatment area morgue is for deceased in that area. Refer to pages 16 and 34 for additional guidelines on mortality management.
Medical Branch Director

DEFINITION: Battalion Chief, Captain, Acting Captain, Paramedic, EMT-I

SUPERVISED BY: Incident Commander or Operations Section Chief

SUBORDINATES: Treatment Group, Triage Group, and Transportation Group Supervisors/or Division Supervisors.

FUNCTIONS: Coordinate and supervise EMS operations as a Branch within the Operations Section. Establish command and control of Medical Branch activities to assure best medical care.

DUTIES:

1. Receive briefing from IC or Ops Section Chief. Manage all Medical Branch activities.

2. Establish and supervise a Medical Branch at a level of personnel and other resources sufficient to handle the magnitude of the incident.

3. Liaison and coordinate with the Medical Group Supervisors (Triage, Treatment and Transport Supervisors) depending on how the Branch is organized. Establish coordination between these Group Supervisors.

4. Liaison and coordinate with the other Branches that have been created, depending upon how the Operations Section is organized. Ensure law enforcement or OME involvement as necessary.

5. Establish priorities and action plan, using the appropriate Operational Guidelines for the various declared levels. Direct trained personnel to appropriate Group Supervisors.

6. Coordinate the amount and types of additional EMS and fire and rescue equipment needed, such as medical caches, ambulances, helicopters, UTA/School buses, protective hose lines, extrication equipment, air packs, backboards, medical supplies, splints, bandages, I.V.’s, etc..

7. Coordinate incoming and outgoing routes of ground travel with the Staging Manager and the Transportation Group Supervisor. Set boundaries for treatment and transportation areas. Ensure security, traffic control and access is established.

8. Coordinate air operations with the Transportation Group Supervisor and the Air Ambulance Staging Manager or Landing Zone Manager depending on how Branch is organized.

Note: Assign a safety standby Engine Company or other appropriate measure to the designated helicopter landing zone

9. Provide for the needs of your personnel: Rest/Rehabilitation, Rotation, Relief

OPERATIONAL CONSIDERATIONS:

1. Establish Branch Command Location for Group Supervisors
   A. Safe area close to Triage/Treatment/Transport Areas and within law enforcement perimeter control.

2. Ambulance traffic pattern and Patient Loading Areas (Transportation Group Supervisor).

3. Treatment Areas - Consider isolating from each other:
   a. Immediate
   b. Delayed
   c. Minor
   d. Morgue
      1. Consider security and remoteness.
      2. Not a high priority if resources are in short supply.
      3. Trauma condition of bodies and the proximity of dead to living and response personnel. Cover and/or move bodies if traumatic stress is a consideration as well as to show respect to the dead.

Refer to Mortality Management Guidelines During Disaster Operations on page 16.
Medical Supply Coordinator

DEFINITION: Qualified personnel as assigned (EMT/Firefighter)

SUPERVISED BY: Medical Branch Director

SUBORDINATES: Personnel as required, “Assistants”

FUNCTION: Acquire, maintain control of, and distribute appropriate medical equipment and supplies within the Medical Branch. Establish supplies at positions near treatment areas. (See Medical Branch Schematic)

DUTIES:
1. Receive briefing from Medical Branch Director
2. Acquire, distribute, maintain status of medical equipment and supplies within the medical branch. Establish supplies at positions near treatment areas. (See Medical Branch Schematic)
3. Request additional medical supplies (medical caches, ambulance supplies, hospital supplies) as needed through the Medical Branch Director.
4. Coordinate and distribute medical supplies with Treatment Area Managers. *If logistics section is established, this position would report to and receive direction from the Supply Unit Leader.*
5. Use Inventory List Form #5. Track source of all supplies for reimbursement purposes.
6. Alert ambulances to drop off supplies in a specific area before leaving for the hospital. Alert additional ambulances (air & ground) to allocate additional supplies from hospitals on return trip if necessary.
7. Request, utilized and mange supplies from MCI trailers as necessary.
Triage Group Supervisor

**DEFINITION:** Qualified Unit Leader

**SUPERVISED BY:** Medical Branch Director or Division Supervisor

**SUBORDINATES:** Medical Teams / personnel

**FUNCTION:** Assume responsibility for providing triage management and movement of all from within the Triage Area. When triage is completed, he/she may be reassigned as needed.

**DUTIES:**

1. Receive briefing from Medical Branch Director

2. Implement S.T.A.R.T triage process; brief and supervise Triage Officers as necessary. Use one (1) Triage Officer for every ten (10) patients.

3. Form Field Transportation Teams (litter bearers), 2-4 members per team, for transport of victims from triage areas to treatment areas. Assemble and supply as many teams as deemed necessary to perform task. Assign (2) teams to every (1) Triage Officer. This will create a Triage Team. (See ICS Medical Branch)

   *Note: You may use untrained volunteers to augment transport personnel in this area. However, assure that there is a minimum of one (1) EMT on each transport team. If each team has one (1) EMT, then the EMT can monitor patients during triage transport, and maintain airways if necessary.*

4. Acquire medical supplies from the Medical Supply Coordinator for triage areas. (i.e. backboards, stretchers, c-collars, bandages, splints etc.)

5. Coordinate with Treatment Group Supervisors to assure that the Field Transportation Teams (Litter Bearers) are delivering patients to the correct treatment areas.

6. Maintain area security and control of the triage area in coordination with the Branch Director and/or law enforcement.

7. Create and isolate a Triage Area Morgue if necessary. Refer to Mortality Management Guidelines During Disaster Operations on page 16. Coordinate with Branch Director, Office of Medical Examiner (OME), and Treatment Group Supervisor.

*Note: Remember*

- Assign only one (1) Triage Officer for every ten (10) patients
- Assign 2-4 litter bearers (Field Transporters) to each Triage Officer
Triage Group Supervisor Continued....

**RESPONSIBILITIES**

1. Manage and coordinate all triage activities at the incident scene.

2. Assemble Triage Teams
   - 1 Triage Officer (Team Leader)
   - Field Transport Team of 2 to 4 Litter Bearers

3. Direct the triage and movement of injured from the triage area to the treatment area.

4. Establish and maintain a safe triage area.

**OPERATIONAL CONSIDERATIONS:**

1. Assess resource needs
   A. Personnel (Triage Officers and Litter bearers)
   B. Equipment and supplies
   C. Relief Units

2. Inform Medical Branch Director of minimum needs

3. Consult with Triage Officers (triage team leaders)

4. Give job assignments
   a. Safety
   b. Records
   c. Triage Personnel
   d. Transporters

5. Establish morgue location if necessary. Assign a Morgue Leader, refer to Morgue Leader position description on page 34 and the Mortality Management Guideline During Disaster Operations on page 16

*Note: Do not allow deceased patients to be removed from their original locations unless absolutely necessary. If possible, take pictures and mark locations of the deceased. This information is essential to the medical Examiner. Upon arrival of the Medical Examiner’s Office (OME), the OME may take charge of all OME-related functions within the morgue area.

6. SAFETY SHALL BE THE NUMBER ONE PRIORITY
**Triage Officer / Triage Team Leader**

**DEFINITION:** Medically qualified personnel – ALS or BLS Triage

**SUPERVISED BY:** Group Supervisor

**FUNCTION:** To Triage patients on-scene (S.T.A.R.T. Triage), assign them to appropriate treatment areas, coordinate movement of patients to respective treatment areas, and to monitor assigned patients for as long as they are in the Triage Area (Mother Hen concept).

**DUTIES:**

1. Receive briefing form Triage Group Supervisor

2. Report to designated on-scene triage location with triage equipment.

3. Direct and manage activities of Triage Team. This includes the Litter Bearers assigned to you.

4. Triage and tag (10) injured patients. Classify patients with tags, “Red”, “Yellow”, or “Green”.

5. Provide appropriate medical treatment (ABC’s) to patients prior to movement, according to S.T.A.R.T. Field Guide.

6. Direct movement of patients to proper treatment areas with Litter Bearers Field Transport: **Move Immediate “Reds” First!**

*Note: Use formula of one (1) Triage officer for every ten (10) patients. Triage Officers do not transport. Triage Officers stay with their respective (10) patients until they are out of the Triage Area and are in the Treatment Area.

“Mother Hen” concept to their (10) patients. Once triage is accomplished, Triage Officers can perform limited treatment as time permits while waiting for transporters to move victims to treatment areas.

7. When all ten (10) victims are carried to the Treatment Area, report with assigned transport team to the Triage Group Supervisor for rehab. or reassignment.
Field Transport Team

**DEFINITION:** Qualified personnel consists of at least one BLS provider who is able to render care while transporting. These persons are litter bearers, and assist the triage area by transporting the injured to the treatment areas. Untrained volunteers can assist EMT’s in this function.

**SUPERVISED BY:** The Triage Officer

**FUNCTION:** Assume responsibility for transporting patients from the disaster site/triage area to a treatment area (immediate/delayed/minor) on a backboard or other appropriate device and render medical care during transport if necessary.

**DUTIES:**

1. Receive briefing and assignment form Triage Group Supervisor. Transport Teams are assigned directly to Triage Officer. Together they comprise a Triage Team. Triage Teams are led by the Triage Officer and can consist the Triage Officer and 2 or 4 litter bearers.

2. Acquire appropriate equipment from the Medical Supply Coordinator to accomplish tasks. (Backboards, c-collars, etc.)

3. Under Triage Officers direction at disaster site, properly manage patients with c-collars, backboards, dressings, etc….while transporting patient to appropriate treatment area.

4. **Guideline:** Each Field Transport Team should carry no more than 10 Patients from the triage area to the respective treatment area before going to rehab. or being reassigned/rotated.

5. Obtained additional help from untrained volunteers or bystanders to assist: (Remember: at least one EMT per Field Transport Team)

6. Report back to Triage Group Supervisor with Triage Officer (Team Leader) for rehab. or reassignment.
**Morgue Manager**

**DEFINITION:** Personnel assigned (firefighter, law enforcement, medical examiner)

**SUPERVISOR:** Triage Group Supervisor / OME representative

**FUNCTION:** Tag / Account / Document all fatalities in medical incident in Triage Area.

**DUTIES:** Locate, tag, and mark locations of all deceased in the Triage Area.

*Do Not* move deceased to morgue area without permission or contact from representative from the coroner’s office. Maintain dignity of the deceased.

Coordinate if necessary with Treatment Group Supervisors or Treatment Area Morgue.

**RESPONSIBILITIES:**

1. Manage all Morgue Area activities as outlined in the Mortality Management Guidelines during Disaster Operation on pg. 16

2. Keep area off limits to all personnel unless except those needed.

3. Coordinate with law enforcement and assist the coroner’s office as necessary.

4. Keep identity of deceased confidential. Maintain records including tentative identity (if available), where the deceased was found, etc.

5. Establish an Incident Morgue location if necessary. Ensure that it is secluded from direct site if possible. Assign security. Coordinate with Treatment Group Supervisor of movement if any of victims who become unsalvageable while in a treatment area. Advise Triage Group Supervisor of location.

**OPERATIONAL CONSIDERATIONS:**

1. Assess resource needs
   a. Equipment and supplies (Body bags, Tags, Privacy Screens)
   b. Personnel / Relief Personnel
   c. Law enforcement, OME

2. Give job assignments (Security, Documentation, Litter Bearers, )

3. Morgue location
   a. Remove form triage area. (OME permission needed)
   b. Not readily available to other patients
   c. Accessible to vehicle (ambulance, OME, law enforcement)

*Note:* *Do not move deceased to morgue area without the permission from the coroner's office. Follow Mortality Management Guidelines.*
Treatment Group Supervisor

DEFINITION: Paramedic level or above

SUPERVISED BY: Medical Branch Director

SUBORDINATES: 1. Treatment Dispatch Manager
2. Immediate Treatment Manager
3. Minor Treatment Manager
4. Delayed Treatment Manager

FUNCTION: Assume responsibility for treatment, prepare for transport, and coordination of patient treatment in treatment areas. Coordinate movement of patients from triage area to treatment area and from treatment to transportation locations.

DUTIES: 1. Receive briefing from Medical Group Supervisor. Use form #1 “Multi-Casualty Branch Worksheet,” Form #2 “Treatment Area Worksheet.” Develop organization sufficient to handle assignment.
2. Manage all activities within the Treatment Group. Implement, direct, and supervise Treatment Dispatcher, and Immediate, Delayed, and Minor Treatment Area Managers.
4. Designate Treatment Mangers and Treatment Areas as appropriate. Isolate Morgue and Minor Treatment Areas from Immediate and Delayed Treatment Areas. Coordinate with Triage Group Morgue Manger if necessary.
5. Request sufficient and qualified emergency medical personnel to staff Treatment Areas. Request medical supplies as needed. Consider communications, equipment supplies, relief personnel, and record keeping/tracking.
6. Communicate and coordinate patient movement with Triage Group Supervisor.
7. Receive patients from Field Transport Teams and direct them to appropriate treatment areas. DON NOT RETRIAGE AT THIS TIME OR LOCATION.
8. Designate/assign an aid to maintain logs, forms, and patient information.
9. Maintain triage assessment of patients throughout treatment areas.
10. Keeps areas off limits to all personnel except needed. Acquire law enforcement assistance to enforce treatment area security.
11. Communicate and coordinate movement with Patient Transportation Supervisor. THE MOST CRITICAL PATIENTS SHOULD BE TRANSPORTED FIRST.
Treatment Dispatch Manager

**DEFINITION:** Paramedic / EMT

**SUPERVISED BY:** Treatment Group Supervisor

**FUNCTION:** Provide coordination between Treatment Area Managers and the Transportation Groups Staging Managers and Medical Communications Coordinator for priority transport.

**RESPONSIBILITIES:**

1. Receive assignment and briefing from Treatment Group Supervisor. Coordinate treatment dispatch function with Treatment Managers and Transportation Group

2. Establish and maintain communication with treatment managers

3. Verify patient transportation priority “Red”, “Yellow”, or “Green”.

4. Designate aid to maintain appropriate forms and patient information if necessary.

5. Establish and maintain communications with Medical Communications Coordinator for transportation of patients.

THE MOST CRITICAL PATIENTS SHOULD BE TRANSPORTED FIRST

a. Coordinate patient loading and ambulance departure/destination.

b. Direct movement of patients to loading locations

7. Maintain appropriate records. Use form #2 “Treatment Area Worksheet.”

**OPERATIONAL CONSIDERATIONS:**

1. Need direct communications with Hospital Communications Coordinator

2. Need direct communication with Air and Ground Staging Managers

3. Need direct communication with Treatment Group Supervisors & Treatment Managers.

4. Assess resource needs

   a. Communications

   b. Equipment and supplies

   c. Records and other personnel.
Immediate Treatment Manager

**DEFINITION:** Paramedic / EMT-I

**SUPERVISED BY:** Treatment Group Supervisors

**SUBORDINATES:** Medical personnel or teams assign to Immediate Treatment Area

**FUNCTION:** Responsible for treatment and re-triage of patients assigned to Immediate Area

**DUTIES:**

1. Receive briefing from Treatment Group Supervisor and brief subordinates.

2. Receive patients from Field Transport Teams. Reassess and treat appropriately.

3. Request or establish medical personnel as necessary.

4. Assign treatment personnel to patients received in the Immediate Treatment Area

*Note: Rule of thumb: 1 EMT / 1 patient*

5. Designate aid to maintain appropriate forms and patient information.

6. Assure that patients are prioritized for transportation.

7. Coordinate transport of patients with Treatment Dispatch Manager. Notify Treatment Dispatch Manager of patient’s readiness and priority for transportation.

8. Assure that appropriate patient information is recorded. Use form #2 Treatment Area Worksheet.
Delayed Treatment Manager

**DEFINITION:** Firefighter / EMT

**SUPERVISED BY:** Treatment Group Supervisor

**SUBORDINATES:** Medical personnel or teams assigned to Delayed Treatment Area

**FUNCTION:** Responsible for treatment and re-triage of patients assigned to Delayed Treatment Area.

**DUTIES:**

1. Receive briefing from Treatment Group Supervisor and brief subordinates.

2. Receive patients from Field Transport Teams. Reassess and treat appropriately.

3. Request or establish medical personnel as necessary.

**Note:** Rule of thumb: 1 EMT / 3 patients

4. Assign treatment personnel to patients received in the Delayed Treatment Area.

5. Assure proper prioritization and re-evaluation of patients for re-assignment to Immediate Treatment Areas if condition worsens.

6. Designate aid to maintain appropriate forms and patient information.

7. Assure that patients are prioritized for transportation.

8. Coordinated transport of patient’s with Treatment Dispatch Manager and the Immediate Treatment Area Manager. Notify Treatment Dispatch Manager of Patient’s readiness and priority for transportation.

9. Assure that appropriate patient information is recorded. Use form #2 Treatment Area Worksheet.
**Minor Treatment Manager**

**DEFINTITION:** Firefighter / EMT

**SUPERVISED BY:** Treatment Group Supervisor

**SUBORDINATES:** Medical personnel or teams assigned to Minor Treatment Area.

**FUNCTIONS:** Responsible for treatment and re-triage of patients assigned to Minor Treatment Area.

**DUTIES:**

1. Receive briefing from Treatment Group Supervisor and brief subordinates.

2. Receive patients from Field Transport Teams and ambulatory patients. Reassess and treat appropriately.

3. Request medical personnel as necessary. Assign treatment personnel to patients received in the Minor Treatment Area.

   *Note:* Do not overuse critical medical resources here. One EMT can take care of several injured, or recruit other “Greens “to assist in the care.

4. Assure proper prioritization and re-evaluation of patients for re-assignment to Delayed Treatment Areas if condition worsens.

5. Treatment of patients triaged to the Minor Treatment Area.

6. Assure that appropriate patient information is recorded prior to patient release or transportation. Designate aid to maintain appropriate forms and patient information. Use form #2 Treatment Area Worksheet.

7. Coordinated transport of patient’s with Treatment Dispatch Manager and the Immediate and/or Delayed Treatment Area Manager. Notify Treatment Dispatch Manager of Patient’s readiness and priority for transportation.
Triage Group Supervisor

**DEFINITION:** Qualified Manager

**SUPERVISED BY:** Medical Branch Director

**SUBORDINATES:** Medical Communications Director, Ground Ambulance Manager, Air Ambulance Manager.

**FUNCTION:** Coordination of patient transportation and maintenance of records related to patient identification, injuries, mode of transportation and destination.

**DUTIES:**

1. Receive briefing from Medical Branch Director. Develop organization sufficient to handle assignments.

2. Ensure establishment of hospital communications. Ensure activation of hospital alert system. Maintain records of all hospitals being utilized and their handling capabilities for proper dispatching. Use Form #3 Hospital Resource Availability.


4. Assign an aid to maintain forms and patient information, if necessary.

5. Direct the transportation of patients as determined by the Treatment Group Supervisor. Ensure proper coordination between Treatment Dispatch Manager and the Transportation Group.

6. Assure that patient information and destination is recorded. Use Form #4 Ambulance Staging Resource Status, Form #3 Hospital Resource Availability. Coordinate with Treatment Group Supervisor and Medical Communications Coordinator, use Form #2 Treatment Area Worksheet.

7. Control all ambulance loading activities and movements. Maintain an accurate account of injured sent to hospitals and their classification. Patient destination will be determined by medical personnel through the Medical Communications Coordinator.

8. Request additional ambulances as required.

9. Assume Transportation Recorder and Ambulance Manager functions until they have been activated.


11. Establish ground ambulance staging area with the Medical Branch Director and Ground Ambulance Staging Manager.

12. Establish air ambulance landing zones with the Medical Branch Director and Ground Ambulance Staging Manager.
OPERATIONAL CONSIDERATIONS:

1. A command location for patient transportation function. Remain in close proximity to the Treatment Group Supervisor, Medical Branch Director, and the transportation area.

2. Develop and ambulance traffic pattern (if possible) to avoid confusion. Use Medical Branch schematic.

3. Designate staging areas early in the operations.

4. Security and safety in the transportation area are a priority.

5. Ensure documentation of patient destinations. (Critical for family notifications)

6. Ensure documentation of State MICU / Polaris forms to be completed for each victim.
Medical Communications Coordinator

**DUTIES:**
Qualified Coordinator

**SUPERVISED BY:**
Transportation Group Supervisor

**SUBORDINATES:**
Transportation Recorder and personnel as required

**FUNCTION:**
Maintain communication with hospitals and other facilities to assure proper patient transportation and destination. Coordinate information through Transportation Group Supervisor, the Dispatch Treatment Manager and both air and ground ambulance staging managers.

**DUTIES:**
1. Establish a communications link with hospitals.
2. Determine hospital availability. Obtain hospital availability information. Use Form #3 Hospital Resource Availability.
3. Designate aid to maintain appropriate forms and patient information (if necessary).
4. Receive basic patient information and injury status from Treatment Dispatch Manager. Communicate patient disposition to destination facility.
5. Communicate appropriate hospital availability to Treatment Dispatch Manager.
6. Select patient destinations for patients leaving the treatment area.
7. Record and maintain appropriate transportation records. Use Form #2 Treatment Area Worksheet. (Coordinate with Treatment Dispatch Manager)
8. Maintain close liaison and information coordination with the Transportation Group Staff and Treatment Dispatch Manager.
9. Coordinate patient loading and destination assignments with the Treatment Dispatch Manager and staging managers. Select mode of transportation of patients leaving the treatment areas.
Ground Ambulance Staging Manager

**DEFINITION:** Personnel as assigned

**SUPERVISED BY:** Transportation Group Supervisor

**SUBORDIANTES:** Personnel as required

**FUNCTION:** Manage the ground ambulance staging area

**DUTIES:**

1. Receive briefing form the Transportation Group Supervisor

2. Establish appropriate staging area for ground ambulances. Notify Transportation Group Supervisor of location.

3. Develop organization sufficient to handle assignment.

4. Manage all ground ambulance staging activities. Control apparatus parking and movement.

5. Establish ambulance ingress and egress (route of travel) for incident action plan.

6. Plan layout of Staging area. Consider immediate and future needs. Refer to medical branch schematic.

7. Provide ambulances upon request. Coordinate activities with Transportation Group Supervisor and Treatment Dispatch Manager.

8. Maintain records as required. Use Form #4 Ambulance Staging Resource Status.

9. Assure that necessary supplies are unloaded from the ambulance for treatment area needs. (For use at the scene through the Medical Supply Coordinator) Provide a medical supply resource inventory.

10. Establish immediate contact with ambulance agencies at the scene.

11. Recommend additional transportation resources as necessary.
Air Ambulance Staging Manager

DEFINITION: Personnel assigned who are trained in landing zone management

SUPERVISED BY: Transportation Group Supervisor

SUBORDINATES: Personnel as assigned

FUNCTION: Manage the air ambulance staging area and dispatch air ambulances as needed.

DUTIES:

1. Receive briefing from Transportation Group Supervisor. Coordinate all activities with group supervisor.

2. Establish appropriate staging area for air ambulances. Manage all air ambulance staging area activities. Use standard landing zone practices.

3. Plan layout of staging area and establish landing zones for air ambulances. Develop organization sufficient to handle assignments. Consider immediate and future needs.


5. Notify Transportation Group Supervisor of staging locations.

6. Provide air ambulances upon request. Coordinate group patient loading with Transportation Group Supervisor and the Treatment Dispatch Manager.

7. Maintain record as required. Use Form #4 Ambulance Staging Resource Status.

8. Air ambulances, upon return trips, may be requested to bring supplies to the scene. Assure that supplies are obtained and given to the Medical Supply Coordinator.

9. Establish communications with air ambulances over appropriate pre-designated frequencies.

10. Recommend additional transportation resources as appropriate.
ICS Medical Branch Forms

Multi-Casualty Medical Branch Worksheet – Form #1 ................................................................. 46
Treatment Area Worksheet - Form #2 .......................................................................................... 47
Hospital Resource Availability – Form #3 .................................................................................. 48
Ambulance Staging Resource Status – Form #4 ........................................................................ 49
Medical Supply Inventory List – Form # 5 .................................................................................. 50
Davis County EMS Incident Worksheet – Form #6 .................................................................... 51
## MULTI-CASUALTY-MEDICAL BRANCH WORKSHEET

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<thead>
<tr>
<th>Incident Command/Name:</th>
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66
FORM #2
TREATMENT AREA WORKSHEET

Immediate / Delayed / Minor (Circle Appropriate Area)

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## DAVIS COUNTY EMS INCIDENT WORKSHEET

**Command:** ________________  **Incident #** __________  **Dispatch Time:** ________

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### Responding EMS Units

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### Upon Arrival

- Initial Report
- Command Established
- Scene Safety
  - Lanes Blocked
- Upgrade Needed
- START Triage Initiated
- Groups established
  - Triage
  - Extrication
  - Treatment
  - Transport
  - Safety
  - LZ

### Benchmarks

- Triage Complete - # of patients identified & priority determined
- All Clear – extrication complete on all vehicles
- All Immediate patients transported
- All patients transported (Delayed & Minor)
- Scene Hazards secured

### Transportation Group

- Hospital Status Done / Severity of Pt’s Accepted / Bed Space Availability
- # of Ambulances_ _ # of Medic Units _ _
- Treatment Area Location(s) ____________________________
- Ambulance Staging Location ____________________________
- Landing Zone Location(s) _____________________________

### Incident Diagram

- Helicopters

### Divisions / Groups

<table>
<thead>
<tr>
<th>Triage</th>
<th>Extrication</th>
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<th>Transport</th>
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# CASUALTY COLLECTION POINTS (CCP) PROTOCOL

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<tbody>
<tr>
<td>CCP Overview</td>
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<tr>
<td>Activation</td>
<td>54</td>
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<tr>
<td>Command and Control</td>
<td>54</td>
</tr>
<tr>
<td>MCI Trailers</td>
<td>55</td>
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<tr>
<td>Locations of CCP’s</td>
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CASUALTY COLLECTION POINT (CCP) PROTOCOL

CCP Overview
The Casualty Collection Point (CCP) protocol is an emergency, or disaster response concept that will allow for, or at least take into consideration, an emergency that has wide spread impact throughout the community, and as such, overwhelms and paralyzes the normal EMS response. A disaster that would create this kind of scenario might, for example, be an earthquake that injures hundreds of citizens throughout the county, perhaps affecting main transportation routes and possibly damaging Davis County’s two hospitals. Hundreds of injured spread throughout the county would overwhelm the EMS system and cause it to be unable to respond to the hundreds of calls for medical assistance. If this were the case, some kind of gathering the wounded would be critical.

If this scenario were compounded by damage to the highway infrastructure, victims would then become isolated from emergency medical care. If victims are unable to be transported to the hospitals, then the hospital employees would have the same dilemma and would be unable to report to their duty stations at their respective hospitals.

If an earthquake affect the county to the extent that there are hundreds of injured, then it stands to reason that the hospitals in Davis County would also receive some type of damage. Therefore the basic premise of a large earthquake injuring hundreds from across the county also creates a very plausible situation wherein transportation is hindered and damages to medical infrastructure will also occur.

Casualty Collection Points (CCP) are created for extreme situations where the EMS system is completely overwhelmed and unable to respond to all incidents without some kind of protocol that will allow for activation of locations where the injured can be taken by citizens and then transferred to the county EMS system. Rather than attempt to send the already overwhelmed EMS to each victim, the victim, through private or organized means can be brought to the EMS system, triaged and transported appropriately via CCP.

Locations
In Davis County, there are 70 pre-determined locations where CCP’s could be activated. (See pages 56-60 for list) These sites coincide with the Points of Distribution (POD) locations. Each site is capable of hosting a CCP. The purpose in identifying multiple sites for a CCP is to have in reserve multiple areas which can be chosen to implement CCP’s assuming many pre-determined sites may be damaged by the same incident requiring the activation of the CCP.
**CCP Planning Concept**

**Activation**
Activation of a CCP is the jurisdiction of the local city or county in which the CCP is located. The city EOC or county EOC may exercise the authority to open a CCP. A policy decision by Chief Elected Officials, under advisement from that jurisdiction’s chief medical or fire officer is all that is needed for a city to activate a CCP.

Notification between hospitals, county wide EMS providers, and county emergency management is necessary to ensure successful incident action planning.

Advisement and/or requests for activation may also come from the hospitals or other jurisdictions within Davis County. It would be anticipated that a situation warranting activation of a CCP were to exist in one jurisdiction, then it is highly likely that this same situation exists in other jurisdictions within Davis County. Activation of any CCP in Davis County would warrant EOC activation for the affected city as well as the county.

**Command and Control**
Once a CCP is activated, there needs to be a command and control element at that facility to organize and manage the medical operations. Due to the nature that would warrant activation of a CCP, it is highly likely that the Community Emergency Response Team (C.E.R.T.) would be activated. If EMS resources are not available, command and control would rest with the community’s C.E.R.T leadership. If EMS resources were available, a medical officer would be expected assume command of the CCP site.

**Command and Control - C.E.R.T.**
When activated, the CCP will require several personnel to conduct search and rescue, transport the injured to the site, conduct triage and treatment and coordinate transportation of victims to a medical facility if possible. C.E.R.T. personnel will be required to staff at a minimum the following management positions:

<table>
<thead>
<tr>
<th>Position</th>
<th>Responsibilities</th>
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</thead>
<tbody>
<tr>
<td>Incident Commander -</td>
<td>Oversee operations / liaison with city EOC</td>
</tr>
<tr>
<td>Medical Supply Coordinator -</td>
<td>Oversee logistics / Distribute and document medical supply needs and use.</td>
</tr>
<tr>
<td>Search &amp; Rescue Group Supervisor -</td>
<td>Coordinate searching, triaging and field transportation of injured to the CCP site.</td>
</tr>
<tr>
<td>Treatment Group Supervisor -</td>
<td>Oversee CCP treatment areas</td>
</tr>
<tr>
<td>Transportation Group Supervisor -</td>
<td>Coordinate transportation of victims to medical facilities.</td>
</tr>
<tr>
<td>Communications Coordinator-</td>
<td>A.R.E.S. communication team members provide with city / county EOC’s and with area hospitals.</td>
</tr>
</tbody>
</table>

C.E.R.T. team members will use the ICS Medical Branch positions and will follow that protocol at CCP sites.
Command and Control – Fire/EMS

Upon activation of a CCP, if fire/EMS resources are available, they are to take command of the CCP. If they are unavailable, then C.E.R.T. will command the site for the city or county. Only fully qualified fire/EMS personnel who are trained in C.E.R.T. capabilities and methodologies are to assume the role of IC. In the case of limited resources, most operational management positions should be retained by C.E.R.T. leadership, thus freeing fire/EMS resources to oversee patient management. Fire and EMS commanders must, upon arrival at the CCP, make contact and establish liaison with C.E.R.T. leadership. On-site medical branch protocols are still in effect at a CCP.

MCI Trailers

When an MCI incident occurs, up to three (3) MCI trailers may be deployed to that specific site for use by fire/EMS personnel. These three (3) trailers were constructed and staged to support county and region wide fire/EMS resources. If the situation is such that local EMS supplies are insufficient, or will be overwhelmed at an MCI, Incident Commanders shall have the authority to request any or all of the MCI trailers, take the necessary supplies and apply them to the specific MCI site.

If an Incident Commander orders the use off any of the MCI trailers, then full documentation of what was taken, what was used, and where it was taken must be made.

Based upon on-site protocol listed earlier in this plan, MCI trailers will be automatically deployed as follows:

<table>
<thead>
<tr>
<th>Response Level Declaration</th>
<th>Number of Trailers Dispatched</th>
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<tr>
<td>Level 1 – Medical Priority Dispatch</td>
<td>No Trailer Dispatched</td>
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<tr>
<td>Level 2 – Expanded Medical Emergency</td>
<td>No Trailer Dispatched</td>
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<tr>
<td>Level 3 – Major Medical Emergency</td>
<td>One Trailer Dispatched</td>
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<tr>
<td>Level 4 – Medical Disaster</td>
<td>Two MCI Trailers</td>
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<tr>
<td>Level 5 – CCP Activation</td>
<td>Can Deploy all Three</td>
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</tbody>
</table>

Trailers should be dispatched automatically when a response level is declared by on-scene command. If additional trailers are or will be requested, then on-scene command will need to notify dispatch of the specific request.

Authority to Use

Any fire/EMS commander has authority to use an MCI trailer. This use is automatic upon declaration of a response level and augmented with a special request for additional trailers from Incident Command.

MCI Trailer Storage / Deployment Locations

1. Fruit Heights Public Works Building
2. South Davis Metro Fire Station #81
3. Layton City Fire Department Station #53
<table>
<thead>
<tr>
<th>#</th>
<th>Site ID #</th>
<th>Facility Name</th>
<th>TYPE</th>
<th>City</th>
<th>Facility Address</th>
<th>Facility Phone #</th>
<th>Latitude</th>
<th>Longitude</th>
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<td>West Bountiful Elementary School</td>
<td>III</td>
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Rule R426-1. General Definitions. As in effect on January 1, 2020

R426-1-100. Authority and Purpose. This rule establishes uniform definitions for all R426 rules. It also provides administration standards applicable to all R426 rules.

R426-1-200. General Definitions. The definitions in Title 26, Chapter 8a are adopted and incorporated by reference into this rule, in addition:

1. "Advanced Emergency Medical Technician" or "AEMT" means an individual who has completed an AEMT training program, approved by the Department, who is licensed by the Department as qualified to render services enumerated in this rule.

2. "Affiliated Provider" means a licensed EMS individual's secondary employer or employers.

3. "Air Ambulance" means a specially equipped and permitted aircraft, especially a helicopter or fixed wing airplane, for transporting patients.

4. "Air Ambulance Personnel" mean the pilot and patient care personnel who are involved in an air medical transport.

5. "Air Ambulance Service" means any publicly or privately owned organization that is licensed or applies for licensure under R426-3 and provides transportation and care of patients by air ambulance.

6. "Air Ambulance Service Medical Director" means a physician knowledgeable of potential medical complications which may arise because of air medical transport, and is responsible for overseeing and assuring that the appropriate air ambulance, medical personnel, and equipment are provided for patients transported by the air ambulance service.

7. "Categorization" means the process of identifying and developing a stratified profile of Utah hospital trauma critical care capabilities in relation to the standards defined under R426-5-7.

8. "Certify," "Certification," and "Certified" mean the official Department recognition that an individual has completed a specific level of training and has the minimum skills required to provide emergency medical care at the level for which they may be licensed.
(9) "Competitive Grant" means a grant awarded through the Emergency Medical Services Grants Program on a competitive basis for a share of available funds.

(10) "Continuing Medical Education" means a Department-approved training relating specifically to the appropriate level of certification designed to maintain or enhance an individual's emergency medical skills.

(11) "County or Multi-County EMS Council or Committee" means a group of persons recognized as the legitimate entity within the county to formulate policy regarding the provision of EMS.

(12) "Course Coordinator" means an individual who has completed a Department course coordinator course and is endorsed by the Department as capable to conduct Department-authorized EMS courses.

(13) "Department" means the Utah Department of Health.

(14) "Emergency Medical Dispatcher" or "EMD" means an individual who has completed a Department approved EMD training program, and is licensed by the Department as qualified to render services enumerated in this rule.

(15) "Emergency Medical Service Dispatch Center" means a call center designated by the Department for the routine acceptance of calls for emergency assistance, staffed by trained operators who utilize a selective medical dispatch system to dispatch licensed designated quick response units or licensed ambulance and paramedic services.

(16) "Emergency Medical Responder" or "EMR" means an individual who has completed a Department approved EMR training program, and is licensed by the Department as qualified to render services enumerated in this rule.

(17) "Emergency Medical Technician" or "EMT" means an individual who has completed a Department approved EMT training program and is licensed by the Department as qualified to render services enumerated in this rule.

(18) "Emergency Medical Technician Intermediate Advanced" means an individual who has completed a Department approved EMT- IA training program and is licensed by the Department as qualified to render services enumerated in this rule.

(19) "Emergency vehicle operator" means an individual on the roster of an EMS provider who may, in the normal course of the individual's duties, drive an ambulance or an emergency medical response vehicle.

(20) "EMS" means Emergency Medical Services.

(21) "Emergency Medical Incident" means any instance in which an Emergency Medical Services Provider is requested to provide or potentially provide emergency medical services.
(22) "EMS Instructor" means an individual who has completed a Department EMS instructor course and is endorsed by the Department as capable to teach EMS personnel.

(23) "EMS stand-by event" means the on-site licensed ambulance, paramedic service, or designated quick response unit at a scheduled event or activity provided by the local 911 exclusive license provider or their designee.

(24) "Endorsement" means a Department recognized set of skills or specific authority extended to an individual's EMS license.

(25) "Exclusive License" means the sole right to perform the licensed act in a defined geographic service area, and that prohibits the Department of Health from performing the licensed act, and from granting the right to anyone else.

(26) "Grants Review Subcommittee" means a subcommittee appointed by the EMS Committee to review, evaluate, prioritize and make grant funding recommendations to the EMS Committee.

(27) "Ground Ambulance" means a vehicle which is properly equipped, maintained, permitted and used to transport a patient to a patient destination such as a patient receiving facility or resource hospital.

(28) "Inclusive Trauma System" means the coordinated component of the State emergency medical services (EMS) system composed of all general acute hospitals licensed under Title 26, Chapter 21, trauma centers, and pre-hospital providers which have established communication linkages and triage protocols to provide for the effective management, transport and care of all injured patients from initial injury to complete rehabilitation.

(29) "Inter-facility Transfer" means an ambulance transfer of a patient, who does not have an emergency medical condition as defined in UCA 26-8a-102(6)(a), and the ambulance transfer of the patient is arranged by a transferring physician for the particular patient, from a hospital, nursing facility, patient receiving facility, mental health facility, or other licensed medical facility.

(30) "Individual" means a human being.

(31) "Level of Care" means the capabilities and commitment to the care of the trauma patient available within a specified facility.

(32) "Level of License" means the official Department recognized step in the licensure process in which an individual has attained as an EMS provider. It also means the licensed or designated level of an ambulance provider or Quick Response Unit.

(33) "Licensed EMS Individual" means a person licensed by the Bureau of Emergency Medical Services and Preparedness to perform an EMS function.
(34) "Meritorious Complaint" means a complaint against a licensed ambulance provider, designated agency, or licensed provider(s) that is made by a patient, a member of the immediate family of a patient, or health care provider, that the Department determines is substantially supported by the facts or a licensed ambulance provider, designated agency, or licensed provider(s):

(a) has repeatedly failed to provide service at the level or in the exclusive geographic service area required licensee;

(b) has repeatedly failed to follow operational standards established by the EMS Committee;

(c) has committed an act in the performance of a professional duty that endangered the public or constituted gross negligence; or

(d) has otherwise repeatedly engaged in conduct that is adverse to the public health, safety, morals or welfare, or would adversely affect the public trust in the emergency medical service system.

(35) "Matching Funds" means that portion of funds, in cash, contributed by the grantee to total project expenditures.

(36) "On-line Medical Control" which refers to physician medical direction of pre-hospital personnel during a medical emergency; and

(37) "Off-line Medical Control" which refers to physician oversight of local EMS services and personnel to assure their medical accountability.

(38) "Medical Director" means a physician certified by the Department to provide off-line medical control.

(39) "Mid-level Provider" means a licensed nurse practitioner or a licensed physician assistant.

(40) "Net Income" means the sum of net service revenue, plus other regulated operating revenue and subsidies of any type, less operating expenses, interest expense, and income.

(41) "Paramedic" means an individual who has completed a Department approved Paramedic training program and is licensed by the Department as qualified to render services enumerated in this rule.

(42) "Paramedic Ground Ambulance" means the provision of advanced life support patient care and transport by licensed paramedic personnel in a licensed ambulance.

(43) "Paramedic Rescue Service" means the provision of advanced life support patient care by licensed paramedic personnel without the ability to transport patients.

(44) "Paramedic Unit" means a vehicle which is properly equipped, maintained and used to transport licensed paramedics to the scene of emergencies to perform paramedic services without the ability to transport patients to a designated hospital or designated patient receiving facility.
(45) "Paramedic Tactical Service" means the retrieval and field treatment of injured peace officers or
victims of traumatic confrontations by licensed paramedics who are trained in combat medical
response.

(46) "Paramedic Tactical Unit" means a vehicle which is properly equipped, maintained, and used to
transport licensed paramedics to the scene of traumatic confrontations to provide paramedic tactical
services.

(47) "Patient Care Report" means a record of the response by each responding Emergency Medical
Services Provider unit to each patient during an EMS Incident.

(48) "Patient Receiving Facility" means a Department designated medical clinic or designated
resource hospital that is approved to receive patients transported by a licensed ambulance provider.

(49) "Per Capita grants" mean block grants determined by prorating available funds on a per capita
basis as delineated in 26-8a-207, as part of the Emergency Medical Services Grants Program.

(50) "Permit" means the document issued by the Department that authorizes a vehicle to be used in
providing emergency medical services.

(51) "Person" means an individual, firm, partnership, association, corporation, company, or group of
individuals acting together for a common purpose, agency, or organization of any kind public or
private.

(52) "Physician" means a medical doctor licensed to practice medicine in Utah.

(53) "Pilot" means an individual licensed to operate an air ambulance.

(54) "Pre-hospital Care" means medical care given to an ill or injured patient by a designated or
licensed EMS provider outside of a hospital setting.

(55) "Primary Affiliated Provider" or "PAP" means a licensed EMS individual's primary or main
employer or provider.

(56) "Primary emergency medical services" means an organization that is the only licensed or
designated service in a geographical area.

(57) "Provider" means a Department licensed or designated entity that provides emergency medical
services.

(58) "Provisional License" means temporary terms and conditions placed on a licensed EMS
individual's license until completion of an investigation or a final adjudication or conclusion of the
pending matter.

(59) "Quick Response Unit" or "QRU" means an entity that provides emergency medical services to
supplement local licensed ambulance providers or provide unique services.
(60) "Quick Response Vehicle" or "QRV" means a vehicle which is properly equipped, maintained, permitted and used to perform assistive services at a scene. A QRV may transport or deliver a patient to a licensed ambulance provider access point. The QRV may include an automobile, an all-terrain vehicle or a watercraft.

(61) "Resource Hospital" means a facility designated by the EMS Committee to provide on-line medical control for the provision of pre-hospital emergency care.

(62) "Restricted License" means a licensed EMS individual may not function in their EMS capacity for an interim period of time.

(63) "Scene" means the location of initial contact with the patient.

(64) "Selective Medical Dispatch System" means a Department-approved reference system used by a designated local dispatch agency to dispatch aid to medical emergencies which includes:

   (a) systemized caller interrogation questions;

   (b) systemized pre-arrival instructions; and

   (c) protocols matching the dispatcher's evaluation of injury or illness severity with vehicle response mode and configuration.

(65) "Specialized Life Support Air Ambulance Service" means a level of care which requires equipment or specialty patient care by one or more medical personnel in addition to the regularly scheduled air medical team.

(66) "Training Officer" means an individual who has completed a department Training Officer Course and is endorsed by the Department to be responsible for an EMS provider organization's continuing medical education, license renewal records, and testing.

**KEY:** Emergency Medical Services

**Date of Enactment or Last Substantive Amendment:** November 6, 2019

**Notice of Continuation:** October 9, 2018

**Authorizing, Implemented, or Interpreted Law:** 26-8a
Advance Care Directives ("Life with Dignity"/DNR)
January 2011

*Note: STATE LAW COMPLIANCE REQUIRED*
POLST

UNITED STATES ORDER FOR LIFE-SUSTAINING TREATMENT WITH DIGNITY ORDER

 Utah Code §75-2a-106

JANUARY 2011
BACKGROUND

WHAT IS A POLST?

The POLST is a standing medical order directing a patient’s end-of-life care treatment. POLST forms are authorized as Life With Dignity Orders under Utah law, §75-2a-106. The POLST enables an authorized provider to put transferable orders in place addressing specific life-sustaining treatments. The POLST encourages communication between providers and patients about difficult end-of-life care decisions. In addition, it is the only legal mechanism that allows a Utahn to have a DNR/DNAR order outside of a licensed health care facility. It is a tool that providers can — and should — use to help their patients get the end-of-life care they want.

In contrast to an Advance Healthcare Directive, which typically becomes effective only after certain future events occur, a POLST becomes effective the moment it is signed. The directions in a POLST should not be contingent on a future changes in condition; the POLST applies as soon as the treatment is medically indicated.

The POLST should be used to document patient preferences. The form should be completed only after the provider has thoroughly explored the patient’s preferences.

No person can be forced to complete a POLST.

WHO BENEFITS FROM A POLST?

Providers should discuss the POLST with patients:

- Who are facing life-threatening illness
- Who have specific preferences about life-sustaining measures (e.g. Jehovah Witness preference for no transfusion)
- Who want a DNR order when living outside of a licensed health facility

In contrast to Advance Directives, which benefit all adults, the POLST is less helpful to individuals who are not in these three categories.

LIABILITY PROTECTION

The POLST law provides criminal and civil liability protection for providers who follow a completed POLST in good faith. It also protects providers who provide life-sustaining care if there is reason to question the validity of a POLST or if there is reason to think a patient’s wishes are not reflected in the document. The POLST does not provide liability protection for providers who fail to provide life-sustaining treatment when a POLST contains an order expressing a preference for life-sustaining treatment.
HEALTH CARE FACILITY OBLIGATIONS

Utah Department of Health regulations (R432-31-11) require licensed health care facilities to ensure that all individuals receiving services who have current POLST/Life With Dignity Orders, receive assistance to complete new orders that comply with current rule and law requirements by January 31, 2011.

POLICIES AND PROCEDURES

Most health care facilities are obligated to have policies and procedures that address how they will:

- Determine upon admission whether an individual has a current POLST form
- Identify individuals who do not have a POLST but who should be offered the opportunity to complete one
- Identify circumstances under which the individual will be offered the opportunity to amend an existing POLST form
- Maintain the POLST form in a prominent location in the individual’s medical record
- Identify circumstances under which it would decline to follow a POLST form

TRAINING

Licensed health care facilities must train relevant health care, quality improvement, and record keeping staff on the requirements of Title 75, Chapter 2a, of the Advance Health Care Directive Act, the requirements of Utah Administrative Rule 432-31, and on the facility’s policies and procedures established pursuant to Rule 432-31.

TRANSMITTING PATIENTS

A POLST is fully transferable between all health care facilities

- The health care providers in the receiving facility must read the POLST and determine next steps in accordance with the facility’s policies and procedures
- A facility that discharges an individual with a POLST form must provide a copy of the POLST to the individual or to the individual’s surrogate decision-maker, when appropriate.
- A facility that transfers an individual with a POLST to another facility must provide a copy of the POLST to the receiving facility.
- A facility shall allow an individual to complete, amend, or revoke a POLST at any time upon request.

HIPAA permits the transfer of the POLST form to the receiving facility.
THE FORM

The POLST form is available on the forms page of the Utah Department of Health, Health Facility Licensing Certification and Resident Assessment forms web page, www.health.utah.gov/hflcra. Only POLST forms approved by the Department of Health may be used, and form may not be altered in layout or style, including font style and size.

WHO AUTHORIZES?

A Patient with Capacity

If the patient has the capacity to make health care decisions (see statutory definition and procedures before a patient is deemed to lack capacity), the patient should authorize and sign the POLST. Family or friends can be involved in discussing the POLST to the extent the patient wants, but a surrogate should not authorize a POLST if the patient has medical decision-making capacity.

A Patient Who Lacks Capacity

If the patient lacks decision-making capacity, the highest-ranking surrogate who is reasonably available can authorize the POLST. The patient must be included in the process of making the decisions, to the greatest extent possible.

PREPARING THE FORM

The POLST must be prepared by:

1. A physician
2. An APRN
3. A physician assistant

OR

A licensed nurse or a licensed social worker, acting, under the supervision of the physician, APRN, or PA who will sign the form, may prepare the form with the patient or surrogate, but the form must be signed by the physician, APRN or physician assistant.

The POLST may not be prepared by any person who does not meet these requirements. The POLST is NOT a “do it yourself” form.

REVIEWING THE FORM

The POLST should be reviewed at least annually, and

1. When the person is transferred from one care setting or care level to another,
2. When there is a substantial change in the person’s health status, and
3. When the person’s preferences change.
THE FORM

VOIDING THE FORM

The patient or surrogate may revoke a POLST by:

a. Orally informing emergency service personnel;
b. Writing "void" across the form;
c. Burning, tearing, or otherwise destroying or defacing the form;
d. Asking another adult to void or destroy the form for the patient;
e. Signing or directing another adult to sign a written revocation on the person’s behalf;
f. Stating, in the presence of an adult witness, that the person wishes to revoke the order; or

g. Completing a new life with dignity order.

A surrogate can revoke or change a POLST completed by the patient only if doing so is consistent with the patient’s preferences. A surrogate’s instructions may not override a patient’s previously expressed preferences.

SIGNING THE FORM

If the surrogate who is authorizing the POLST is doing so on the phone, a person at the patient’s location may sign at the direction of the surrogate.

COPIES AND FAXES

Copies and faxes of POLST forms are valid. A provider should make sure that, if a POLST is changed, copies of the new form are provided to others who may still have the version that has been revoked.

OUT-OF-STATE USE

A POLST may or may not be legally enforceable in other states, but an individual with a POLST should travel with it when out-of-state.

A Utah provider may honor a POLST from another state that either meets the requirements of Utah’s law or that meets the requirements of the law of the state in which it was made.
HEALTH CARE DECISION-MAKING CAPACITY

75-2 a-103(13) Definitions

Health care decision making capacity means an adult's ability to make an informed decision about receiving or refusing health care, including:

(a) the ability to understand the nature, extent, or probable consequences of health status and health care alternatives;
(b) the ability to make a rational evaluation of the burdens, risks, benefits, and alternatives of accepting or rejecting health care; and
(c) the ability to communicate a decision.

75-2 a-104. Capacity to make health care decisions – Presumption – Overcoming presumption.

(1) An adult is presumed to have:
(a) health care decision making capacity; and
(b) capacity to make or revoke an advance health care directive.
(2) To overcome the presumption of capacity described in Subsection (1)(a), a physician, an APRN, or, subject to Subsection (6), a physician assistant who has personally examined the adult and assessed the adult's health care decision making capacity must:
(a) find that the adult lacks health care decision making capacity;
(b) record the finding in the adult's medical chart including an indication of whether the adult is likely to regain health care decision making capacity; and
(c) make a reasonable effort to communicate the determination to:
(i) the adult;
(ii) other health care providers or health care facilities that the person who makes the finding would routinely inform of such a finding; and
(iii) if the adult has a surrogate, any known surrogate.
(3) (a) An adult who is found to lack health care decision making
HEALTH CARE DECISION-MAKING CAPACITY

75-2 a-104. Capacity to make health care decisions -- Presumption -- Overcoming presumption. (Cont.)

capacity in accordance with Subsection (2) may, at any time, challenge the finding by:

(i) submitting to a health care provider a written notice stating that the adult disagrees with the physician's finding; or

(ii) orally informing the health care provider that the adult disagrees with the finding.

(b) A health care provider who is informed of a challenge under Subsection (3)(a), shall, if the adult has a surrogate, promptly inform the surrogate of the adult's challenge.

(c) A surrogate informed of a challenge to a finding under this section, or the adult if no surrogate is acting on the adult's behalf, shall inform the following of the adult's challenge:

(i) any other health care providers involved in the adult's care; and

(ii) the health care facility, if any, in which the adult is receiving care.

(d) Unless otherwise ordered by a court, a finding, under Subsection (2), that the adult lacks health care decision making capacity, is not in effect if the adult challenges the finding under Subsection (3)(a).

(e) If an adult does not challenge the finding described in Subsection (2), the health care provider and health care facility may rely on a surrogate, pursuant to the provisions of this chapter, to make health care decisions for the adult.

(4) A health care provider or health care facility that relies on a surrogate to make decisions on behalf of an adult has an ongoing obligation to consider whether the adult continues to lack health care decision making capacity.

(5) If at any time a health care provider finds, based on an examination and assessment, that the adult has regained health care decision making capacity, the health care provider shall record the results of the assessment in the adult's medical record, and the adult can direct the adult's own health care.

(6) A physician assistant may not make a finding described in Subsection (2), unless the physician assistant is permitted to make the finding under the physician assistant's delegation of services agreement, as defined in Section 58-70a-102.
PRIORITY OF SURROGATE DECISION - MAKERS


2. Court-appointed guardian who has been granted the authority to make health care decisions.

3. The adult's spouse, unless the adult is divorced or legally separated; or

4. The following family members:
   (A) a child;
   (B) a parent;
   (C) a sibling;
   (D) a grandchild; or
   (E) a grandparent.

No person may direct an adult's care if a person of a higher priority class is able and willing to act as a surrogate for the adult.

A court may disqualify a person described in Subsection (1)(b) from acting as a surrogate if the court finds that the person has acted in a manner that is inconsistent with the position of trust in which a surrogate is placed.

If no person named above is reasonably available to act as a surrogate, a person who is 18 years of age or older, other than those designated in Subsection (1) may act as a surrogate if the person:
   (a) has health care decision making capacity;
   (b) has exhibited special care and concern for the patient;
   (c) knows the patient and the patient's personal values; and
   (d) is reasonably available to act as a surrogate.
FOR MORE INFORMATION

Go to the Utah Commission on Aging tab at www.aging.utah.edu or email maureen.henry@utah.edu.

Health facilities should contact the Utah Department of Health, Health Facility Licensing, Certification, and Resident Assessment

Toll Free: (800) 662-4157
Salt Lake Area: (801) 538-6158

Emergency medical services questions should be directed to:

Toll-free: (800) 284-1131
Salt Lake Area: (801) 273-6666
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Trauma Patient Care Guidelines
Utah Trauma System Advisory Committee

GENERAL TRAUMA MANAGEMENT

AMPUTATIONS / TOOTH AVULSIONS

BURNS – THERMAL / ELECTRICAL / LIGHTNING

HEAD INJURY (TRAUMATIC BRAIN INJURY)

HEMORRHAGE CONTROL, EXTREMITY AND CRUSH INJURIES

NON-ACCIDENTAL TRAUMA/ABUSE

SNAKE BITES

SPINAL MOTION RESTRICTION (SMR)

Davis County EMS Appendix 1
General Patient Care Guidelines

These guidelines were created to provide direction to each level of certified provider in caring for all types of patients. All of these directions, dosages and provisions are subject to change with a later notice or revision of the guidelines. The 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. If the explanation is not sufficient, the provider should bring the issue to their medical director or the BEMSP for review.

General Approach to General Patient Care Guidelines

- Assess your patient prior to initiating a guideline.
- 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 the receiving hospital 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.
- OLMC physician must approve usage of dosages in excess of the guideline.

General Pediatric Considerations

- Pediatric reference based tape dosing is preferred over calculated dosages 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.

⚠️ This symbol and yellow highlighted instructions precedes any treatment that requires OLMC prior to initiating the treatment unless otherwise specified.
# AIRWAY AND TRACHEOSTOMY MANAGEMENT

## Focused history and physical exam
- Assess ABC’s for evidence of current apnea, airway reflex compromise or difficulty in ventilatory effort.
- Assess medical conditions, burns or traumatic injuries that may have or will compromise the airway.

## Continuous cardiac, ETCO2, blood pressure, and pulse oximetry monitoring, when available.

## Obtain a 12 Lead EKG when available.

## Treatment Plan
- Provide basic airway maneuvers to all compromised airways, i.e. jaw-thrust, airway adjuncts, and oxygen.
- Identify and treat underlying reversible medical conditions (narcotic overdose, hypoglycemia, etc.).
- Provide supplemental oxygen and assisted ventilation as needed for the patient to maintain an oxygen saturation 90-94% and ETCO2 of 35-45.
- Always ensure proper care of the C-spine during airway treatment per the *Spinal Motion Restriction Guideline*.
- Keep NPO. Stop any GI Feedings and do not use GI tube during resuscitation except to vent tube if assisted ventilations being delivered
- Infants and young children are primary nose breathers. Suction oral and nasal passages as needed to keep clear.
- BVM is the preferred method of ventilation below the age of 10 years old.
- Tracheostomy/Home Ventilator
  - Primary caretakers and families are your 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. (Disconnecting a vent poses a very HIGH risk for body fluid exposure and can be dangerous to the patient if done incorrectly, see appendix for more details)
  - If unable to ventilate, suction the tracheostomy, then reattempt ventilatory efforts.
  - If still unable to ventilate, attempt traditional BVM
  - If there is difficulty ventilating a tracheostomy patient, consider “D.O.P.E.” (Dislodged? Obstruction? Pneumothorax? Equipment failure?)

## ADULT

### EMT
- Ventilate with BVM when apneic or exhibiting respiratory distress. *Consider a nasal or oral airway when not contraindicated (facial fractures, intact gag response, etc).*
- Avoid hyperventilation and maintain a ventilatory rate of 10-12 breaths per minute

### AEMT
- Consider an appropriately sized supraglottic airway device if unable to ventilate with BVM

## PEDIATRIC (<15 years of Age)

### EMT
- Ventilate with BVM when apneic or exhibiting respiratory distress. *Consider a nasal or oral airway when not contraindicated (facial fractures, intact gag response, etc).*
- Avoid hyperventilation - 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)

### AEMT
- Consider an appropriately-sized supraglottic airway device if unable to ventilate with BVM
CPAP/BiPAP – 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 or BiPAP according to manufacturer instructions.
- If unable to adequately ventilate return to BVM and consider insertion of a supraglottic airway.

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

Endotracheal Intubation - Consider orotracheal intubation using an endotracheal tube (ETT) when indicated

- Document TWO confirmation methods to verify endotracheal placement. (e.g. ETCO2, CO2 detection device, or esophageal intubation detector)
- Secure the ETT for transport
- Consider NG/OG tube placement or opening active G-tubes for all intubated patients
- Consider sedation after intubation
- If endotracheal intubation is unsuccessful revert to a supraglottic airway device or BVM with appropriate oral/nasal airway. Avoid multiple attempts at intubation.

Surgical Airway - Cricothyrotomy - Consider only when all other methods of oxygenation, ventilation and securing the airway have failed.

- Document TWO confirmation methods to verify endotracheal placement. (e.g. ETCO2, CO2 detection device, or esophageal intubation detector)
- Gather all equipment before beginning the procedure
- Once the procedure is done insert a 5.0 or 6.0 cuffed ETT, inflate cuff, and secure.

Tracheostomy Assistance

- Provide supplemental oxygen
- Suction the patient appropriately (use in-line suction if available)
- 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, orotracheal

Endotracheal Intubation - Consider orotracheal intubation using an endotracheal tube (ETT) when indicated

- BVM ventilations are the preferred method of ventilation in children, even for long transports. However, if oxygenation or ventilation is inadequate with BVM, a trial of a supraglottic airway is indicated. In the rare instance that a supraglottic airway is ineffective, then proceed to ETT
- For longer transports, be aware of gastric distension during BVM, which may limit ventilation. An NG/OG tube can be placed to decompress the stomach
- Pediatric ETT’s are sized according to age and are in mm:
  - Preemie: 2.5
  - 0-3 months: 3.0
  - 3-7 months: 3.5
  - 7-15 months: 4.0
  - 15-24 months: 4.5
  - 2-15 years: Formula is (age+16) / 4
- Document TWO confirmation methods to verify endotracheal placement. (e.g. ETCO2, CO2 detection device, or esophageal intubation detector)
- Secure the ETT for transport
- Consider NG/OG tube placement or opening active G-tubes for all intubated patients
- Consider sedation after intubation
- If endotracheal intubation is unsuccessful revert to a supraglottic airway device or BVM with appropriate oral/nasal airway. Avoid multiple attempts at intubation.

Contact OLMC to discuss further settings.
intubation or Supraglottic device to ventilate the 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.

Surgical Airway – Cricothyrotomy - Consider only when all other methods of oxygenation, ventilation and securing the airway have failed.
- Open Surgical Cricothyrotomy is contraindicated in ages < 12 years old.
- Needle Cricothyrotomy can be used below 12 years of age.
- Document TWO confirmation methods to verify endotracheal placement. (e.g. ETCO2, CO2 detection device, or esophageal intubation detector).
- Gather all equipment before beginning the procedure.
- Once the procedure is done insert an appropriately sized cuffed ETT and secure.

Contact OLMC for further instructions as needed.

Tracheostomy Assistance
- Provide supplemental oxygen
- Suction the patient appropriately (use in-line suction if available)
- Replace tracheostomy tube, with patient’s back up 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 ETT use BVM, orotracheal intubation or SGD

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 cardiac, ETCO2, blood pressure, and pulse oximetry monitoring, when available.
- Obtain a 12 Lead EKG when available

**Treatment Plan**
- Assess for trauma.
- Assess for stroke and score per the *Suspected Stroke Guideline*.
- Assessment for possible overdose, substance abuse or other potential toxin exposure. Evaluate the scene for supportive evidence.
- Gather and collect any evidence on scene that may assist in the treatment of the patient (medication bottles, pills, notes, etc.)

**Key Considerations**
- Consider non-accidental trauma, especially in pediatric and elderly patients
- Consider hypoglycemia in pediatric patient
- Pediatric lowest acceptable systolic blood pressures are birth to 1 month = 60mmHg, 1 month to 1 year = 70mmHg, 1 year to 10 years = 70mmHg + (age x 2) and over 10 years = 90mmHg.
- If poisoning suspected, you may contact Utah Poison Center at 1-800-222-1222 for guidance.
- When evaluating pediatric level of consciousness use **A.V.P.U.** Alert, Verbal, Pain, Unresponsive

<table>
<thead>
<tr>
<th>A</th>
<th>Alcohol</th>
</tr>
</thead>
<tbody>
<tr>
<td>T</td>
<td>Trauma/Temp</td>
</tr>
<tr>
<td>E</td>
<td>Electrolytes</td>
</tr>
<tr>
<td>I</td>
<td>Infection</td>
</tr>
<tr>
<td>O</td>
<td>Opiates</td>
</tr>
<tr>
<td>P</td>
<td>Psychogenic</td>
</tr>
<tr>
<td>U</td>
<td>Uremia</td>
</tr>
<tr>
<td>S</td>
<td>Shock/Seizure</td>
</tr>
</tbody>
</table>

**ADULT**

- Apply supplemental oxygen as needed to maintain oxygen saturation of 90-94%
- Apply warming or cooling techniques as indicated
- Consider physical restraints as needed to protect the patient and/or rescue personnel
- **Naloxone** 0.4–2 mg (per dose) IM/IN (intranasal) for suspected narcotic overdose. May repeat once

**PEDIATRIC (<15 years of Age)**

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

- Apply supplemental oxygen as needed to maintain oxygen saturation of 90-94%
- Apply warming or cooling techniques as indicated
- Consider physical restraints as needed to protect the patient and/or rescue personnel
- **Naloxone** 0.1 mg/kg (max 2mg per dose) IM/IN (intranasal) for suspected narcotic overdose. May repeat once

**AEMT**

- Advanced airway, vascular access and fluid therapy
- Consider chemical restraints per the *Violent Patient/Chemical Restraint Guideline*, as needed, to protect the patient and/or rescue personnel

**EMT**

- Advanced airway, vascular access and fluid therapy
- If evidence of poor perfusion, give NS 20mL/kg IV max 1 L
- Consider chemical restraints per the *Violent Patient/Chemical Restraint Guideline*, as
If patient is hypoglycemic, refer to hypoglycemia protocol needed, to protect the patient and/or rescue personnel.

If patient is hypoglycemic, refer to hypoglycemia protocol.
DEATH DETERMINATION AND TERMINATION OF RESUSCITATION

ALL PROVIDERS

❑ **General Crime Scene Management Principles** as appropriate.

❑ **Treatment Plan**

  - **EMS may withhold initiation of resuscitation when:**
    - Bodily injury or condition incompatible with life such as:
      - Obvious death, decomposition, and/or rigor mortis
      - Obvious fatal wounds without signs of life
      - Dependent lividity
    - Any adult patient who is apneic, pulseless, and has an initial rhythm of asystole who also:
      - Had an unwitnessed arrest AND an estimated time interval of greater than 15 minutes from collapse to the initiation of CPR
      - Could not have resuscitation started within 15 minutes of arrest due to scene difficulties such as extrication, location, or unsafe environment
      - Is a patient in a multi-victim incident where insufficient resources preclude initiating resuscitative measures
      - Is a drowning victim with a reasonably determined submersion time of greater than one (1) hour prior to exam
      - Experienced a traumatic arrest AND all signs of life are absent, including pupillary reflexes, spontaneous movement, response to pain, spontaneous respirations, or organized electrical activity on the cardiac monitor.
    - Written or verbal orders that request no resuscitation:
      - A verbal order by a licensed physician in the State of Utah who is present on scene pronouncing the patient dead
      - A verbal order by the OLMC physician
      - A Do Not Resuscitate (DNR) written order, bracelet, or necklace from any U.S. state.
      - A signed Physician/Provider Order for Life-Sustaining Treatment (POLST) form from any U.S. state indicating that the patient does not desire resuscitative efforts
      - Immediate family member request honoring the patient’s wishes to NOT start CPR, AND has had a known chronic or terminal illness, WITH the full agreement of all relatives AND EMS personnel on scene AND with concurrence of OLMC. If EMS is uncomfortable with the request, then resuscitative efforts should be started
      - OLMC should be consulted for any difficult or questionable case
    - **Termination of CPR** may be done in the following circumstances with the concurrence of OLMC:
      - A valid DNR or POLST form is discovered after resuscitative efforts were initiated
      - Resuscitative efforts were initiated when criteria to not resuscitate were present (as above)
      - A verbal order pronouncing the patient dead by a licensed physician in the state of Utah who arrives on scene
      - Order by the OLMC physician
      - Adult cardiac arrest - resuscitation attempts may be terminated if the patient is in asystole after 20 minutes of ACLS on scene if ALL of the following criteria are met:
        - Arrest was not witnessed by EMS personnel
        - No shockable rhythm was identified at any time during the resuscitation
        - No ROSC occurred at any time during the resuscitation

⚠️ Must contact OLMC for approval prior to termination of resuscitation efforts
• **Special Considerations for Resuscitation**
  - All traumatic and non-traumatic pediatric arrests should be transported to the hospital after 15 minutes of on-scene resuscitation with resuscitative efforts carried out en-route, unless it is an obvious death on scene.
  - Arrests not due to cardiac cause or trauma. The following situations require hospital transport and/or prolonged resuscitation attempts:
    - Hypothermia
    - Active Internal Bleeding
    - Drug/toxin overdose
    - Drowning
    - Electrocution or Lightning Strike
  - Dangerous, violent or otherwise unsafe or difficult scene situation. EMS personnel safety and patient respect are of the utmost importance. Assessing the scene to insure a safe and secure environment to continue resuscitation is important. If any concerns about scene safety or personnel security, the patient should be promptly loaded and transported to the hospital.
  - Pregnant mother >25 weeks pregnant. Initiate early hospital transport for possible advanced care and possible delivery of the baby.

• 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 Guidelines*
  - 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.

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**ADULT**

<table>
<thead>
<tr>
<th>EMT</th>
<th>AEMT</th>
<th>PARAMEDIC</th>
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</thead>
</table>

**PEDIATRIC (<15 years of Age)**

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

<table>
<thead>
<tr>
<th>EMT</th>
<th>AEMT</th>
<th>PARAMEDIC</th>
</tr>
</thead>
</table>

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**KEY POINTS/CONSIDERATIONS**

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 could and should have been done to resuscitate the patient was done.
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 with the pediatric patient and their families.

Demonstration of Family Centered Care is by one’s actions and behaviors when caring for patients.

Treatment Plan

- 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.
  - 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 the patient.
    - 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), allowing 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, so allow them to be present.
- School Age: Attachment objects, honesty about procedures, and imaginary/magical (e.g. “I made the car crash,” “I told a lie, and this is why mom is hurt”) perspective of young children. Include the child in conversations about his/her treatment when possible.
- 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 important. Adolescents as well as adults are afraid of pain. The anticipation of pain can be worse that 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 crew member to be a liaison to the family in order to facilitate communication and continuity.

**ADULT**

<table>
<thead>
<tr>
<th>EMT</th>
<th>AEMT</th>
<th>PARAMEDIC</th>
</tr>
</thead>
</table>

**PEDIATRIC (<15 years of Age)**

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

| EMT | AEMT | PARAMEDIC |
# Nausea / Vomiting

**ALL PROVIDERS / EMT**

- Focused history and physical exam
  - Blood glucose, temperature and oxygen saturation assessment
- Continuous cardiac, ETCO2, blood pressure, and pulse oximetry monitoring, when available
- **Treatment Plan**
  - Nothing by mouth (NPO)
  - Place the patient in an upright or lateral recumbent position
  - Obtain a 12 lead EKG, if available, for:
    - 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

### AEMT

- Vascular access and fluid therapy
- Document level of consciousness before and after giving medication
- **Ondansetron** 4mg IV/IM/PO
- **Promethazine** 12.5–25 mg IV titrated to effect if SBP >100 or peripheral pulse present
  - Dilute with 5–10 mL of NS and administer over 30 seconds
  - Avoid in elderly patients due to potential for sedation
  - Should be given through AC or larger vessel due to extravasation risk
  - **Promethazine** 25 mg IM, if no vascular access

## Pediatric (<15 years of Age)

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

### AEMT

- Vascular access and fluid therapy
- Document level of consciousness before and after giving medication.
- **Ondansetron (Zofran)**
  - > 2 years old- 0.1mg/kg IV/IM/PO once (max 4mg)
  - 1-2 years old- 0.1 mg/kg IV/IM/PO Once
- **Promethazine (Phenergan)** – NOT recommended, requires OLMC contact.
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 cardiac, ETCO2, blood pressure, and pulse oximetry monitoring, when available
- Implement appropriate treatment guideline for the chief complaint.

Treatment Plan

- Consider 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
- Consider ice packs
- Implement pharmaceutical measures
  - Monitor patient vital signs every 5 minutes as this guideline is implemented
  - Have naloxone available in case of respiratory depression
  - Avoid or stop giving medications if SBP < 100 mmHg in adults, SBP < 70 + (age in years x 2) mmHg for pediatrics, SaO2 < 90% without oxygen, or GCS < 14
  - Stop pain medication dosing when the patient has adequate relief, pain score < 5, adult SBP < 100 mmHg, peds SBP < 70 + (age in years x 2) mmHg, SaO2 < 90% without oxygen, or GCS < 14
  - If pain and anxiety are both present, attempt to treat pain fully with analgesics alone before using analgesics and sedatives concurrently

Key Considerations

- 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

<table>
<thead>
<tr>
<th>Categories</th>
<th>FLACC Scoring for Infants</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Face</td>
<td>No particular expression or smile</td>
</tr>
<tr>
<td>Legs</td>
<td>Normal position or relaxed</td>
</tr>
<tr>
<td>Activity</td>
<td>Lying quietly, normal position, moves easily</td>
</tr>
<tr>
<td>Cry</td>
<td>No cry (awake or asleep)</td>
</tr>
</tbody>
</table>

ADULT

PEDIATRIC (<15 years of Age)

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

- Vascular access and fluid therapy
  - The order in which medications below are listed is not intended to indicate hierarchy, order, or preference of administration
  - Dosages should be reduced by half when there is concern for drug or alcohol intoxication
  - Consider treating with antiemetic’s prior to pain management
  - Maximize dosing of a single agent before using additional agents

Pain Control

- Acetaminophen 650-1000mg PO, IV, single dose only
- Ibuprofen 600mg PO, single dose only
- Ketorolac 15mg IV, single dose only
- Morphine Sulfate 2-10 mg q10 minutes IV/IO/IM titrated to effect
- Fentanyl 20-50mcg q10 minutes IV/IO/IM/IN, Max dose 100mcg

- Acetaminophen 15mg/kg PO, IV, single dose only. Max dose 650mg
- Ibuprofen 10mg/kg PO ONLY FOR USE in patients over the age of 6 months, single dose only. Max dose 600mg
- Ketorolac 0.5mg/kg IV (max 15mg), single dose only, ONLY FOR USE in patients over the age of 2.
- Fentanyl 1 mcg/kg (max 50 mcg per dose) IV/IM/IO. Use 2 mcg/kg for IN (intranasal) (max 100mcg per dose). May repeat x 1 if needed after 10-15 min
- Morphine Sulfate 0.1 mg/kg (max of 4mg per dose) IV/IM/IO titrated to effect

Anxiety Control

- Midazolam
  - IV/IO – 2.5- 5 mg, may repeat once in 10 minutes, if needed. Total max dose: 10mg
  - Intranasal (IN) – 5 mg, may repeat once in 10 minutes to a max dose of 10mg
  - Intramuscular (IM) – 10 mg once
- Diazepam
  - IV/IO – 5 mg every 10 min to the desired effect or max dosage of 20 mg
  - Intramuscular (IM) – 10 mg once (IM not preferred, unless no other options)
- Lorazepam
  - IV/IO – 2 mg every 5 min. to the desired effect or max dose of 4 mg
  - Intramuscular (IM) – 4 mg once

- Midazolam
  - IV/IO - 0.1 mg/kg (max 5 mg), may repeat once in 10 minutes, if needed. Total max dose: 10 mg
  - Intranasal (IN) - 0.2 mg/kg (max 5 mg), may repeat once in 10 minutes, if needed. Total max dose: 10 mg
  - Intramuscular (IM) – 0.2 mg/kg (max 10 mg) once
- Diazepam
  - IV/IO - 0.1 mg/kg (max 5 mg), may repeat once in 10 minutes, if needed. Total max dose: 10 mg
  - Intramuscular (IM) – 0.2 mg/kg (max 10 mg) once (IM not preferred unless no other options)
- Lorazepam
• IV/IO – 0.05 mg/kg (max 2 mg), may repeat once in 10 minutes, if needed. Total max dose: 4 mg
• Intramuscular (IM) – 0.05 mg/kg (max 4 mg) once

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

PARAMEDIC

☐ Ketamine 30mg diluted in 100mL of normal saline IV/IO infused over 15 minutes OR until analgesia is attained. May repeat x 1. Max dose 60mg.

☐ Ketamine 0.15-0.3 mg/kg (max 30mg) diluted in 100mL of normal saline IV/IO infused over 15 minutes ONLY FOR USE in patients over the age of 2 years.

☐ May halt infusion if pain relief obtained before full dose administered.
PEDIATRIC ASSESSMENT

ALL PROVIDERS / EMT

- The pediatric assessment should be modified for the developmental level of each patient
- Continuous cardiac, ETCO2, and pulse oximetry monitoring, when available
- Treatment Plan (develop and implement plan based on assessment for
  - Use the Pediatric Assessment Triangle (defined by the AAP) to form a general impression of

- 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, delayed capillary refill and cyanosis

- If the patient looks ill and has poor perfusion, start CPR when the heart rate is less than:
  - 80 bpm for infants (up to 1 year of age)
  - 60 bpm for children (1 year to 8 years)
- Look on scene for the 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.

### Normal Pediatric Vital Signs

<table>
<thead>
<tr>
<th>Age of Patient</th>
<th>HR</th>
<th>RR</th>
<th>Systolic BP</th>
<th>Temp</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 days - &lt; 1 mo</td>
<td>&lt;80</td>
<td>&gt;205</td>
<td>&lt;30</td>
<td>&gt;60</td>
</tr>
<tr>
<td>&gt; 1 mo - &lt; 3 mo</td>
<td>&lt;80</td>
<td>&gt;205</td>
<td>&lt;30</td>
<td>&gt;60</td>
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<tr>
<td>&gt; 3 mo - &lt; 1 yr</td>
<td>&lt;75</td>
<td>&gt;190</td>
<td>&lt;30</td>
<td>&gt;70</td>
</tr>
<tr>
<td>&gt; 1 yr - &lt; 2 yrs</td>
<td>&lt;75</td>
<td>&gt;190</td>
<td>&lt;24</td>
<td>&gt;40</td>
</tr>
<tr>
<td>&gt; 2 yrs - &lt; 4 yrs</td>
<td>&lt;60</td>
<td>&gt;140</td>
<td>&lt;24</td>
<td>&gt;40</td>
</tr>
<tr>
<td>&gt; 4 yrs - &lt; 6 yrs</td>
<td>&lt;60</td>
<td>&gt;140</td>
<td>&lt;22</td>
<td>&gt;34</td>
</tr>
<tr>
<td>&gt; 6 yrs - &lt; 10 yrs</td>
<td>&lt;60</td>
<td>&gt;140</td>
<td>&lt;18</td>
<td>&gt;30</td>
</tr>
<tr>
<td>&gt; 10 yrs - &lt; 13 yrs</td>
<td>&lt;60</td>
<td>&gt;100</td>
<td>&lt;12</td>
<td>&gt;16</td>
</tr>
<tr>
<td>&gt; 13 yrs - &lt; 18 yrs</td>
<td>&lt;60</td>
<td>&gt;100</td>
<td>&lt;12</td>
<td>&gt;16</td>
</tr>
</tbody>
</table>

- Key Considerations
  - Obtaining a full set of vital signs, including blood pressure, 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.
SHOCK, SEPSIS, & FLUID THERAPY

ALL PROVIDERS / EMT

❑ Focused history and physical exam
  • Blood glucose, oxygen saturation and temperature assessment
  • Consider shock in patients with one or more of the following:
    o Vital signs: HR >100, SBP <90mmHg for adults, SBP <70 + (age in years x 2) mmHg for children, or RR >20 BPM
    o Skin signs: cold clammy skin, febrile, or delayed capillary refill
    o Mental status: altered, lethargic, or irritable (esp. in infants).
❑ Evaluate for the source of shock including distributive (e.g. infection, anaphylaxis), hypovolemic (e.g. hemorrhagic, vomiting/diarrhea, heat exposure), neurologic (i.e. spinal injury), or cardiogenic
❑ Sepsis Alert – Contact the hospital and initiate a Sepsis Alert if:
  • Suspected or documented Infection AND EITHER
    • Two or more of the following criteria are met:
      o Temp >100.4 °F (38°C) or <96.8°F (36°C)
      o RR >20 BPM
      o Heart Rate >90 bpm
    OR
      • Signs of hypoperfusion – SBP <90mmHg or MAP <65mmHg or ETCO2 <25
❑ Continuous cardiac, ETCO2, and pulse oximetry monitoring, when available
❑ Obtain a 12 Lead EKG when available
❑ Treatment Plan
  • Address the underlying cause of shock, if possible
  • Administer oxygen as needed to keep oxygen saturations between 90-94%.
  • Ensure patient warmth, resuscitate with warm IV fluids when available
  • Pregnancy >20 weeks gestation - Transport in partial left lateral decubitus position. Place wedge-shaped cushion or multiple pillows under patient’s right hip and shoulders to elevate R side 30-45 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

AEMT

❑ Vascular access
  • Insert 2 large bore IVs
❑ Traumatic Shock – Permissive Hypotension
  • If SBP >80-90 (intact radial pulse):
    o No IV fluid bolus
    o Place saline locks on IVs or run at TKO rate
  • If SBP <80-90:
    o Give fluid bolus 500mL at a time, reassess and repeat as needed to:
      ▪ Maintain SBP to 80-90 mmHg WITHOUT a CLOSED HEAD INJURY.
      ▪ Maintain SBP to 110-120 mmHg WITH a CLOSED HEAD INJURY.

PEDIATRIC (<15 years of Age)

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

AEMT

❑ Vascular access
  • Insert 2 large bore IVs
❑ Traumatic Shock – Give fluid bolus of NS 20 mL/kg at a time (max 1L) reassess and repeat up to a maximum of 60 mL/kg total (Max 3L); Reassess for reversal of the signs of shock
  • If the patient remains hypotensive after 60mL/kg (max 3L) of NS call OLMC
❑ Non- Traumatic Shock - Provide 20mL/kg (max 2 L) boluses up to a maximum of 60mL/kg and reassess for reversal of the signs of shock
  • If the patient remains hypotensive after 60mL/kg (max 3L) of NS call OLMC
❑ Cardiogenic Shock - In patients with CHF, pulmonary edema and cardiogenic shock, IV
• Once minimum blood pressures have been achieved the patient should have a saline lock and no further fluid boluses should be administered unless the BP falls below the limits.

❑ **Non-Traumatic Shock** – Give IV NS bolus 500 ml at a time, re reassess and repeat up to a maximum of 2 liters as required for reversal of signs of shock
  🔄 Call OLMC if the patient remains hypotensive after 2 liters has been administered

❑ **Cardiogenic Shock** - In patients with CHF, pulmonary edema, and cardiogenic shock, IV fluids should be withheld, to avoid worsening shock
  • Rapidly transport to hospital

❑ **Kidney Failure (i.e. dialysis patients)** - Give 500mL fluid boluses up to a maximum of 1 liter and reassess for reversal of the signs of shock

-------

**PARAMEDIC**
FOR USE ONLY IN NON-TRAUMATIC SHOCK

❑ **Epinephrine 2–10 mcg/min** IV/IO infusion for hypoperfusion. Titrante to maintain a SBP >100 mmHg

❑ **Push Dose Epinephrine 10mcg** as needed to maintain a SBP >100 mmHg after fluid bolus

❑ **Norepinephrine** initial dose: **0.05 – 1 mcg/kg/min** IV/IO for hypoperfusion. Titrante to maintain a SBP > 100 mmHg. For patients in refractory shock: 8-30 mcg/minute

 fluids should be withheld, to avoid worsening shock
  • Apply high-flow oxygen
  • Rapidly transport to the hospital

❑ **Kidney Failure (i.e. dialysis patients)** - Give 10 mL/kg fluid boluses(max 500mL) up to a maximum of 20mL/kg (max 1L) and reassess for reversal of the signs of shock
  🔄 Call OLMC if the patient remains hypotensive after 20 ml/kg has been administered

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**PARAMEDIC**
FOR USE ONLY IN NON-TRAUMATIC SHOCK

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

橙 **Push Dose Epinephrine 1mcg/kg** as needed to maintain a SBP>70 + (age in years x 2) mmHg after fluid bolus

橙 **Norepinephrine** initial dose: **0.05 - 0.1 mcg/kg/min**, ttitrate to max of 2 mcg/kg/min to maintain SBP >70 + (age in years x 2) mmHg
Cardiac Patient Care Guidelines

These guidelines were created to provide direction for each level of certified provider in caring for cardiac patients. All of these directions, dosages and provisions are subject to change with a later notice or revision of the guidelines. The 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. If the explanation is not sufficient to the provider, then they may bring the issue to their medical director or the BEMSP for review.

General Approach to Cardiac Patient Care Guidelines

- Assess your patient prior to initiating a guideline.
- 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 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.

General Pediatric Considerations

- 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.
CARDIAC ARREST

ALL PROVIDERS / EMT

For Traumatic Arrest refer to General Trauma Management Guidelines

- Focused history and physical exam
  - Assess for evidence that resuscitation should not be attempted per the Death Determination Guideline.
- Continuous ECG, CO2, and Pulse Oximetry monitoring when available

- Treatment Plan
  - Assess for presence of a pulse, respirations, and consciousness. If absent:
    - Begin chest compressions for 2 min
    - Apply AED and shock if advised.
      - AEMT/PM: Apply cardiac monitor/defibrillator and shock if Vtach/Vfib

- Key Considerations
  - Effective chest compressions are critical
    - Minimize interruptions in chest compressions
      - Precharge the defibrillator and countdown to rhythm check/defibrillation
      - Use a verbal 10 second countdown during any pause to limit hands-off time
    - Rate: 100-120/min
    - Depth: 2-2.5 inches (adult) / 1/3 of chest depth (pediatric)
    - Allow full chest recoil after each compression
    - After each shock, immediately perform 2 minutes of chest compressions before checking rhythm/pulse
    - Rotate compressors every 2 minutes
    - If using mechanical CPR:
      - Apply device with minimum interruption in CPR
      - Check rhythm/pulse every 2 min (5 seconds only)
      - Duration of resuscitation as below
  - Consider the Pit Crew model as an approach to treatment
    - Pre-defined roles, as determined by a specific EMS agency, for members of an integrated team of first responders, BLS, and ALS.
    - Designated individuals for chest compressions
    - Designated individual for overall code leadership/management
    - Designated individual for airway management
    - Additional roles to be assigned as determined by specific agency based on provider availability include: IO/IV access, medication administration, CPR quality monitoring, cardiac rhythm monitoring, defibrillation
    - Consider transition of roles as additional providers become available to ensure maximal use of resources
    - Treatment of the adult cardiac arrest patient in the field is preferred in the majority of cases and is associated with improved outcomes
    - Assume cardiac origins for all adult arrests unless evidence to the contrary. Consider underlying causes and treat when possible.
    - Duration of resuscitation. Consider prolonged attempts in patients with an initial shockable rhythm and a witnessed collapse
      - Initial shockable/PEA rhythms: <1% survival after 40 minutes of resuscitation attempt
      - Initial Asystole: <1% survival after 20 minutes of resuscitation attempt
  - H’s & T’s - Treat as appropriate with confirmed or suspected Hypovolemia, Hypoxia, Hyperkalemia, Acidosis, Hypothermia, Hypoglycemia, or specific Toxins.

- Pregnancy >20 weeks gestation
  - Perform manual displacement of the uterus to the patients left. If unable to perform manual displacement, place wedge-shaped cushion or multiple pillows under patient’s right hip to achieve 30 degree lateral tilt.
- Transport pregnant patients to the nearest emergency department without delay while attempting to provide continuous compressions and defibrillation (if applicable). There is potential to perform emergency cesarean section in the ED, which may save the fetus and is associated with maternal survival.

- **Pediatric Population**
  - Consider transport in pediatric arrest after 15 minutes of field resuscitation, including high-quality CPR, effective ventilations, and IV/IO access
  - Pediatric lowest acceptable systolic blood pressures are birth to 1 month = 60mmHg, 1 month to 1 year = 70mmHg, 1 year to 10 years = 70mmHg + (age x 2), >10 years = 90mmHg.
  - Pediatric Defibrillation:
    - Age < 1 year: Manual defibrillator with pediatric paddles/pads preferred in patients <1. If not available, an AED may be used, preferably with pediatric pads.
    - Age 1 – 8 years: AED may be used with pediatric pads preferred

- As nationally-established cardiac care guidelines (e.g. ACLS, PALS) are updated, these may be integrated into performance, as per agency medical director.

### ADULT

<table>
<thead>
<tr>
<th>EMT</th>
<th></th>
<th>PEDIATRIC (&lt;15 years of Age)</th>
<th>NOTE: Pediatric weight based dosing should not exceed adult dosing.</th>
</tr>
</thead>
<tbody>
<tr>
<td>AED</td>
<td></td>
<td>Defibrillate immediately if AED advises shock.</td>
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<tr>
<td></td>
<td></td>
<td>Resume CPR immediately after each shock and continue for 2 minutes</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>Check pulse and repeat shock if prompted by AED</td>
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</tr>
<tr>
<td>Witnessed arrest, presumed cardiac etiology:</td>
<td></td>
<td>Place an NP / OP airway and a non-rebreather mask 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 or use a 30:2 compressions to ventilations ratio</td>
<td>Place an NP or OP airway and apply asynchronous BVM breaths at a rate of 1 breath every 4-6 seconds</td>
</tr>
<tr>
<td>Unwitnessed arrest or evidence of a non-cardiac cause:</td>
<td></td>
<td>Apply asynchronous BVM breaths at a rate of 1 breath every 6-8 seconds or use a 30:2 compressions to ventilations ratio</td>
<td></td>
</tr>
</tbody>
</table>

### AEMT

<table>
<thead>
<tr>
<th>ALL RHYTHMS</th>
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</thead>
<tbody>
<tr>
<td>Begin CPR, as above</td>
<td></td>
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</tr>
<tr>
<td>Vascular access and fluid therapy</td>
<td></td>
<td>BVM and supraglottic, vascular access and fluid therapy</td>
</tr>
<tr>
<td>Consider placement of a supraglottic device after 2-3 cycles of CPR/defibrillation without interrupting CPR</td>
<td></td>
<td>Epinephrine: 0.01 mg/kg (0.1 mg/ml / 1:10,000) IV/IO every 3-5 min as long as the patient remains pulseless.</td>
</tr>
<tr>
<td>Epinephrine: 1 mg (10 ml of 0.1 mg/ml/1:10,000) IV/IO push every 3-5 min as long as the patient remains pulseless.</td>
<td></td>
<td>Max dose = 1 mg (10 ml)</td>
</tr>
<tr>
<td>Unless a clear response to epinephrine is observed, consider a limit of 3 total doses.</td>
<td></td>
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</tr>
<tr>
<td>Consider NS 1000 mL IV/IO bolus if hypovolemia suspected</td>
<td></td>
<td>Consider NS 20 ml/kg IV/IO bolus if hypovolemia suspected, reassess and repeat if needed to a Max of 60 mL/kg</td>
</tr>
</tbody>
</table>

### SHOCKABLE RHYTHM (VF/VT) PRESENT
SHOCKABLE RHYTHM (VF/VT) PRESENT

- **Defibrillation**
- **360J** for a monophasic defibrillator or **120-360J** for a biphasic, with escalating energy for subsequent shocks (Follow manufacturer’s recommendations)
- Resume CPR immediately after shock and continue for 2 minutes
- Check rhythm and pulse every 2 min
- Anti-arrhythmics are indicated for shockable rhythms that are unresponsive to defibrillation
  - May administer either ONE of these anti-arrhythmics:
    - **Amiodarone** 300 mg IV/IO, second dose is 150 mg IV/IO after 5 min
    - **Lidocaine** 1 mg/kg IV/IO/ET. May repeat every 3-5 min up as needed up to 3 mg/kg.
      - Follow with continuous infusion (1 to 4 mg/minute) after return of perfusion.

- **Defibrillation**
- **2 J/kg** for the first shock with either a monophasic or biphasic defibrillator. Second and subsequent shocks increase by 2 J/kg, up to a max dose 10 J/kg
- Resume CPR immediately after shock and continue for 2 minutes
- Check rhythm and pulse every 2 min
- Anti-arrhythmics are indicated for shockable rhythms that are unresponsive to defibrillation
  - May administer either ONE these antiarrhythmics:
    - **Amiodarone** 5 mg/kg IV/IO (max 300mg/dose). May repeat 2 more times every 5 min as needed. (Total max 450mg)
    - **Lidocaine** 1 mg/kg IV/IO/ET. May repeat every 3-5 min up to 3 mg/kg.
      - Maintenance 20-50 mcg/kg/min

- Contact OLMC before terminating resuscitative efforts in the field

ALL RHYTHMS

- May consider endotracheal intubation, if unable to adequately ventilate with BVM (preferred) or supraglottic airway.
- Intubation must not interfere with chest compressions.
- Special Circumstances
  - Known or Suspected Hyperkalemia
    - **Calcium Chloride** 1 gram IV/IO over 2 min. May repeat every 5 min X2 OR Calcium Gluconate 3 grams IV/IO over 2 min
    - **Sodium Bicarbonate** 1 mEq/kg IV/IO may repeat every 5 min X2
  - Polymorphic VT associated with long QT
    - **Magnesium** 2 gm IV/O over 2 min

- Contact OLMC for further orders or therapies

Contact OLMC before terminating resuscitative efforts in the field

ALL RHYTHMS

- May consider endotracheal intubation, if unable to adequately ventilate with BVM (preferred) or supraglottic airway.
- Intubation must not interfere with chest compressions.
- Special Circumstances
  - Known or Suspected Hyperkalemia
    - **Calcium Chloride** 20 mg/kg IV/IO may repeat in 10 min (max 2 grams) OR Calcium Gluconate 100 mg/kg IV/IO may repeat in 10 min (max 3 grams)
    - **Sodium Bicarbonate** 1 mEq/kg IV/IO (Max of 50 mEq). For <2 years of age use 4.2% concentration.
  - Polymorphic VT associated with long QT
    - **Magnesium** 50 mg/kg (Max = 2,000 mg) IV/O over 2 min

Contact OLMC for further orders or therapies
# BRADYCARDIA (Symptomatic)

## ALL PROVIDERS / EMT
- **Focused history and physical exam**
  - Assess for signs of poor perfusion, hypotension or other signs of shock, altered mental status, chest pain, or acute heart failure.
  - Obtain a blood glucose level.
- **Continuous ECG, CO2, 12 lead ECG, and pulse oximetry monitoring, blood pressure, when available**

## Treatment Plan
- Only treat bradycardia IF the patient is unstable (hypotension or signs of poor perfusion).
- If patient is a newborn, follow the [Newborn Resuscitation Guideline](#).
- Identify and treat the underlying cause, if possible. Potential causes include:
  - Hypoxia
  - Shock
  - 2nd or 3rd degree heart block
  - Toxin exposure (beta-blocker, calcium channel blocker, organophosphate, digoxin)
  - Electrolyte disorder (hyperkalemia)
  - Increased intracranial pressure (ICP)
  - Hypothermia
  - Acute MI
  - Pacemaker failure
- Maintain airway - assist with breathing, and provide oxygen as necessary
- Ensure patient warmth.

## Pediatric patient (<8-year-old)
- Aggressive oxygenation with high flow oxygen and assisted ventilations with a BVM, as indicated.
- Persistent heart rate <60/min and signs of poor perfusion following aggressive oxygenation and ventilation: **begin chest compressions**

## Key Considerations
- In pregnant patients of >20 weeks’ gestation: place wedge-shaped cushion or multiple pillows under patient’s right hip to displace uterus to the left, off of the vena cava.
- 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
### AEMT
- Vascular access and fluid therapy
- **Atropine 0.5 mg IV/IO**
  - Repeat as needed every 3 minutes
  - Maximum total dose of 3 mg
- **Epinephrine 0.1 mg IV/IO push**
  - Repeat as needed every 3-5 min

### PEDIATRIC (<15 years of Age)
- Vascular access and fluid therapy
- **Epinephrine 0.01 mg/kg IV/IO**
  - Repeat as needed every 3 minutes
  - Maximum total dose of 1 mg
- If increased vagal tone or primary AV block consider **Atropine 0.02 mg/kg IV/IO**
  - Maximum single dose of 0.5 mg
  - Repeat Atropine every 3-5 minutes as needed until Max 1 mg for child and 2 mg for adolescents.

## PARAMEDIC
### SYMPTOMATIC BRADYCARDIA
- **Epinephrine 0.1 mg IV/IO push**
  - Repeat as needed every 3-5 min

### PEDIATRIC (<15 years of Age)
- Vascular access and fluid therapy
- **Epinephrine 0.01 mg/kg IV/IO**
  - Repeat as needed every 3 minutes
  - Maximum total dose of 1 mg
- If increased vagal tone or primary AV block consider **Atropine 0.02 mg/kg IV/IO**
  - Maximum single dose of 0.5 mg
  - Repeat Atropine every 3-5 minutes as needed until Max 1 mg for child and 2 mg for adolescents.
☐ Transcutaneous pacing (TCP) at an initial rate of 80 beats per minute if the patient does not respond to medications. Ensure mechanical and electrical capture.

☐ Consider Procedural related anxiety management (refer to the Pain/Anxiety Management Protocol)

☐ Epinephrine 2–10 mcg/min IV/IO infusion for persistent hypoperfusion. Titrate to maintain a SBP >100 mmHg. And/or

☐ Norepinephrine initial dose: 0.01-3 mcg/kg/min IV/IO. Titrate to maintain a SBP >100 mmHg.

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

☢ Transcutaneous pacing (TCP) at an initial rate of 100 beats per minute, if the patient does not respond to medications. Ensure mechanical and electrical capture.

☢ Consider Procedural related anxiety management (refer to the Pain/Anxiety Management Protocol)

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

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

☢ Push Dose Epinephrine 1mcg/kg as needed to maintain a SBP >70 + (age in years x 2) mmHg after fluid bolus
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/Trend (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, CO2, and pulse oximetry monitoring, blood pressure, when available.
- For prolonged transports >15 minutes: serial 12 lead ECGs should be obtained every 10 minutes until ED arrival
- **Treatment Plan**
  - Chest pain patients should only receive oxygen therapy as needed to target O2 saturations ~94%
- **Key Considerations**
  - Assess blood glucose level.

**ADULT**

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>- Aspirin: 325 mg PO chewed if patient is &gt;18 years old and no reported allergies to aspirin</td>
<td>- Source: Pediatric weight based dosing should not exceed Adult dosing.</td>
</tr>
<tr>
<td>- Administer even if patient takes a daily dose</td>
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</tr>
<tr>
<td>- Assist patient with prescribed nitroglycerin SL every 5 minutes, up to 3 doses, as long as dyspnea or chest pain persist and SBP &gt;90 mmHg</td>
<td></td>
</tr>
<tr>
<td>- Do not administer nitroglycerin if the patient (male or female) has taken erectile dysfunction medications within the last 24 hours</td>
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</table>

**AEMT**

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<tbody>
<tr>
<td>- Vascular access and fluid therapy</td>
<td>- Chest pain with cardiac origin is rare in children, consider other causes;</td>
</tr>
<tr>
<td>- IV access prior to administration of nitroglycerin is preferable, if possible</td>
<td>- Asthma</td>
</tr>
<tr>
<td>- 12 Lead EKG (If available). Acquire and transmit.</td>
<td>- Foreign body</td>
</tr>
<tr>
<td>- If the patient has a STEMI then transport to the closest available STEMI/PCI receiving center (if available) and give advanced notification of ECG findings and transmission of ECG if possible.</td>
<td>- Infection</td>
</tr>
<tr>
<td>- Confirm that a catheterization lab will be available for the patient. If NOT then consider transporting to a different STEMI/PCI receiving center</td>
<td>- Trauma</td>
</tr>
</tbody>
</table>
• Confirm with online medical control if needed **Nitroglycerin**: 0.4 mg (every 5 minutes) (max of 3 doses) SL as long as chest symptoms persist and SBP >90 mmHg
• Administer with caution in patients with known inferior ST-Elevation MI
• Do not administer nitroglycerin if the patient (male or female) has taken erectile dysfunction medications within the last 24 hours
• If hypotension occurs following nitroglycerin administration, administer 500mL bolus of NS and withhold further nitroglycerin.

- Pain medications per *Pain and Anxiety Management Guideline*
- **Fentanyl** appears to have less effect on the effectiveness of antiplatelet agents than morphine and may be preferred in patients with ACS

PARAMEDIC

☎ Contact OLMC for further instructions.

PARAMEDIC

☎ Contact OLMC for further instructions.
CONGESTIVE HEART FAILURE / PULMONARY EDEMA

ALL PROVIDERS

- Focused history and physical exam
  - Determine whether the patient (male or female) has taken erectile dysfunction medications such as Viagra, Levitra or Cialis within the last 24 hours.
  - Assess blood glucose level.
- Continuous cardiac monitoring, CO2, 12 lead ECG, and pulse oximetry monitoring, when available

Treatment Plan

- Maintain airway; assist with breathing as necessary, provide oxygen as needed to target SpO2 90-94%.

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 and manually displace the uterus.
- 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 dyspnea or chest pain persist and SBP >90 mmHg
  - Do not administer nitroglycerin if the patient (male or female) has taken erectile dysfunction medications within the last 24 hours
- CPAP/BiPAP – Consider when the patient is awake, cooperative and SBP >90 mmHg
  - Explain the procedure to the patient
  - CPAP - Provide 10 L/min oxygen and PAP at 10 cm H2O
  - BiPAP – Provide 10 L/min oxygen and IPAP at 10 cm H2O with EPAP at 5 cm H2O

Paramedic

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

AEMT

- Supraglottic device, vascular access and fluid
  - IV access prior to nitrates is preferred if possible
  - Limit fluid bolus to 250–500 mL NS
- Nitroglycerin 0.4 mg SL every 5 minutes (max of 3 doses) if dyspnea or chest pain persist and SBP >90 mmHg.

EMT

- CPAP/BiPAP – 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

AEMT

- Supraglottic device, vascular access and fluid
Push Dose Epinephrine 10mcg as needed to maintain a SBP >100 mmHg after fluid bolus

Epinephrine 2 mcg/min IV/IO infusion for shock. Titrate up to 10 mcg/min to maintain a SBP >100 mmHg

Norepinephrine 1 mcg/min IV/IO for shock. Titrate up to 30 mcg/min to maintain SBP >100 mmHg.

Push Dose Epinephrine 1mcg/kg as needed to maintain a SBP >70 + (age in years x 2) mmHg after fluid bolus

Epinephrine 0.1–1mcg/kg/min IV/IO infusion for shock. Titrate to maintain a SBP >70 + (age in years x 2) mmHg.
NEWBORN RESUSCITATION

ALL PROVIDERS / EMT

❑ Focused history and physical exam: Term baby? Breathing? Tone?
❑ Continuous ECG, CO2, 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
  • First 30 seconds: Warm, dry, and stimulate the baby. Consider suction (bulb syringe) mouth, then nose.
    o Evaluate respirations, heart rate, and activity
  • Next 30 seconds: If after first 30 seconds the baby remains apneic, lethargic, and/or has HR <100, then perform 30 seconds of positive pressure ventilation (PPV) with BVM with a rate of 40-60 breaths/minute
    o Watch for chest rise to ensure adequate ventilation. If none, reposition mask seal and increase pressure slightly
    o Target O2 saturations to 90 – 92%; excessive oxygenation can be harmful to the newborn brain
    o Target PPV efforts to improving tone and increasing heart rate; titrate up O2 if HR remains <100 despite adequate PPV
  • Next 30 seconds: If after an additional 30 seconds of effective PPV the baby continues to have a HR<60, begin CPR with a breath/compression ratio of 1:3.
    o Use 2 thumb encircling technique for CPR, rate of 120 compressions/min
• Check glucose and treat if <30 mg/dl
❑ Key Considerations
  • As nationally-established neonatal resuscitation guidelines (NALS, NRP, etc.) are updated, these may be integrated into performance, as per agency medical director
  • Keep baby as warm as possible

AEMT

❑ Supraglottic airway device placement may be indicated when:
  • BVM has been ineffective despite repositioning infant and checking equipment
  • Chest compressions are necessary
❑ IV or IO at a keep open rate (approx. 10ml/hr) after boluses to avoid volume overload
  • IV required only when required for fluid resuscitation or parenteral medication
  • IO infusions are only indicated when life-threatening conditions are present
❑ Epinephrine
  • IV/IO- 0.01-0.03 mg/kg = 0.1-0.3 ml/kg (0.1 mg/ml/1:10,000) for HR <60/min despite 30 seconds of effective CPR with PPV. Repeat every 3-5 minutes until spontaneous heart rate remains >60 bpm

EVIDENCE OF HYPOPERFUSION OR HYPOVOLEMIA

❑ NS (IV or IO) @ 10 mL/kg syringe bolus over 5-10 min
❑ Run D10 if available for maintenance fluid at 10 ml/hr after bolus
  ✐ Additional boluses require physician approval
- Endotracheal intubation may be indicated when:
  - BVM has been ineffective despite repositioning infant and checking equipment
  - Chest compressions are necessary
  - Insert a gastric tube in all intubated patients
  - Suction the trachea using a suction catheter through the endotracheal tube or directly suction the trachea with a meconium aspirator for poor chest rise despite successful intubation
- **Epinephrine**: Endotracheal ET: (IV/IO route preferred) 0.05 to 0.1 mg/kg (0.5 to 1 mL/kg of 0.1 mg/mL (1:10,000) solution) every 3 to 5 minutes until IV access established or return of spontaneous circulation
- **Dextrose 10%** per *Glucose Emergencies - Hypoglycemia/Hyperglycemia Guidelines*
POST CARDIAC ARREST
RETURN OF SPONTANEOUS CIRCULATION (ROSC)

ALL PROVIDERS / EMT

- Focused history and physical exam
  - Blood glucose assessment
- Continuous ECG, CO2, and pulse oximetry monitoring, when available
- Assist ventilations to maintain ETCO2 35-45mmHg
- Document blood pressure after establishing ROSC
- Prepare for transport while maintaining monitoring and re-checking for pulse periodically
- Acquire and transmit a 12L EKG after establishing ROSC
- Consider putting mechanical CPR device in place for transport if available for use in case of re-arrest
- Treatment Plan
  - Preferential transport to a STEMI/PCI receiving center, if available.

ADULT

AEMT

- Supraglottic, vascular access and fluid therapy
- Prepare Vasopressors for possible hypotension
  - Push Dose Epinephrine 10mcg as needed to maintain a SBP >100 mmHg after fluid bolus

PARAMEDIC

- Epinephrine (1:1000) 0.1-0.5 mcg/kg/min (7 to 35 mcg/minute in a 70 kg patient) IV/IO infusion for hypoperfusion. Titrate to maintain SBP >100 mmHg
- Norepinephrine 1 mcg/min IV/IO for shock. Titrate up to 30 mcg/min to maintain SBP >100 mmHg.

PEDIATRIC (<15 years of Age)

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

AEMT

- Supraglottic, vascular access and fluid therapy
  - Push Dose Epinephrine 1mcg/kg as needed to maintain a SBP>70 + (age in years x 2) mmHg after fluid bolus

PARAMEDIC

- Norepinephrine 1 mcg/min IV/IO for shock. Titrate up to 30 mcg/min to maintain SBP >100 mmHg.

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.
- Prepare Vasopressors for possible hypotension
  - Push Dose Epinephrine 1mcg/kg as needed to maintain a SBP>70 + (age in years x 2) mmHg after fluid bolus
TACHYCARDIA (With a Pulse)

ALL PROVIDERS

- Focused history and physical exam
  - Assess blood glucose level
- Continuous ECG, CO2, blood pressure, and pulse oximetry monitoring when available
- Acquire and transmit a 12L EKG if possible.

- Key Considerations
  - Pregnancy >20 weeks gestation - Place wedge-shaped cushion or multiple pillows under patient’s right hip.
  - 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

- Vascular access and fluid therapy

  **Supraventricular Tachycardia (SVT)**
  - Obtain a 12 Lead EKG, if possible
  - Maneuvers to increase vagal tone: Valsalva, ice pack to face, Trendelenburg, urination, etc.

PEDIATRIC (<15 years of Age)

- Vascular access and fluid therapy

  **Supraventricular Tachycardia (SVT)**
  - Infants: rate usually greater than 220 bpm with no variation
  - Children: rate usually greater than 180 bpm with no variation
  - Obtain a 12 Lead EKG is possible, if possible
  - Maneuvers to increase vagal tone: Valsalva, ice pack to face, Trendelenburg, urination, etc.
Supraventricular Tachycardia (SVT)

- **Adenosine**
  - Indicated for patients with prior SVT who have responded to adenosine previously
  - *Initial dose:* 6 mg IV
  - *May repeat once:* 12 mg IV

Stable Wide Complex (QRS > 120 msec) Tachycardia

- Transport to ED with IV in place and careful monitoring

Unstable Tachycardia – Synchronized Cardioversion

**Signs/Symptoms of Unstable Tachycardia**

- Acute cardiac chest pain
- Acute 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 for unstable patients*
- These are initial doses:
  - Narrow Regular: 50-100 J (mono- or bi-phasic)
  - Narrow Irregular: 120-200 J biphasic and 200 J monophasic
  - Wide Regular: 100 J (mono- or bi-phasic)
  - Wide Irregular: defibrillate without synchronization
- Consider Procedural related anxiety management (refer to the Pain/Anxiety Management Protocol)
Medical Patient Care Guidelines

These guidelines were created to provide direction for each level of certified provider in caring for medical patients. All of these directions, dosages and provisions are subject to change with a later notice or revision of the guidelines. The 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. If the explanation is not sufficient, the provider should bring the issue to their medical director or the BEMSP for review.

General Approach to Medical Patient Care Guidelines

- Assess your patient prior to initiating a guideline.
- 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 the receiving hospital 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 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.

General Pediatric Considerations

- Pediatric reference based tape dosing is preferred over calculated dosages for infants and children.
ALLERGIC REACTION / ANAPHYLAXIS

ALL PROVIDERS / EMT

- Focused history and physical exam.
- Cardiac monitor, ETCO2, and pulse oximetry monitoring, when available.
- **Treatment Plan**
  - Eliminate the source of exposure, if possible. May require moving the patient to another location
  - Maintain airway.
  - Apply a cold pack to bite or sting site as necessary.
  - Monitor closely for hypotension.
- **Key Considerations**
  - If the patient has any respiratory distress and is conscious, treat and transport them in a position of comfort, including leaving a child in parent’s lap.
  - Determine if anaphylaxis is present:
    - **Non-anaphylactic allergic reaction**: Symptoms involving only one organ system (i.e. itching, rash, or localized angioedema that does not involve the airway and is not associated with vomiting)
    - **Anaphylaxis**: More severe and is characterized by an acute onset involving:
      - Hypotension after exposure to a likely allergen OR
      - Two or more of the following occurring rapidly after exposure to a likely allergen:
        - Skin and/or mucosal involvement (urticaria, itching, face/lips/tongue swelling
        - Respiratory compromise (dyspnea, wheezing, stridor, hypoxemia)
        - Persistent gastrointestinal symptoms, particularly in infants/young children (vomiting, abdominal pain)
  - **Do not delay administering epinephrine**. Give IM epinephrine as soon as the diagnosis of anaphylaxis has been established.

**ADULT**

- (≥25 kg / 55lbs)

- **Administer epinephrine 1 mg/ml (1:1000) for anaphylaxis by either**:
  - Epinephrine autoinjector IM (0.3 mg)
  - Epinephrine 0.5mg IM (0.5 mL of 1 mg/mL (1:1000))
- May repeat epinephrine dose every 10 minutes as needed
- May repeat epinephrine every 10 minutes as needed
- If WHEEZING is present: Assist patient albuterol inhaler if wheezing is present (2 puffs). May repeat in 10 minutes
- O2 as needed to maintain SaO2 above 90%.

**PEDIATRIC**

- (<25 kg / 55 lbs)

- **Give or assist patient with epinephrine autoinjector ("Jr." 0.15 mg) IM for severe respiratory distress and/or shock from anaphylaxis**.
  - If >25kg, use adult autoinjector (0.3 mg) IM
- **Administer epinephrine 1 mg/ml (1:1000) 0.15 mL IM.**
  - If > 25 kg, then give 0.3 mL IM
- May repeat epinephrine dose every 10 minutes, as needed
- If WHEEZING is present: Assist patient with own albuterol inhaler if wheezing is present (2 puffs). May repeat in 10 minutes
- O2 as needed to maintain SaO2 above 90%.

**AEMT**

- Advanced airway, vascular access and fluid therapy
- **Diphenhydramine 50 mg IV/IO/IM for allergic reaction with urticaaria/itching**

**AEMT**

- Advanced airway, vascular access and fluid therapy
- **Diphenhydramine 1 mg/kg to max of 50 mg IV/IO/IM for allergic reaction with urticaaria/itching**
☐ If WHEEZING is present:
  • **Albuterol 2.5 mg** nebulized every 10 minutes until symptoms improve

☐ If STRIDOR is present:
  • **Epinephrine (1:1000) 2mL** mixed with 3 mL of NS nebulized every 10 minutes until symptoms improve

---

**PARAMEDIC**

- **Epinephrine 2–10 mcg/min** IV/IO infusion for hypoperfusion. Titrate to maintain a SBP >100 mmHg
- **Push Dose Epinephrine 10mcg** as needed to maintain a SBP >100 mmHg after fluid bolus
- **Norepinephrine** initial dose: **0.05 – 1 mcg/kg/min** IV/IO for hypoperfusion. Titrate to maintain a SBP > 100 mmHg. For patients in refractory shock: 8-30 mcg/minute

---

**PARAMEDIC**

- **Epinephrine 0.1–1 mcg/kg/min** IV/IO infusion for hypoperfusion. Titrate to maintain a SBP >70 + (age in years x 2) mmHg
- **Push Dose Epinephrine 1mcg/kg** as needed to maintain a SBP>70 + (age in years x 2) mmHg after fluid bolus
- **Norepinephrine** initial dose: **0.05 - 0.1 mcg/kg/min**, titrate to max of 2 mcg/kg/min to maintain SBP >70 + (age in years x 2) mmHg
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.
- Cardiac monitor, ETCO2, pulse oximetry monitoring, blood pressure when available.

**Treatment Plan**
- Safely remove patient from the water
- Place patient supine
- Remove wet clothing and wrap in blankets
- Ensure patient warmth
- If concern for spinal injury refer to Spinal Motion Restriction Guideline.
- Scuba divers “Dive Computer” or Dive Log Book should be transported with the patient.

**Key Considerations**
- Airway maintenance is the primary consideration.
- Unlike the “CAB” strategy used in standard cardiac arrest, patients suffering cardiac arrest from drowning require an “ABC” approach with emphasis prompt airway management and supplemental ventilations.
- 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 with Shock and Fluid Therapy Guideline.
- Initiation of in-water ventilations may increase survival; however, in-water chest compressions are futile.
- Submersion in cold water will often cause severe hypothermia, notify receiving hospital so that appropriate resources can be mobilized.
- Pediatric cardiac arrest due to drowning and hypothermia (temperature <30°C/86°F): consider direct transport to Primary Children’s Medical Center and do NOT rewarm this patient.
- Adult cardiac arrest due to drowning and hypothermia (temperature <30°C/86°F): consider direct transport to University of Utah Medical Center and do NOT rewarm this patient.

### ADULT

**EMT**
- 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 nasal or oral airway
- Initiate 5 rescue breaths followed by 30 chest compressions, then use a 30:2 compression: ventilation ratio

**AEMT**
- 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 nasal or oral airway
- Initiate 5 rescue breaths followed by 30 chest compressions, then use a 15:2 compression: ventilation ratio

### PEDIATRIC (<15 years of Age)

**EMT**
- 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 nasal or oral airway
- Initiate 5 rescue breaths followed by 30 chest compressions, then use a 30:2 compression: ventilation ratio

**AEMT**
- 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 nasal or oral airway
- Initiate 5 rescue breaths followed by 30 chest compressions, then use a 15:2 compression: ventilation ratio

NOTE: Pediatric weight based dosing should not exceed Adult dosing.
- Advanced airway, vascular access and fluid therapy
  - 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
- Consider CPAP in awake patients with respiratory distress

<table>
<thead>
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FEVER MANAGEMENT

ALL PROVIDERS

- Focused history and physical exam
- Assess temperature.
- Cardiac monitor, 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 disease.
  - 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**

- **EMT**
  - Acetaminophen 650-1000 mg by mouth once
  - Ibuprofen 600 mg by mouth once

- **AEMT**
  - Advanced Airway, IV/IO Access, and Fluid Therapy

**PEDIATRIC (<15 years of Age)**

- **EMT**
  - Acetaminophen 15mg/kg (max 650mg) by mouth or rectum once
  - Ibuprofen 10mg/kg (max 600mg) by mouth once Contraindicated in children under 6 months old

- **AEMT**
  - Advanced Airway, IV/IO Access, and Fluid Therapy
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 (<30 days of age) with any degree of altered mentation.

❑ Treatment Plan
  • Insulin pump in place: Hypoglycemic patient with altered mentation -
    o Care is directed at treating hypoglycemia first, then stopping administration of insulin.
    o Turn off insulin pump, if able.
    o 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.
      ▪ Completely remove the dressing, thereby removing the subcutaneous needle and catheter from under patient’s skin.
    o When mental status returns to normal, patient should be strongly encouraged to eat.
  • Criteria for scene release of hypoglycemic patient:
    o Patient does not want to be transported.
    o Return to apparent normal mental capacity following treatment.
    o Insulin only. The patient does not have access to oral medications for diabetes.
    o No suicidal ideations or recent suicide attempt.
    o There is at least one responsible party that can assist them in their recovery and is comfortable in their care.
    o Children should be considered for transport for evaluation regardless of improvement in the field due to other possible etiologies for the episode.

❑ Key Considerations
  • Do NOT attempt to give oral glucose to those who are unconscious, cannot swallow or whose gag reflex is diminished.
  • Transport any patient who is at risk for prolonged or recurrent hypoglycemia such as long acting insulin or oral hypoglycemic overdose.
  • If the patient is hypoglycemic and has a seizure, recheck blood glucose every 15 minutes to check for recurrent low blood sugar that may need treatment.

ADULT

EMT

❑ Dextrose Oral glucose 15 grams if patient is able to protect airway
  • Repeat in 15 minutes as needed

AEMT

❑ Vascular access and fluid therapy

HYPOGLYCEMIA

❑ Dextrose 50% 12.5 grams (25mL) IV/IO. May repeat as necessary
❑ Dextrose 10%: Infuse 125 mL. (12.5 grams), then recheck blood sugar. If still low, may repeat
❑ Glucagon 1 mg IM if no IV/IO access available

PEDIATRIC (<15 years of Age)

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

EMT

❑ Dextrose Oral glucose 7.5 grams if patient is able to protect airway
  • Repeat in 15 minutes as needed

AEMT

❑ Vascular access and fluid therapy

HYPOGLYCEMIA

❑ Infants up to 1 year
  • Dextrose 10% 5 mL/kg (0.5 grams/kg) IV/IO. May repeat as necessary up to a MAX of 125 mL (12.5 grams).
❑ Children greater than 1 year
HYPERGLYCEMIA (BS >300 mg/dL)
- Normal Saline 1000 mL IV/IO over 30–60 minutes

- Dextrose 25% 2 mL/kg IV/IO: repeat as necessary (max 12.5G/ 50mL)
- Dextrose 10% 5 mL/kg (0.5 grams/kg) IV/IO. May repeat as necessary up to a MAX of 125 mL (12.5 grams).
- Glucagon 0.01 mg/kg (max dose of 1 mg) IM if no IV/IO access available

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

ALL PROVIDERS / EMT

- Focused history and physical exam
  - Do not perform pelvic exam
- Cardiac monitor, ETCO2, and pulse oximetry monitoring when available.

- Treatment Plan
  - Imminent Deliveries: normal delivery procedures
    o Attempt to prevent explosive delivery.
    o As delivery occurs, do not suction nose and mouth. Wipe nose and mouth to clear excess secretions.
    o Place one umbilical cord clamp 2 inches away from baby, place second clamp 2 inches further, cut cord between the clamps.
    o Keep newborn warm and dry with vigorous stimulation.
    o Allow infant to nurse (unless multiple births when babies should not be allowed to nurse until all have been delivered).
    o Calculate APGAR score at 1 minute and again at 5 minutes.
  - Special Situations – TRANSPORT TO THE CLOSEST HOSPITAL
    o Excessive hemorrhage following delivery or delayed placenta delivery.
      - Begin fundal massage immediately after placental delivery.
      - Paramedics should begin oxytocin after placental delivery – see below.
    o 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.
    o Prolapsed cord or limb presentation: cord or limb out of the vagina before the baby – DO NOT ATTEMPT DELIVERY
      - Maintaining a pulsatile cord is the objective: 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.
    o 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.
    o 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.
    o 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 create a sanitary environment
  - Transport in left lateral decubitus position
ADULT

AEMT
- Vascular access and fluid therapy
- Treat seizures as per Seizure Guideline

PARAMEDIC
- Oxytocin 10 units IM for post-partum hemorrhage after placental delivery
- Tranexamic Acid (TXA) 1 gram IV if within 3 hours of delivery for post-partum hemorrhage as per criteria noted in medication appendix.
- Oxytocin Infusion may be started if bleeding continues:
  - IM 10 units followed by IV/IO Infusion by adding 10-40 units to 500mL or 1000mL NS and titrating the infusion to decrease bleeding and patient comfort
- In the event of uterine inversion, cover uterus with moistened sterile gauze. Contact OLMC for surgical preparations

PEDdiATRIC (<15 years of Age)

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

AEMT
- Vascular access and fluid therapy
- Treat seizures as per Seizure Guideline

PARAMEDIC
- Refer to the Newborn Resuscitation Guideline

❖ Oxytocin Infusion may be started if bleeding continues:
  - IM 10 units followed by IV/IO Infusion by adding 10-40 units to 500mL or 1000mL NS and titrating the infusion to decrease bleeding and patient comfort

❖ In the event of uterine inversion, cover uterus with moistened sterile gauze. Contact OLMC for surgical preparations

❖ High-risk preterm labor when delivery is imminent: (1) Rapidly infuse 1 liter of NS, (2) Albuterol 2.5 mg via nebulization, (3) Magnesium Sulfate 1 gram IV and titrate per OLMC.

Palindrome: 111
OPIOID OVERDOSE

ALL PROVIDERS

- Focused history and physical exam
  - Assess blood glucose, temperature, and oxygen saturation.
  - Assess the time and circumstances of the ingestion.
  - Assess patient and scene for possible trauma and additional information on possible toxins, poisons, medications or other related concerns.
- Cardiac monitor, ETCO2, and pulse oximetry monitoring, when available.
- 12-lead ECG, if available

Treatment Plan

- **Opioid Overdose:** Initial focus is on providing/assisting with adequate ventilation with BVM immediately.
- Initial dose of naloxone should be given IN (intranasal) while preparing for IV placement by AEMT/PM.
- Dosing of naloxone should be focused on restoration of adequate spontaneous ventilation, not restoration of full consciousness. Excessive naloxone use can precipitate an acute withdrawal syndrome, putting both the patient and the emergency personnel at risk for injury.
- Begin with small doses of naloxone (0.4 mg IN/IV) and titrate to adequate spontaneous ventilation.

Key Considerations

- Transport any pill bottles, open containers, or potential chemicals that may have been ingested.
- Transport suicide notes or other pre-ingestion communications.
- All potential life threatening narcotic overdoses should be transported to the hospital. Typical AMA standards apply, but if naloxone was given the patient should be educated on life threatening sedation that could return when the reversal effects of naloxone wane.
- May contact Poison Control 1-800-222-1222
- With some new opiates, very large doses of naloxone may be required to restore respirations. If no results with 2-3 0.4 mg doses, consider a trial of 2 mg doses.
- If other drugs are ingested in addition to opiates (such as alcohol or benzodiazepines), the response to naloxone may be incomplete.
- Patients 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 by providing “pink sheet” and assisting with patient control during transport.

---

ADULT

**EMT**

- Naloxone 0.4–2 mg (per dose) IN (intranasal) for suspected opioid overdose. May repeat as necessary to maintain respirations.
- IM route may be used if unable to administer IN

**AEMT**

- Advanced airway, vascular access and fluid therapy
- Naloxone 0.4–2 mg (per dose) IV/IM/IO/IN for suspected narcotic overdose. May repeat as needed to maintain respirations

---

PEDIATRIC (<15 years of Age)

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

**EMT**

- Naloxone 0.1 mg/kg (max 2mg per dose) IN (intranasal) for suspected opioid overdose. May repeat as needed to maintain respirations
- IM route may be used if unable to administer IN

**AEMT**

- Advanced airway, vascular access and fluid therapy
- Naloxone 0.1 mg/kg (max 2mg per dose) IV/IM/IO/IN for suspected narcotic overdose. May repeat as needed to maintain respirations
Sodium bicarbonate 1 mEq/kg slow IV/IO push for tricyclic antidepressant overdose with sustained HR >120 bpm, QRS >0.10, hypotension unresponsive to fluids, or ventricular dysrhythmias.

Epinephrine 2–10 mcg/min IV/IO infusion for hypoperfusion. Titrate to maintain a SBP >100 mmHg.

Push Dose Epinephrine 10mcg as needed to maintain a SBP >100 mmHg after fluid bolus.

Norepinephrine initial dose: 0.05 – 1 mcg/kg/min IV/IO for hypoperfusion. Titrate to maintain a SBP > 100 mmHg. For patients in refractory shock: 8-30 mcg/minute.

Sodium bicarbonate for tricyclic antidepressant overdose: Contact OLMC.

Epinephrine IV/IO infusion for hypoperfusion. Titrate to maintain a SBP >100 mmHg.

Push Dose Epinephrine 1mcg/kg as needed to maintain a SBP >70 + (age in years x 2) mmHg after fluid bolus.

Norepinephrine initial dose: 0.05 – 1 mcg/kg/min IV/IO for hypoperfusion. Titrate to maintain a SBP >100 mmHg. For patients in refractory shock: 8-30 mcg/minute.
**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 Guideline*
  - Assess blood glucose, temperature and oxygen saturation
- Cardiac monitor, ETCO2, and pulse oximetry monitoring, when available
- Consider a 12 lead EKG
- **Treatment Plan**
  - **Choking**: Attempt to alleviate any obvious obstructions to the airway
    - 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 (“Heimlich”) maneuver.
  - Maintain airway, administer 10-15 lpm of oxygen via NRB
- **Key Considerations**
  - Recall that infants and small children are primarily nose breathers, consider oral and nasal suctioning for copious secretions
  - Keep patient NPO for any respiratory distress and if children have a RR >60

**ADULT**

**EMT**
- Administer prescribed metered dose inhaler or nebulizer medication per dosing instructions. If MDI dosing instructions are not available, give second dose at 20 minutes if needed

**AEMT**
- Advanced airway, vascular access and fluid therapy
- For **ANAPHYLAXIS**:
  - See *Anaphylaxis/Allergic Reaction Guideline*
- For **WHEEZING** (Asthma):
  - **Ipratropium 0.5mg** x1 nebulized treatment.
  - **Albuterol 2.5 mg/3cc NS** nebulized
  - Repeat nebs every 10 min as needed
  - Ipratropium and Albuterol may be combined (Duoneb)
  - Patient respiratory status must be reassessed after each dose to determine need for additional treatment
  - **Epinephrine 0.5 mg (1:1000 1mg/mL)** IM every 20 minutes as needed for acute

**PEDIATRIC (<15 years of Age)**

**EMT**
- Administer prescribed metered dose inhaler or nebulizer medication per dosing instructions. If MDI dosing instructions are not available, give second dose at 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.

**AEMT**
- Advanced airway, vascular access and fluid therapy
- For **ANAPHYLAXIS**:
  - See *Anaphylaxis/Allergic Reaction Guideline*
- For **WHEEZING**:
  - **Duoneb 3mL (0.5mg ipratropium/2.5mg Albuterol)** x1 nebulized treatment.
  - **Albuterol 2.5 mg** nebulized
  - For infants < 1yr: **albuterol 2.5 mg** nebulized if wheezing persists after nasal suctioning
  - **Epinephrine IM (1:1000 1mg/mL)** 0.01 mg/kg every 20 minutes as needed for Acute severe asthma unresponsive to inhaled beta-agonist
- For **STRIDOR**:
  - **Epinephrine (1:1000 1mg/mL)** 2mL (2mg) added to 3mL of Normal Saline via nebulizer
severe asthma unresponsive to multiple doses of inhaled beta-agonists

- For STRIDOR (Croup):
  - Epinephrine (1:1000 1mg/mL) 2 ml (2mg) mixed with 3mL of normal saline nebulized

- CPAP/BiPAP – 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 or BiPAP according to training instructions.
  - CPAP - Provide 10 L/min oxygen and PAP of 5 cm H2O to begin.
  - BiPAP – Provide 10 L/min oxygen and IPAP at 15 cm H2O with EPAP at about 5 cm H2O

- BIPAP/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

- Patient respiratory status must be reassessed after each dose to determine need for additional treatment. Call OLMC for additional doses.

- Magnesium sulfate 2gm IV over 15-30 minutes for severe wheezing unresponsive to albuterol

- For patients not tolerating CPAP/BiPAP Consider Procedural related anxiety management (refer to the Pain/Anxiety Management Protocol)

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

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

- BIPAP/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

- Patient respiratory status must be reassessed after each dose to determine need for additional treatment. Call OLMC for additional doses.

- Magnesium sulfate 50 mg/kg (max 2 gm) IV over 15-30 minutes for severe wheezing unresponsive to albuterol
# SEIZURES

## ALL PROVIDERS

- **Focused history and physical exam**
  - Blood glucose, temperature and oxygen saturation assessment
  - Determine possibility of third trimester pregnancy, if appropriate
  - Assess scene for possible toxin, overdose or trauma
- **Cardiac monitor, ETCO2, and pulse oximetry monitoring, when available**
- **Treatment Plan**
  - Do not restrain, but do provide protection from injury during the tonic-clonic phase
  - Spinal motion restriction per *Spinal Motion Restriction Guideline*
  - Ensure patients experiencing febrile seizures are not excessively dressed or bundled
  - Any child <12 months old with seizure activity should be encouraged to be transported

## Key Considerations:
- Intranasal (IN) and intramuscular (IM) routes are preferred for first line administration of benzodiazepines
- Intravenous (IV) administration of benzodiazepines is appropriate once an IV is in place
- Rectal administration is not recommended

### ADULT

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<thead>
<tr>
<th>EMT</th>
<th>PEDIATRIC (&lt;15 years of Age)</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Maintain open airway with patient in the recovery position</td>
<td></td>
</tr>
<tr>
<td>- Assist patient’s family or caretaker with any home medication treatments</td>
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</tbody>
</table>

### EMT

| Maintain open airway with patient in the recovery position |
| Assist patient’s family or caretaker with any home medication treatments |

### AEMT

- Advanced airway, vascular access and fluid therapy
- **Benzodiazepines**: is cut dose in half if the patient is under the influence of narcotics or alcohol
  - **Midazolam**
    - IN/IM/IV/IO – 5 mg, may repeat once in 5 minutes, if needed. Total max dose: 10mg
  - **Diazepam**
    - IV/IO – 5 mg, may repeat every 5 minutes, if needed. Total max dose: 20mg
  - **Intramuscular (IM) – 10 mg**, may repeat once in 10 minutes, if needed. Total max dose: 20 mg (IM not preferred unless no other options)
  - **Lorazepam**
    - IV/IO/IM – 4mg, may repeat every 5 minutes, if needed. Total max dose: 8mg

### EMERGENCY MEDICAL TECHNICIANS (EMT) <15 years of Age>

**Note:** Pediatric weight based dosing should not exceed Adult dosing.

- **Midazolam**
  - IN/IM: 0.2 mg/kg (max 5 mg), may repeat once in 5 minutes, if needed. Total max dose: 10 mg
  - IV/IO – 0.1 mg/kg (max 5 mg), may repeat once in 5 minutes, if needed. Total max dose: 10 mg
- **Diazepam**
  - IV/IO – 0.1 mg/kg (max 5 mg), may repeat every 5 minutes, if needed. Total max dose: 10 mg
  - **Intramuscular (IM): 0.2 mg/kg (max 10 mg)**, may repeat every 10 minutes, if needed. Total max dose: 20 mg (IM not preferred unless no other options)
- **Lorazepam**
  - IV/IO/IM – 0.1mg/kg (max 4 mg per dose), may repeat every 5 minutes, if needed. Total max dose: 8 mg.

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

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

- **Magnesium Sulfate** – For pediatric patients who are pregnant and having a seizure contact OLMC

PARAMEDIC

- Pregnant females with eclampsia/seizures
  - **Magnesium sulfate - 5 gm IM/IV/IO gm.**
    - Give infusion over 15 to 30 min.
SUSPECTED STROKE

ALL PROVIDERS/EMT

- Focused history and physical exam
  - Blood glucose, temperature and oxygen saturation assessment.
  - Keep NPO.
  - Document symptom onset time or time last seen normal.
- Continuous cardiac, blood pressure, ETCO2, and pulse oximetry monitoring when available.
- 12 Lead EKG, if available and does not delay transport.

**Treatment Plan**

- Perform **Cincinnati Stroke Scale (CSS)** to determine if a stroke is likely present (below)
- If **CSS** positive, perform a **Cincinnati Stroke Triage Assessment Tool (C-STAT)** to determine if a large vessel occlusion (LVO) stroke is likely present (below). An LVO stroke may be best treated with an endovascular thrombectomy (direct clot removal) at a specialized stroke center (TSC or CSC, below).
- Determine Last Known Well (LKW) time (the time when the patient was last seen without new stroke symptoms)
- Destination guidelines for stroke patients:
  - If **LVO score (C-STAT) is positive** AND you will arrive at the destination hospital within:
    - 0-4 hours since LKW: Transport to nearest IV tPA-capable hospital (with pre-notification and possible LVO transport protocol activated by hospital).
    - 4-24 hours since LKW: Transport to thrombectomy-capable center if no more than 30 minutes of added transport time over transport to a closer SRF / PSC.
    - > 24 hours since LKW: Transport to closest stroke center (any level of certification)
  - If **LVO scale (C-STAT) is negative**, EMS to transport to closest stroke center (any level of certification).
- Consider air medical transport to facilitate rapid transport when needed.
- Acquire the cell phone number of family members/next of kin to provide to clinicians so they can call them and ask questions if needed.
- Alert the receiving emergency department that you are transporting a suspected stroke patient as soon as you have made a destination decision. Inform them if the patient is “C-STAT” positive and of their presenting symptoms.

**Pediatric Considerations**

- Children can have strokes too. 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**

- **EMT**
  - Apply oxygen to maintain oxygen saturation 90 - 95%
  - Evaluate and Document **Cincinnati Stroke Scale (CSS)** during assessment. The scale is positive (a stroke is likely) if ANY of following are abnormal:

**PEDIATRIC (<15 years of Age)**

- **EMT**
  - Apply oxygen to maintain oxygen saturation 90 - 95%
  - Evaluate and Document **Cincinnati Stroke Scale (CSS)** during assessment. The scale is positive (a stroke is likely) if ANY of the 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

Evaluate and Document **Cincinnati Stroke Triage Assessment Tool (C-STAT)** during assessment. The scale is positive (a LVO stroke is likely) if the score is **2 or greater**:
- **2 points – Conjugate Gaze Deviation** (eyes deviated to one side and unable to track across the midline)
- **1 Point – Mental Status: Incorrectly performs at least one of the following**:
  - Tell correct age or current month
  - AND, is unable to follow at least one of two commands (e.g. close eyes, open or close hand)
- **1 Point – Weakness: Cannot hold up one arm for 10 seconds before it fall to the bed**

AEMT
- Advanced airway, vascular access and fluid therapy

PARAMEDIC
- Advanced airway, vascular access and fluid therapy
TEMPERATURE AND ENVIRONMENTAL EMERGENCIES

ALL PROVIDERS / EMT

- 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.

- Cardiac monitor, ETCO2, and pulse oximetry monitoring when available

- Treatment Plan
  - **Heat Related**
    - Temperature elevation **WITHOUT** altered mental status (*Heat Exhaustion*)
      - Slow cooling with ice packs, wet towels, and/or fans to areas in the vicinity of carotid, femoral, brachial arteries.
      - 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 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*
  - Room temperature IV fluids should be administered for both heat exhaustion and heat stroke (AEMT and PM only)
  - Benzodiazepines may be used for shivering (AEMT and PM only)
  - **Cold Related**
    - Protect patient from further heat loss (application of blankets, removal of wet clothing, warm environment, etc.).
    - Suspcion of cardiac arrest in cold environment, assess for 30-45 seconds to confirm pulselessness.
    - Measure body temperature and treat accordingly
      - **Severe: <86°F (30°C)**
        - Use active external rewarming (heated oxygen, warm packs to neck, armpits, groin, etc.)
        - Administer warm IV fluids (AEMT/PM only)
        - Cardiac arrest: Chest compressions and ventilations. Limit defibrillation attempts to 3 and no external pacing. Likelihood of successful defibrillation improves as patient is warmed.
        - Pediatric cardiac arrest due to hypothermia (temperature <30 C/86 F): consider direct transport to Primary Children’s Medical Center and do NOT rewarm this patient.
        - Adult cardiac arrest due to hypothermia (temperature <30 C/86 F): consider direct transport to University of Utah Medical Center and do NOT rewarm this patient.
        - Handle the patient gently during transport because rough movement may precipitate dysrhythmias.
      - **Moderate: 86-93°F (30-34°C)**
        - Use warm packs to neck, armpits, and groin
        - Warm IV fluids (AEMT/PM only)
      - **Mild: >93°F (34°C)**
        - Warm with blankets, warm environment, etc.
        - Frostbite precautions – Do not rub or use dry external heat. Re-warm with 40°C water if possible.
        - Warm IV fluids (AEMT/PM only)
Key Considerations

- Avoid refreezing of cold extremities. If refreezing cannot definitely be avoided during transport, do not start the thawing process.

ADULT

AEMT

- Advanced airway, vascular access and fluid therapy
  - Heat Emergencies
    - Cool fluid therapy: 500 – 1000 cc NS bolus
    - Benzodiazepines for shivering:
      - Midazolam
        - IN/IM/IV/IO – 5 mg, may repeat once in 5 minutes, if needed. Total max dose: 10mg
      - Diazepam
        - IV/IO – 5 mg, may repeat every 5 minutes, if needed. Total max dose: 20mg
        - Intramuscular (IM) – 10 mg, may repeat once in 10 minutes, if needed. Total max dose: 20 mg (IM not preferred unless no other options)
      - Lorazepam
        - IV/IO/IM – 1-2mg, may repeat every 5 minutes, if needed. Total max dose: 4mg
  - Cold Emergencies
    - Warm fluid therapy: 500 – 1000 cc NS bolus

PARAMEDIC

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

PEDIATRIC (<15 years of Age)

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

AEMT

- Advanced airway, vascular access and fluid therapy
  - Heat Emergencies
    - Cool fluid therapy: 20 ml/kg IV bolus
    - Benzodiazepines for shivering:
      - Midazolam
        - IN/IM: 0.2 mg/kg (max 5 mg), may repeat once in 5 minutes, if needed. Total max dose: 10 mg
        - IV/IO - 0.1 mg/kg (max 5 mg), may repeat once in 5 minutes, if needed. Total max dose: 10 mg
      - Diazepam
        - IV/IO - 0.1 mg/kg (max 5 mg), may repeat every 5 minutes, if needed. Total max dose: 10 mg
        - Intramuscular (IM): 0.2 mg/kg (max 10 mg), may repeat every 10 minutes, if needed. Total max dose: 20 mg (IM not preferred unless no other options)
      - Lorazepam
        - IV/IO/IM – 0.1mg/kg (max 2 mg), may repeat every 5 minutes, if needed. Total max dose: 4 mg.
  - Cold Emergencies
    - Warm fluid therapy: 20 cc/kg NS bolus

PARAMEDIC

- Cold emergencies
  - Withhold anti-arrhythmic meds until temperature >86°F (30°C)
TOXIC EXPOSURE - CARBON MONOXIDE

ALL PROVIDERS / EMT

- Scene and patient management
  - Safely and rapidly remove patient from source of exposure.
  - Collect environmental CO levels if equipment is available.
- Focused history and physical exam
  - Estimation of exposure time.
  - Pulse oximetry readings are unreliable in carbon monoxide exposures
- Cardiac monitor and ETCO2, when available
- Treatment Plan
  - Administer 100% high-flow oxygen via non-rebreather mask.
  - Any exposure to carbon monoxide related to a closed space fire (such as a house fire) often also results in cyanide exposure.
- Key Considerations
  - Patients with symptoms of headache, nausea, tachycardia, neurologic changes, or a CO monitor reading >10% should be transported.
  - Pregnant patients: the fetus is very sensitive to even low levels of CO. All pregnant patients exposed to CO should be transported, regardless of the symptoms or the CO level.

ADULT

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

AEMT

- Advanced airway management, vascular access and fluid therapy
- Closed Space Fires: Consider **hydroxocobalamin 5 g** (contained in a single vial), administered by IV/IO infusion over 15 minutes (approximately 15 mL/min)

PARAMEDIC

- **Epinephrine 2–10 mcg/min** IV/IO infusion for hypoperfusion. Titrated to maintain a SBP >100 mmHg.
- **Push Dose Epinephrine 10mcg** as needed to maintain a SBP >100 mmHg after fluid bolus

AEMT

- Advanced airway management, vascular access and fluid therapy
- **Closed Space Fires: hydroxocobalamin 70mg/kg** over 15 minutes IV/IO (approximately 15ml/min) not to exceed a max dose of 5 grams under direction of OLMC or Poison Control

PARAMEDIC

- **Epinephrine 0.1–2 mcg/kg/min** IV/IO infusion for hypoperfusion. Titrated to maintain a SBP >70 + (age in years x 2) mmHg.
- **Push Dose Epinephrine 1mcg/kg** as needed to maintain a SBP >70 + (age in years x 2) mmHg after fluid bolus
TOXIC EXPOSURE - CYANIDE

ALL PROVIDERS / EMT

☐ Scene Management
  • If properly trained and equipped, safely and rapidly remove patient from the source of exposure.
  • Request HazMat response as appropriate.
  • Industries in which to consider cyanide exposure:
    o Electroplating and Metallurgy
    o Organic chemicals production
    o Photographic developing
    o Manufacture of plastics
    o Fumigation of ships
    o Some mining processes especially gold/copper

☐ Patients and EMS providers may be exposed to cyanide in the following ways;
  o Breathing air, drinking water, touching soil, or eating foods that contain cyanide.
  o Breathing smoke during closed-space fires.
  o Breathing air near a hazardous waste site containing cyanide.
  o 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;
    o Acute dyspnea/tachypnea without cyanosis
    o Nausea/vomiting
    o Seizures
    o Hyper or hypotension
    o Total body erythema (redness)
    o Cardiac monitor, CO2, and Pulse Oximetry monitoring when available

☐ Treatment Plan
  • Administer high flow oxygen immediately and continuously
  • Pulse oximetry readings may not be accurate because of cyanide interaction
  • Cardiac monitor and ETCO2, when available

ADULT

AEMT

☐ Advanced airway, vascular access and fluid therapy

☐ Hydroxocobalamin (CYANOKIT®) for adults is 5 g (contained in a single vial), administered by IV/IO infusion over 15 minutes (approximately 15 mL/min)

PARAMEDIC

☐ Epinephrine 2–10 mcg/min IV/IO infusion for hypoperfusion. Titrated to maintain a SBP >100 mmHg.

☐ Push Dose Epinephrine 10mcg as needed to maintain a SBP >100 mmHg after fluid bolus

PEDiATRIC (<15 years of Age)

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

AEMT

☐ Advanced airway, vascular access and fluid therapy

Hydroxocobalamin (CYANOKIT®) can be used in children. Administer 70mg/kg over 15 minutes IV/IO (approximately 15ml/min) not to exceed a max dose of 5 grams under direction of OLMC or Poison Control

PARAMEDIC

☐ Epinephrine 0.1–2 mcg/kg/min IV/IO infusion for hypoperfusion. Titrated to maintain a SBP >70 + (age in years x 2) mmHg.

Push Dose Epinephrine 1mcg/kg as needed to maintain a SBP>70 + (age in years x 2) mmHg after fluid bolus
TOXIC EXPOSURE - HYDROFLUORIC ACID

ALL PROVIDERS / EMT

- Scene Management
  - Industrial Exposures in which to consider hydrofluoric acid
    - 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
- Cardiac monitor, CO2, and pulse oximetry monitoring, when available
- Treatment Plan
  - Skin Exposure
    - Immediate irrigation. Clothing, jewelry etc., is removed as irrigation is taking place.
    - Soak burned skin in magnesium hydroxide antacid preparations (milk of magnesia, Mylanta, Maalox).
    - 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 possibly in a glove
  - Eye Exposure
    - Continuous rinsing for a minimum of 15 minutes or until a calcium ocular solution is available.
  - Oral ingestion – conscious/alert patient only – OT recommended for the pediatric patient.
    - If patient is able to swallow, administer any calcium or magnesium based antacid (milk of magnesia, Mylanta, Maalox). In the absence of these products, have patient drink approximately 8-16 oz. of water. Consult OLMC for questions.

ADULT

AEMT

- Advanced airway, vascular access and fluid therapy
- 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 possibly in a glove

PARAMEDIC

PEDIATRIC (<15 years of Age)

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

AEMT

- Advanced airway, vascular access and fluid therapy
- 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 possibly in a glove

PARAMEDIC
TOXIC EXPOSURE - ORGANOPHOSPHATES / NERVE AGENTS

ALL PROVIDERS

- Scene management
  - If properly trained and equipped, safely and rapidly remove patient from the source of exposure.
  - Request HazMat response as appropriate
  - Be aware of exposure Level
    o Mild – miosis (constricted pupils) only or no symptoms
    o Moderate – Other “S.L.U.D.G.E.M.” symptoms
    o Severe – Unconscious, in respiratory distress, seizing, flaccid or apneic

- Focused history and physical exam.

- Cardiac monitor, CO2, and pulse oximetry monitoring, when available

- Treatment Plan
  - Irrigate immediately
  - Remove clothing, jewelry etc. as irrigation is taking place

- Key Considerations
  - Always protect yourself from exposure before entering a treatment zone.
  - Nerve agents, organophosphates and carbamates are the general categories of these toxic substances.
  - These agents may be used in fertilizers or as pesticides, herbicides, fungicides, fire retardants, or biowarfare agents.

ADULT

EMT

- Atropine/Pralidoxime kits (Mark I, Duodote, etc.)
  - Mild Exposure with no symptoms may require no treatment
  - Moderate Exposure with evidence of SLUDGEM give 1-2 Kits
  - Severe Exposure with respiratory distress and SLUDGEM give 3 Kits

PEDiatric (<15 years of Age)

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

EMT

- Contact OLMC or Poison Control for instructions

AEMT

- Atropine sulfate 2 mg rapid IV (preferred) or IM repeated every 10 minutes until you have:
  - 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

PARAMEDIC

- Contact OLMC or Poison Control for instructions
Scene management
- Contact Law Enforcement if the patient is determined to be a threat to EMS providers, themselves, or others or if assistance with patient control is otherwise needed.
- Remove patient from the stressful environment and remove any possible weapons from scene.
- Before touching any patient that has been Taser’d, 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.
- Note medications/substances on scene that may contribute to the agitation, or may be for treatment of a relevant medical condition

Cardiac monitor, ETCO2, and pulse oximetry monitoring, when available

Treatment Plan
- **Taser’d patient**: Removal of Taser probes
  - EMS providers may remove probes that are not 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 stimulants (including methamphetamines, phencyclidine/PCP, cocaine, spice, bath salts, designer drugs, etc).
      - Patients exhibiting bizarre behavior or those with abnormal vital signs

Key Considerations
- Chemical sedation should be considered for patients that cannot be calmed by non-pharmacologic methods and who are a danger to EMS providers, themselves, or others.
- Selection of chemical restraint medications should be based upon the patient’s clinical condition, current medications, and allergies. Consult OLMC when necessary to assist in the selection of medications in difficult cases.
- Generally speaking, it is preferable to choose ONE drug for management of agitation and maximize dosing of that medication prior to adding another medication.
- Consider a reduction in the initial dosage of chemical restraint medications if the patient has taken narcotics or alcohol (e.g. begin with 50% of the recommended initial dose to assess response).

The order in which medications below are listed is not intended to indicate hierarchy, order, or preference of administration
ADULT

EMT

- Attempt to calm or gently restrain the patient with verbal reassurance. Engage the assistance of any family or significant others in the process.

AEMT

- Vascular access and fluid therapy

- Midazolam
  - IV/IO - 5 mg, may repeat once in 10 minutes, if needed. Total max dose: 10mg
  - Intranasal (IN) - 5 mg, may repeat once in 10 minutes to a max dose of 10mg
  - Intramuscular (IM) - 10 mg once

- Diazepam
  - IV/IO - 5 mg every 10 min to the desired effect or max dosage of 20 mg
  - Intramuscular (IM) - 10 mg once (IM not preferred, unless no other options)

- Lorazepam
  - IV/IO - 2 mg every 5 min. to the desired effect or max dose of 4 mg
  - Intramuscular (IM) - 4 mg once

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

PARAMEDIC

- Ketamine
  - Intramuscular (IM) - 4 mg/kg once (max 300 mg)
  - IV/IO - 1 mg/kg every 10 min to the desired effect (max dose 200 mg)

- Haloperidol
  - Intramuscular (IM) - 5-10mg once
  - IV/IO - 2-5 mg every 10 min to the desired effect (max dose 10 mg)

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

PEDIATRIC (<15 years of Age)

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

EMT

- Attempt to calm or gently restrain the patient with verbal reassurance. Engage the assistance of any family or significant others in the process.

AEMT

- Vascular access and fluid therapy

- Midazolam
  - IV/IO - 0.1 mg/kg (max 5 mg), may repeat once in 10 minutes, if needed. Total max dose: 10 mg
  - IN/IM - 0.2 mg/kg (max 5 mg), may repeat once in 10 minutes, if needed. Total max dose: 10 mg

- Diazepam
  - IV/IO - 0.1 mg/kg (max 5 mg), may repeat once in 10 minutes, if needed. Total max dose: 10 mg
  - Intramuscular (IM) - 0.2 mg/kg (max 10 mg) once (IM not preferred unless no other options)

- Lorazepam
  - IV/IO - 0.05 mg/kg (max 2 mg), may repeat once in 10 minutes, if needed. Total max dose: 4 mg
  - Intramuscular (IM) - 0.05 mg/kg (max 4 mg) once

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

PARAMEDIC

- Ketamine
  - Intramuscular (IM) - 3 mg/kg once (max 300 mg)
  - IV/IO - 1 mg/kg once (max dose 200 mg)

- Haloperidol
  - <6 years old – NOT recommended
  - 6-12 years old: 0.15 mg/kg IM (max 3 mg) once
  - 12 years and older: 5-10mg IM once
Trauma Patient Care Guidelines

These guidelines were created to provide direction for each level of certified provider in caring for trauma patients. All of these directions, dosages, and provisions are subject to change with later notice or revision of the guidelines. The 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. If the explanation is not sufficient, the provider should bring the issue to their medical director or the BEMSP for review.

General Approach to Trauma Patient Care Guidelines

- Assess your patient prior to initiating a guideline.
- Destination decisions for trauma patients should be in accordance with the Utah Trauma Field Triage Guidelines.
- Early notification allows the receiving physician to activate the receiving hospital’s trauma alert system.
- Providers should describe: vital signs, including GCS/AVPU, injuries, mechanism of injury and any complicating factors that will affect treatment (as per the Utah Trauma Field Triage Guidelines) so that the hospital may activate the appropriate level of trauma response.
- Consider air transport for critically injured patients with long transport times to a trauma center (over 60 minutes).
- Consider delivery to the nearest hospital if your patient is too unstable for a prolonged transport or the patient has a compromised airway that you cannot secure.
- 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 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.

General Pediatric Considerations

- 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.
Utah Trauma Field Triage Guidelines

Measure vital signs and level of consciousness

Step One
- Glasgow Coma Scale ≤ 13
- Systolic Blood Pressure (mmHg) ≤ 90
- Respiratory Rate ≤ 20 or 10 or > 20 breaths per minute
- < 20 in infants aged ≤ 1 year
- or need for ventilatory support

No
Assess anatomy of injury

Yes

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

No
Assess mechanism of injury and evidence of high-energy impact

Yes

Step Three
- Falls
  - Adults: > 20 feet (one story is equal to 10 feet)
  - Children: > 10 feet or two or three times the height of the child
  - High-risk auto crash
  - Intoxication (including occult) > 12 inches occupants seat > 18 inches any seat
  - Ejection: partial or complete) from automobile
  - Death in same passenger compartment
  - Vehicle telemetry data consistent with high risk of injury
  - Auto vs. pedestrian/ligot hit, thrown, run over, or with significant (> 20 mph) impact
  - Motorcycle crash > 20 mph

No
Assess special patient or system considerations

Yes

Transport to a trauma center
Steps One and Two attempt to identify the most seriously injured patients. These patients should be transported preferentially to the highest level of care within the defined trauma system.

Step Four
- Older adults
  - Risk of injury/death increases after age 55 years
  - SBP < 110 might represent shock after age 65 years
  - Low impact mechanisms (e.g., ground level falls) might result in severe injury
- Children
  - Should be triaged preferentially to pediatric capable trauma centers
- Anticoagulants and bleeding disorders
- Patients with head injury are at high risk for rapid deterioration
- Burns
  - Without other trauma mechanism: trage to burn facility
  - With trauma mechanism: trage to trauma center
- Pregnancy > 20 weeks
- EMS provides judgment

Yes

Transport to a trauma center or hospital capable of timely and thorough evaluation and initial management of potentially serious injuries. Consider consultation with medical control.

No

Transport according to protocol

When in doubt, transport to a trauma center

Utah Trauma System Advisory Committee

Guidelines for Transport of Trauma Patients to Freestanding Emergency Departments

The following types of patients are NOT candidates for transport to a freestanding ED (FSED):

1. Critically-injured patients with unstable vital signs or other life-threatening conditions UNLESS the patient’s airway is not maintainable with EMS advanced or basic airway management techniques and the FSED is the closest ED
2. Traumatic cardiac arrest patients
3. Patients meeting Steps 1-3 criteria of the Utah Trauma Field Triage Guidelines.
4. Patients with head injuries who are over 65 years old OR who are taking anticoagulants
5. Patients with angulated long bone fractures
6. Patients with suspected open fractures or dislocations
7. EMS provider judgement

These guidelines may be modified during a disaster situation
GENERAL TRAUMA MANAGEMENT

ALL PROVIDERS / EMT

- Focused history and physical exam
- Continuous cardiac monitoring, ETCO2, and pulse oximetry, when available
- Treatment Plan
- Primary Survey:
  - Hemorrhage Control: Assess for and stop severe hemorrhage
  - Airway:
    - Assess airway patency, ask patient to talk to assess stridor and ease of air movement
    - Evaluate for injuries that may lead to airway obstruction including unstable facial fractures, expanding neck hematoma, blood or vomitus in the airway, facial burns/inhalation injury
    - Evaluate mental status for ability to protect airway (AVPU=”P” or “U” or GCS <8). These patients will require airway protection.
    - Establish a patent airway (with cervical spine precautions)
  - Breathing:
    - Assess respiratory rate and pattern, symmetry of chest wall movement, and presence of breath sounds bilaterally
    - If chest injury present in a hypotensive patient, consider tension pneumothorax
      - Needle Thoracostomy: The 5th intercostal space at the anterior axillary line is the preferred location for needle thoracostomy placement
      - If placing at the 5th ICS at the anterior axillary line, a 5 cm catheter should be the maximum length used to minimize risk of injury to vital structures
      - Minimum catheter length should be 5 cm (and 8 cm may be necessary) for 2nd ICS/mid-clavicular line needle thoracostomy placement
    - For open chest wound, place an occlusive dressing sealed on 3 sides
  - Circulation:
    - Assess vital signs / check for radial pulse
    - If pelvis is unstable (based on lateral compression), place pelvic binder to stabilize pelvis
  - Disability (quick neurologic evaluation)
    - Assess pupils, motor movement of extremities, and mental status (AVPU)
  - Exposure/Environment:
    - Rapid evaluation of entire body (including back) to assess for injuries
    - Prevent hypothermia by removing wet clothing, providing passive rewarming, and use of warmed IV fluids (if fluids indicated)
  - Treat for pain and anxiety per the Pain and Anxiety Management Guideline.
- Key Considerations
  - Scene times should be as short as possible for severely injured patients (Goal: 10 minutes). Perform required procedures enroute to the trauma center.
  - Severely injured trauma patients should be preferentially transported to a state-certified trauma center, as per the Field Trauma Triage Guideline.
  - Withholding and termination of resuscitative efforts
    - Resuscitative efforts should be withheld for trauma patients with the following:
      - Decapitation
      - Hemicorpectomy
      - Signs of rigor mortis or dependent lividity
      - Blunt trauma patients who are apneic, pulseless, and have no organized activity on the cardiac monitor
Resuscitative efforts may be terminated in patients with traumatic arrest who have no return to spontaneous circulation after 15-30 minutes of resuscitative efforts, including CPR. 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

- Vascular access and begin fluid therapy
- **Suspected Tension Pneumothorax:** Evidence of chest trauma + hypotension:
  - Immediate needle decompression of affected side
- **Traumatic Arrest**
  - Consider bilateral needle decompression based on mechanism of injury

### PEDIATRIC (<15 years of Age)

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

- Vascular access and begin fluid therapy
- **Suspected Tension Pneumothorax:** Evidence of chest trauma + hypotension:
  - Immediate needle decompression of affected side
- **Traumatic Arrest**
  - Consider bilateral needle decompression based on mechanism of injury
AMPUTATIONS / TOOTH AVULSIONS

ALL PROVIDERS / EMT

❑ Focused history and physical exam
❑ Cardiac monitor, ETCO2, and pulse oximetry monitoring, when available
❑ Treatment Plan
  • Maintain airway, apply oxygen as needed to maintain SaO2 90-94%.
  • Unless this is an isolated injury, consider spinal motion restriction per the Spinal Motion Restriction Guideline.
  • Treat for pain and anxiety per the Pain and Anxiety Management Guideline.
  • Monitor closely for signs of shock, especially in amputations above the wrist or ankle.
❑ Amputated Body Parts and/or Tissue
  • Apply direct pressure to control hemorrhage. A tourniquet is frequently required to control hemorrhage from amputation or near-amputation, when direct pressure is ineffective or impractical.
    o If amputation is incomplete, cover stump with sterile dressing saturated in NS, splint affected digit or limb in baseline physiologic position.
    o All easily retrievable tissue should be transported.
    o Rinse part(s) with NS.
    o Wrap tissue in sterile gauze moistened with NS.
    o Place tissue into plastic bag or container.
    o Place bag/container into separate container filled with ice (if available)
    o Do not allow tissue to come into direct contact with ice, do not freeze, and do not submerge in water.
❑ Tooth Avulsion
  • If tooth is out over 30 minutes, broken, or cannot be re-implanted on scene.
    o Handle tooth by chewing surface only (avoid touching the root).
    o Rinse with water. Do not scrub, dry, or wrap tooth in tissue or cloth.
    o Place tooth in container of (in order of preference)
      ▪ Patient’s saliva (place in patient’s mouth, if patient awake and alert)
      ▪ Alternatively, it may be placed in a container with milk or normal saline
    o If tooth is out less than 30 min, you may attempt re-implantation (only permanent teeth) on scene (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.
❑ Key Considerations
  • Consider transportation of extremity amputation patients directly to a trauma center.

ADULT

AEMT
❑ Advanced airway, vascular access and fluid therapy

PARAMEDIC

PEDIATRIC (<15 years of Age)

AEMT
❑ Advanced airway, vascular access and fluid therapy

PARAMEDIC

NOTE: Pediatric weight based dosing should not exceed Adult dosing.
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. These patients may be in ventricular fibrillation and resuscitated with CPR and defibrillation.

Focused history and physical exam

- Identify potential entry and exit wounds for electrical burns – both sites will generally be a full thickness burn site.

Cardiac monitor, ETCO2, and pulse oximetry monitoring, when available. Avoid placing monitor attachments over burned skin if possible.

Treatment Plan

- Initiate early oxygen therapy with high flow O2.
- In the unconscious patient, implement spinal motion restriction per the Spinal Motion Restriction Guideline
- If patient is in shock, fluid resuscitation as per Shock and Fluid Therapy Guideline (AEMT/Paramedic)
- With electrical burns anticipate heart rhythm irregularities.
- 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: Cover burns with dry dressings.
- Closely monitor patient’s temperature and prevent hypothermia.
- Treat for pain and anxiety per the Pain and Anxiety Management Guideline.
- Burn patients with major trauma should be transported to a trauma center as per the Utah Trauma Field Triage Guideline
- Consider air ambulance transportation for long transport times, inability to control pain after maximal doses of analgesics, and airway concerns that might necessitate advanced airway management
- Consider transport directly 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).
  - Circumferential burns
  - Partial or full thickness burns involving face, hands, or genitalia

**Cyanide or carbon monoxide (CO) poisoning**

- Signs: muscular weakness, confusion, agitation, unconsciousness, or profound shock
- Most common in closed-space fires
- Apply 100% NRB oxygen

**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.
- Consider 12-lead ECG for patients with electrical burns
• Care for traumatic injuries should precede care for the burn.
• If patient is initially hypotensive after burn (first hour), it is NOT a result of the burn: strongly suspect underlying trauma.
• Keep patients warm! 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)
• Do not overhydrate patients with IV fluid. See proper fluid rates for burns below.
• Definitions:
  o Superficial (1st Degree) Burns – red, painful, without blisters.
  o Partial Thickness (2nd Degree) Burns – red, painful/hypersensitive, swollen, with either intact or ruptured blisters.
  o Full Thickness (3rd Degree) Burns – dark, leathery, painless, waxy, and does not blanch.

  ❑ Parkland Formula
  • 4 ml X weight (kg) X %BSA = total fluid (ml) to be administered in 24 hrs
  • 1/2 of total should be given in first 8 hrs, the remainder in the next 16 hrs

  ❑ Calculation of Burn Surface Area (%BSA): based only on 2nd and 3rd degree burn totals

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<tr>
<th>ADULT</th>
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<th>AEMT</th>
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<tr>
<td>❑ Advanced airway, vascular access</td>
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</table>
  • If possible, avoid placing IV through burned skin |
| ❑ IV Fluid therapy: If 2nd + 3rd degree >10% BSA begin: |
  • LR or NS at 500 cc/hr (no bolus) |
• If time from burn is >30 min, begin fluids using Parkland Formula
  o <5 years old: 125 cc/hr
  o 5-13 years old: 250 cc/hr
  o >13 years old: 500 cc/hr
• If time from burn is >30 min, begin fluids using Parkland Formula

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**PARAMEDIC**

- If evidence of possible airway burn (singed nasal hair, carbonaceous sputum, hoarse voice, or stridor), consider early intubation
- If signs of cyanide toxicity present: **hydroxycobalamin (Cyanokit) 5 gm IV over 15 min**
- High voltage electrical injury or direct lightning strike
  - LR or NS at 500 ml/hr (no bolus)
  - If diagnosed with rhabdomyolysis prior to transport, increase fluid replacement to keep urine output >2 ml/kg/hr

---

**PARAMEDIC**

- If signs of cyanide toxicity present: **hydroxycobalamin (Cyanokit) 70 mg/kg IV over 15 min (max 5 gm)**
- High voltage electrical injury or direct lightning strike
  - LR or NS infusion rates (no bolus)
    o <5 years old: 125 ml/hr
    o 5-13 years old: 250 ml/hr
    o >13 years old: 500 ml/hr
  - If diagnosed with rhabdomyolysis prior to transport, increase fluid replacement to keep urine output >2ml/kg/hr
HEAD INJURY (TRAUMATIC BRAIN INJURY)

ALL PROVIDERS / EMT

- Focused history and physical exam
- Cardiac monitor, CO2, and Pulse Oximetry monitoring when available

**Treatment Plan**
- Maintain airway. Administer oxygen to maintain SaO2 90-94%.
- Consider spinal motion restrictions per the *Spinal Motion Restriction Guideline*
- Elevate head 30 degrees.
- Monitor the level of consciousness during the transport
- **Severe TBI (GCS <8 or AVPU “P” or “U”):**
  - Adult: Consider endotracheal intubation for airway protection (Paramedic only)
  - Pediatrics: Continue effective BVM. Utilize airway adjuncts, if needed to ensure adequate chest rise, ventilation, and oxygenation.
  - **Do not hyperventilate** unless patient shows signs of herniation: unilateral pupillary dilation or posturing. In this case, increase respiratory rate by ~10% above normal target respiratory rate (see Mild Hyperventilation Guide). Target ETCO2: 30-35 mmHg.

### Mild Hyperventilation Guide for Signs of Herniation

<table>
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<tr>
<th>Age</th>
<th>Normal Ventilation Rate</th>
<th>Mild Hyperventilation Rate</th>
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<tr>
<td>Neonate</td>
<td>40</td>
<td>44</td>
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<tr>
<td>Infant</td>
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<td>33</td>
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<tr>
<td>Child</td>
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<tr>
<td>Adult</td>
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<td>12</td>
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- Open skull fractures should be covered with dry sterile dressings. Do not apply pressure unless needed to stop severe hemorrhage.

**Key Considerations**
- TBI may be painful. However, excessive pain medications can cloud serial neurological assessments. Pain medications should generally be avoided in a patient with altered mental status after TBI. If pain is severe, give small doses only until pain is manageable.
- Patients with TBI may be confused or combative. Consider physical/chemical restraints if needed to protect patient or personnel.
- Loss of memory, prolonged confusion or altered mental status associated with trauma may indicate a significant head injury.
- Avoid hypoxia (SaO2 should be 90-94%).
- Avoid over tightening of cervical collar (if placed) as this can cause increased intracranial pressure.
- Do not allow the patient to be hypotensive. Try to keep adult SBP >110 using the *Shock and Fluid Therapy Guideline*.
- Pediatric lowest acceptable systolic blood pressures are birth to 1 month = 60mmHg, 1 month to 1 year = 70mmHg, 1 year to 10 years = 70mmHg + (age x 2) and over 10 years = 90mmHg.
ADULT

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

AEMT

- Advanced airway, vascular access, and fluid therapy
- 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:
  - Epinephrine 2–10 mcg/min IV/IO infusion for hypoperfusion. Titr...age x 2) mmHg
  - Push Dose Epinephrine 10mcg as needed to maintain a SBP >100 mmHg after fluid bolus
  - Norepinephrine initial dose: 0.05 – 1 mcg/kg/min IV/IO for hypoperfusion. Titrat...SBP > 100 mmHg. For patients in refractory shock: 8-30 mcg/minute

PEDIATRIC (<15 years)

- Advanced airway, vascular access, and fluid therapy
- Check blood pressure every 5-10 minutes.
- Initiate NS 20ml/kg IV/IO for hypotension OR if unable to obtain blood pressure
- If hypotensive patient shows no improvement with initial treatment, may repeat NS 20 ml/kg IV/IO up to a total of 60 ml/kg

AEMT

- Advanced airway, vascular access, and fluid therapy
- Check blood pressure every 5-10 minutes.
- Initiate NS 20ml/kg IV/IO for hypotension OR if unable to obtain blood pressure
- If hypotensive patient shows no improvement with initial treatment, may repeat NS 20 ml/kg IV/IO up to a total of 60 ml/kg

- Epinephrine 0.1–1 mcg/kg/min IV/IO infusion for hypoperfusion. Titrat...age x 2) mmHg
- Push Dose Epinephrine 1mcg/kg as needed to maintain a SBP>70 + (age in years x 2) mmHg after fluid bolus
- Norepinephrine initial dose: 0.05 - 0.1 mcg/kg/min, titrat...SBP >70 + (age in years x 2) mmHg
HEMORRHAGE CONTROL, EXTREMIT Y AND CRUSH INJURIES

ALL PROVIDERS / EMT

- Focused history and physical exam

- **Treatment Plan**
  - Maintain airway, administer oxygen to maintain SaO2 90-94%.
  - Assess for deformity, swelling, tenderness, crepitus, open or closed fractures, hemorrhaging, lacerations, ecchymosis, instability, decreased function or pulses, loss of sensation of distal extremities.
  - **Epistaxis**: bleeding from the nose 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.
  - **Crush syndrome** should be considered for the following patients:
    - Entrapped/compressed patients or limbs 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, etc.)
    - Patients with crush syndromes are prone to cardiac dysrhythmias and electrolyte abnormalities. They should be placed on a cardiac monitor and the rescuer should be ready for possible cardiac arrest.
  - 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 eye shield.
    - Do not apply pressure or attempt to replace in socket.
    - Cover both eyes, if the patient will tolerate it. This minimizes eye movements.
  - In large, partially attached *skin avulsions*, the tissue should be returned to its’ original 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.

- **Extremity hemorrhage control**:
  - Apply direct pressure to the bleeding site, followed by a pressure dressing
  - If direct pressure/pressure dressing is ineffective or impractical:
    - If the bleeding site is amenable to tourniquet placement, apply a tourniquet to the extremity
      - Tourniquet should be placed 2-3 cm proximal to the wound, not over a joint, and tightened until the bleeding stops and the distal pulse is eliminated. If bleeding or distal pulse still present, place a second tourniquet proximal to the first.
      - For thigh wounds, consider placement of two tourniquets, side by side, and tighten sequentially.
      - When a tourniquet is initially placed to stop obvious severe hemorrhage, an attempt may be made to replace it with a pressure dressing after patient is stabilized and bleeding is controlled. The tourniquet should NOT be removed/replaced if:
        - Amputation or near-amputation
        - Unstable or complex multiple-trauma patients
        - Unstable clinical or tactical situation
• If the bleeding site is NOT amenable to tourniquet placement (for example groin or axillary wounds): tightly pack the wound with gauze followed by 3 minutes of direct pressure, then apply a tight pressure bandage.

☐ Fractures/dislocations:
- Stabilize suspected fractures/dislocations
  - If extremity is deformed and distal vascular status is compromised (poor distal pulse or capillary refill), gently attempt to restore normal anatomic position with gentle traction. Pain medication should be considered prior to any manipulation.
  - If extremity is deformed but vascular function is normal, splint in current position, to limit movement of suspected fracture.
  - If open fracture with exposed bone, place moist gauze over exposed bone
  - Elevate extremity above heart level, when possible, to minimize swelling.

☐ Treatment for pain and anxiety per the *Pain and Anxiety Management Guideline*.

☐ Key Considerations
- Tourniquets are painful and the conscious patient will likely require pain medication.
- Commercial tourniquets are strongly preferred over improvised tourniquets.

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<tr>
<td>✗ For crush injury patients, when possible, initiate IV/IO access and consider administration of 1 liter NS bolus prior to release from entrapment</td>
<td>✗ For crush injury patients, when possible, initiate IV/IO access and consider administration of NS 20 mg/kg bolus prior to release from entrapment</td>
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For patients with severe hemorrhage and hypotension:

- Consider: Tranexamic Acid (TXA) 1g IV bolus, as per criteria noted in medication appendix
- Consider: A second TXA dose (1g IV infusion over 8 hours) as per criteria noted in medication appendix
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 cardiac monitor, ETCO2, and pulse oximetry, 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.
    - Be nonjudgmental and avoid accusations.
    - Consider law enforcement assistance.
  - **Collect:** Provide good documentation of incident.
    - Document using direct quotation when possible. Describe the scene rather than interpret it.
      - Example: “garbage on floor, spoiled food on counter” is more helpful than “dirty apartment.”
    - Document objectively without speculation.
    - HIPAA-compliant photography may be considered for documentation.
  - **Report:** You have the responsibility to report suspected child or elder abuse and neglect to law enforcement or the Division of Family Services. 1-855-323-DCFS (3237)

- Key Considerations
  - Non-accidental trauma, abuse, or neglect can occur in patients of any age and in all ethnic and socio-economic groups.
  - TEN-4 Rule. For children 4 and younger bruising to the Torso, around the Ears or the Neck needs to be reported. Additionally, any bruising in a baby not yet pulling up or taking steps is highly suspicious.
  - 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.**
# SNAKE BITES

## ALL PROVIDERS / EMT

- 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 touches Yellow = Poison Fellow, Red on touches Black = Safe with attack”.
  - Signs of envenomation include paresthesia, metallic taste, chills, nausea, vomiting, headache, dysphagia, cramps, hypotension, fever, local edema, blebs, and discoloration.
- Continuous cardiac monitor, ETCO2, and pulse oximetry, when available.

## Treatment Plan

- Ensure scene safety by moving the patient to a safe distance, away from the snake.
- Splint limb and place at 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, such as rings or bracelets.

## 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.
- Remember that snakes can reflexively envenomate up to 1 hour after death.
- Pictures of the snake can be helpful.
- Any snakebite 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.

### AEMT

- Advanced airway, vascular access, and fluid therapy

### AEMT

- Advanced airway, vascular access, and fluid therapy

### PARAMEDIC

**Persistent hypotension unresponsive to fluids**

- **Epinephrine 2–10 mcg/min** IV/IO infusion for hypoperfusion. Titrate to maintain a SBP >100 mmHg
- **Push Dose Epinephrine 10mcg** as needed to maintain a SBP >100 mmHg after fluid bolus
- **Norepinephrine** initial dose: 0.05 – 1 mcg/kg/min IV/IO for hypoperfusion. Titrate to maintain a SBP > 100 mmHg. For patients in refractory shock: 8-30 mcg/minute

### PARAMEDIC

**Persistent hypotension unresponsive to fluids**

- **Epinephrine 0.1–2 mcg/kg/min** IV/IO infusion for hypoperfusion. Titrate to maintain a SBP >70 + (age in years x 2) mmHg.
- **Push Dose Epinephrine 1mcg/kg** as needed to maintain a SBP >70 + (age in years x 2) mmHg after fluid bolus
- **Norepinephrine** initial dose: 0.05 - 0.1 mcg/kg/min, titrate to max of 2 mcg/kg/min to maintain SBP >70 + (age in years x 2) mmHg
SPINAL MOTION RESTRICTION (SMR)

ALL PROVIDERS

❑ Assessment
  • Assess the scene, to determine the risk of injury. Mechanism alone should not determine if a patient requires SMR. However, mechanisms that have been associated with a higher risk of cervical spine injury are the following:
    o Motor vehicle collisions, including automobiles, motorcycles, ATVs, and snowmobiles
    o Axial loading injuries to the spine, such as diving accidents
    o Severe injuries to the torso
    o Falls >10 feet
  • Assess the patient in the position in which he/she was found. Initial assessment should focus on determining whether or not a cervical collar needs to be applied.
  • Assess for mental status, neurologic deficits, spinal pain or tenderness, any evidence of intoxication, or other severe/painful injuries

❑ Treatment Plan
  • Perform full SMR if there are any of the following:
    o Patient complains of midline neck or back pain
    o Any midline neck or spinal tenderness with palpation
    o Any anatomic deformity of the spine
    o Any abnormal mental status (including extreme agitation)
    o Any neurologic deficit
    o Any evidence of alcohol or drug intoxication
    o Another severe or painful distracting injury is present
    o Torticollis in children
    o A communication barrier that prevents accurate assessment
  • If none of the above apply, a cervical collar need not be placed on the patient, unless the treating medic otherwise feels there is a high risk of cervical spine injury.
  • Patients with a penetrating injury to the neck should not have a cervical collar placed, regardless of whether they are exhibiting neurologic symptoms. Doing so can lead to delayed identification of injury or airway compromise and has been associated with increased mortality in such patients.
  • Extrication:
    o From a vehicle: After placing a cervical collar, if indicated as above, adults and children in a booster seat should be allowed to self-extricate, if they are able. For infants and toddlers already strapped in a car seat with a built-in harness, remove the car seat and infant together, leaving the infant secured in the car seat.
    o Other situations requiring extrication: A padded long board may be used for extrications, using the lift and slide technique.
  • Helmet removal: If a helmet needs to be removed, it is recommended to remove the face mask followed by manual removal (rather than the use of automated devices) of the helmet, while keeping neck motion manually restricted. Occipital padding should be applied, as needed, with the patient in a supine position, in order to maintain neutral cervical spine positioning.
  • Patients should NOT routinely be transported on long boards, unless the clinical situation specifically warrants long board use. Padded scoop stretchers, vacuum splints, or a secured ambulance cot are all appropriate options for SMR. An example of an indication for long board use may be facilitation of immobilization of multiple extremity injuries or an unstable patient where removal of a board will delay transport and/or other treatment priorities. In these rare situations, long boards should be padded or have a vacuum mattress applied to minimize secondary injury to the patient.
  • Assess neurological function before, during, and after application of SMR.

❑ Key Considerations

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Patients who have a low likelihood of spinal injury and are therefore not likely to benefit from SMR, should not be immobilized.

Patients should be "log rolled," with maintenance of spinal alignment, for examination of the spine for tenderness and deformities.

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.

Pediatric Considerations

- Age <2 should be secured in a car seat or age appropriate papoose device.
- Children who are <5 years old should be secured with an appropriately-sized cervical collar or soft towel rolls and tape, if tolerated. If attempts at SMR result in more distress and fighting to get free, then the SMR should be minimized.
- Children under the age of 8 cannot have their cervical spines reliably assessed in the field and should have the cervical spine immobilized if the mechanism warrants it.
- Children do not require full SMR if isolated injury to the cervical spine is suspected as their risk for noncontiguous spinal injuries is much lower than adults.
- 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. (See figure below)

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

ADULT

EMT
AEMT
PARAMEDIC

PEDIATRIC (<15 years of Age)

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

EMT
AEMT
PARAMEDIC
Appendix 1

EMS MEDICATIONS

Note: DAVIS COUNTY EMS Revision 06/2022
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**Acetaminophen (Tylenol)**

**Action/Mechanism:**
An analgesic/antipyretic that has weak anti-inflammatory activity and no effects on platelets or bleeding time. Acetaminophen acts both centrally and peripherally via multiple enzymatic processes. The most significant appears to be peroxidase inhibition which yields COX-2 inhibitor-like effects.

**Indication:**
Fever. Minor pain.

**Contraindication:**
Known liver disease (relative). Hypersensitivity.

**Precaution:**
Do not administer if used in the last 4 hours.

**Adverse Effects:**
Gastric irritation (rare)

**Dose:**
- Adult: PO/Rectal 650-1000mg
- Pediatric: 15mg/kg PO/Rectal; Max 650 mg
Adenosine (Adenocard)

Action/Mechanism:
A naturally occurring nucleoside that acts on the AC node to slow conduction and inhibit reentry pathways. Useful in PSVT. Rapidly metabolized—Half-life is <5 seconds.

Indication:
To convert acute PSVT to normal sinus rhythm. Diagnostic agent for distinguishing supraventricular from ventricular tachycardia, as well as broad QRS complex tachycardias.

Contraindication:
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.

Precaution:
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.

Adverse Effects:
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.

Dose:
Rapid bolus over 1-3 seconds. The dose should be followed quickly by a 20 ml saline flush
- Adult: 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: Initial- 0.1 mg/kg (Max 6mg), if not effective- 0.2 mg/kg (Max 12mg)
## Albuterol (Ventolin/Proair/Proventil)

**Action/Mechanism:**
Relaxes bronchial, uterine, and vascular smooth muscle by stimulating beta2-adrenergic receptors.

**Indication:**
For the relief of bronchospasm in patients two years of age and older with reversible obstructive airway disease and acute attacks of bronchospasm. Not for use in croup. High-risk preterm labor when delivery is imminent with medical control consulted.

**Contraindication:**
Hypersensitivity to the drug.

**Precaution:**
Used with caution in patients with cardiovascular disorders, especially coronary insufficiency, cardiac arrhythmias and hypertension. MAO inhibitors, tricyclic antidepressants, may potentiate action on CV system. Propranolol, and other beta blockers inhibit the effect of albuterol.

**Adverse Effects:**
Tachycardia, hypertension, bronchospasm, bronchitis, nasal congestion, tremors, dizziness, nervousness, headache, and sleeplessness.

**Dose:**
- Adult and pediatric: 2.5 mg nebulized every 10-20 minutes as needed, (Max total= 7.5 mg or 3 nebs) Nebulized solution will usually be delivered over approximately 5 to 15 minutes depending on flow rate.
Amiodarone Hydrochloride (Cordarone)

Action/Mechanism:
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.

Indication:
Used in a wide variety of atrial and ventricular tachyarrhythmia’s and for rate control of rapid atrial arrhythmias in patients with impaired LV function when digoxin has proven ineffective.

Contraindication:
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.

Precaution:
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.

Adverse Effects:
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.

Dose:
- Adult: Cardiac Arrest: Anti-arrhythmics are indicated for shockable rhythms that are unresponsive to defibrillation: 300mg IV push. Consider repeating 150 mg IV push in 3-5 minutes. Wide complex tachycardia (stable): 150 mg rapid infusion IV (15 mg/min) over the first 10 minutes. May repeat 150 mg rapid infusion IV every 10 minutes as needed.
- Pediatric: Anti-arrhythmics are indicated for shockable rhythms that are unresponsive to defibrillation. IV/IO: 5 mg/kg (maximum: 300 mg/dose) rapid bolus; may repeat twice up to a maximum total dose of 15 mg/kg (total max 450 mg)
Aspirin (Ecotrin)

Action/Mechanism:
Irreversibly inhibits cyclooxygenase-1 and 2 (COX-1 and 2) enzymes, via acetylation, which results in decreased formation of prostaglandin precursors; irreversibly inhibits formation of prostaglandin derivative, thromboxane A2, via acetylation of platelet cyclooxygenase, thus inhibiting platelet aggregation; analgesic, and anti-inflammatory properties

Indication:
Cardiac chest pain patients fitting criteria

Contraindication:
Hypersensitivity to NSAIDs; patients with asthma, rhinitis, and nasal polyps; use in children or teenagers for viral infections, with or without fever.

Precaution:
Documentation of allergenic cross-reactivity for salicylates is limited. However, because of similarities in chemical structure and/or pharmacologic actions, the possibility of cross-sensitivity cannot be ruled out with certainty.

Adverse Effects:
Bleeding gums, signs of GI bleeding, and petechiae. Aspirin will increase bleeding time.

Dose:
- Adult: 162 mg-325 mg oral- chewed once (chewable tabs preferred)
- Pediatric: Do not use unless ordered by OLMC
Atropine

Action/Mechanism:
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 which increases cardiac output. Atropine dries secretions by reversing the muscarinic effects of cholinergic poisoning due to agents with acetylcholinesterase inhibitor activity by acting as a competitive antagonist of acetylcholine at muscarinic receptors. The primary goal in cholinergic poisonings is reversal of bronchorrhea and bronchoconstriction. Atropine has no effect on the nicotinic receptors responsible for muscle weakness, fasciculations, and paralysis.

Indication:
Treatment of symptomatic sinus bradycardia, second and third degree heart block. Antidote in organophosphate poisoning.

Contraindication:
Hypersensitivity to the drug, unstable cardiovascular status, myocardial ischemia, glaucoma, and COPD

Precaution:
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.

Adverse Effects:
Postural hypotension, Blurred vision, dryness of the mouth, GI reflux, nausea, vomiting, tachyarrhythmias, and urinary retention. May also cause ventricular tachycardia or ventricular fibrillation.

Dose:
- Adult: For bradycardia, 0.5mg IV/IO 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 IV/IO/ET up to 0.5 mg for child or 1mg for adolescent (minimum dose 0.1mg). May be repeated once in 5 minutes.

Organophosphate Poisonings:
Atropine sulfate 2 mg rapid IV (preferred) or IM repeated every 10 minutes until you have:
- 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
Calcium Chloride/Calcium Gluconate

Action/Mechanism:
Electrolyte. Calcium is a positively charged ion involved in multiple physiologic functions. Calcium is required for muscle contraction, nerve impulse transmission, hormone secretion, blood coagulation, cell division, cell motility and wound healing. In vascular smooth muscle, calcium is involved in the maintenance of vascular tone. Calcium is also required for cardiac muscle contraction. The entry of calcium into cardiac cells during depolarization triggers additional intracellular calcium release from the sarcoplasmic reticulum, leading to myocardial contraction. The cardiac pacemaker cells of the SA and AV nodes depend on an inward calcium current for depolarization. Calcium antagonizes the effects of both potassium and magnesium at the cell membrane. In hyperkalemia, calcium antagonizes cardiac membrane excitability. It has no effect on the serum potassium level. The effect of cardiac membrane stabilization is temporary (20-40 min) and some patients may require a repeat dose.

Indication:
Hyperkalemia. Hydrofluoric acid (HF) exposure. Calcium channel blocker toxicity. Beta blocker toxicity. Cardiac Arrest with presumed hyperkalemic cause (i.e. dialysis patient overdue for dialysis). Hypermagnesemia.

Contraindication:
Known hypersensitivity. Digitalis toxicity

Precaution:
Calcium chloride contains three times more elemental calcium than calcium gluconate (1 gm of calcium chloride is equivalent to 3 gm of calcium gluconate). Administer slowly if not in cardiac arrest. **Calcium chloride and calcium gluconate are two commonly used parenteral formations of calcium. In the EMS setting, the two preparations may be used interchangeably, but it should be noted that calcium chloride contains three times more elemental calcium than does calcium gluconate (1 gm of calcium chloride is equivalent to 3 gm of calcium gluconate). Calcium chloride has greater bioavailability, but is more likely to cause tissue damage if extravasation occurs. Ideally use AC or larger vessel. Sodium bicarbonate and calcium preparations are not compatible and should be given through separate IV lines if possible. If they must be administered via the same IV line, the line should be flushed in between the administration of each.

Adverse Effects:

Dose:
- Adult:
  - **Calcium Chloride**: 1 gm SLOW PUSH IV/IO. May repeat once after 5 min.
  - **Calcium Gluconate**: 3 gm SLOW PUSH IV/IO. May repeat once after 5 min.
- Pediatric:
  - **Calcium Chloride**: 20mg/kg (max 1 gm/dose) SLOW PUSH IV/IO. May repeat once after 10 minutes
  - **Calcium Gluconate**: 100 mg/kg IV/IO (max 3 grams/dose). May repeat once after 10 min.
Dextrose

Action/Mechanism:
Dextrose provides calories and increases blood glucose concentrations.

Indication:
Diabetics who are unable to take oral fluids due to altered level of consciousness and low blood glucose. - Unknown, unconsciousness

Contraindication:
Hypersensitivity to dextrose, corn or corn products, or any component of the formulation; hypertonic solutions in patients with intracranial or intraspinal hemorrhage, diabetic coma, or delirium tremens, especially if dehydrated; severe dehydration; glucose-galactose malabsorption syndrome

Precaution:
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.

Adverse Effects:
Pulmonary edema, exacerbated hypertension, heart failure, Hyperglycemia, (during infusion), hyperosmolar syndrome (mental confusion, loss of consciousness), hypokalemia, reactive hypoglycemia (after infusion).

Dose:
- Adult: One prefilled syringe of D50W- 25mL(12.5 gm) IV—may repeat as appropriate
- Pediatric:
  - D10W 5 ml/kg (0.5 gm/kg) IV- Max 12.5 gm(125 ml) [Preferred for everyone]
  - D25W 2ml/kg (0.5 gm/kg) IV (only for >1year old) Max 12.5gm(50mL)

Note:
Vesicant (at concentrations ≥10%); ensure proper needle or catheter placement prior to and during IV infusion. Avoid extravasation. If extravasation occurs, stop infusion immediately and disconnect (leave needle/cannula in place); gently aspirate extravasated solution (do NOT flush the line); initiate hyaluronidase antidote; remove needle/cannula; apply dry cold compresses; elevate extremity.
Diphenhydramine (Benadryl)

Action/Mechanism:
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.

Indication:
Supplemental therapy to epinephrine in anaphylaxis and other uncomplicated allergic reactions requiring prompt treatment.

Contraindication:
Hypersensitivity to the drug, during acute asthmatic attacks, in newborns, premature neonates, or breastfeeding women. Avoid use in patients taking MAO inhibitors. Also patients with glaucoma, peptic ulcer, and COPD

Precaution:
Use with extreme caution in patients with asthma or COPD, increased intraocular pressure, hyperthyroidism, CV disease, hypertension. Drug and alcohol use causes increased CNS depression.

Adverse Effects:
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.

Dose:
- Adult: 50mg IV/IO/IM once
- Pediatric: 1 mg/kg IM/IV/PO (Max 50mg) Children may be more prone to paradoxical responses than adults
Diazepam (Valium)

Action/Mechanism:
Depresses/decreases the excitability and functional activity of four areas of the CNS:
- 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)

Indication:
Status epilepticus. Sedation prior to cardioversion. Relief of nervous anxiety and tension. Moderate skeletal muscle spasms.

Contraindication:
Pregnancy, patients with respiratory depression, hypotension

Precaution:
Drug dependence

Adverse Effects:
Drowsiness, dizziness, ataxia, respiratory depression and arrest, hypotension, decreased level of consciousness.

Dose:
- Adult: 5-10mg IV/IM slow IV push, maximum dose 40mg.
- Pediatric: 0.1mg/kg IM/IV slow IV push, 0.5mg/kg rectally
Epinephrine (Adrenaline)

Action/Mechanism:
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.

Indication:
Cardiac arrest: VF, pulseless VT, asystole, pulseless electrical activity. Anaphylaxis, severe allergic reactions, and profound bradycardia or hypotension after other drugs tried may be used as a gtt.

Contraindication:
None when used in a life-threatening situation
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.

Precaution:
High doses do not improve survival or neurologic outcome and may contribute to post-resuscitation myocardial dysfunction. Raising blood pressure and increasing heart rate may cause myocardial ischemia, angina and increased myocardial oxygen demand. Higher doses may be required to treat poison/drug-induced shock. The effects of the drug may be potentiated by tricyclic antidepressants.

Adverse Effects:
Nervousness, tremor, headache, agitation, dizziness, weakness, cerebral hemorrhage, palpitations, hypertension, tachycardia, anginal pain, nausea and vomiting, and dyspnea.

Dose:
- Adult: Cardiac Arrest Epinephrine 1mg (10ml of 1:10,000) every 3-5 min as long as the patient remains pulseless. Unless a clear response to epinephrine is observed, consider a limit of 3 total doses.
  - For WHEEZING(Asthma): Epinephrine 0.5 mg IM every 20 minutes as needed for acute severe asthma unresponsive to multiple doses of inhaled beta-agonists
  - For STRIDOR(Croup): Epinephrine 2mg (1 mg/mL; 1:1000) mixed with 3mL of normal saline nebulized
  - Anaphylaxis: 0.5 mg (1mg/mL; 1:1000) IM every 10 minutes as needed
- Pediatric: Cardiac arrest- Epinephrine 0.01 mg/kg (0.1 ml/kg of 0.1mg/mL; 1:10,000) push (Max dose= 1 mg or 10 mL) every 3-5 min as long as the patient remains pulseless. Unless a clear response to epinephrine is observed, consider a limit of 3 total doses.
  - For WHEEZING: Epinephrine IM 0.01 mg/kg every 20 minutes as needed for acute severe asthma unresponsive to inhaled beta-agonist
  - For STRIDOR: Epinephrine 2mg (2mL of 1 mg/mL; 1:1000) added to 3mL of Normal Saline via nebulizer
  - Anaphylaxis: 0.01 mg/kg (0.01 mL/kg of 1 mg/mL; 1:1000) IM up to 0.3 mg if patient was exposed to commonly recognized allergen and has respiratory distress or hypotension.
Epinephrine – “Push Dose” Pressor Administration

Action/Mechanism:
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).

Indication:
Immediate/temporizing treatment of hypotension, not due to hypovolemia, while preparing IV pressors.

Contraindication:
None when used in a life-threatening situation. 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.

Precaution:
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.

Adverse Effects:
Nervousness, tremor, headache, agitation, dizziness, weakness, cerebral hemorrhage, palpitations, hypertension, tachycardia, anginal pain, nausea and vomiting, and dyspnea.

Dose:
- Adult: 0.5-2 mL’s (5-20mcg) every 2-5 minutes to maintain blood pressure.
- Pediatric: 1 mcg/kg (0.1mL/kg) IV every 2-5 minutes to maintain blood pressure

How to make:
- Recipe 1 =10mL
  - Take a 10 ml syringe with 9 ml of normal saline
  - Into this syringe, draw up 1 ml of epinephrine from the cardiac amp (Cardiac amp contains Epinephrine 100 mcg/ml)
  - Now you have 10 mls of Epinephrine 10 mcg/ml
- Recipe 2 =50mL
  - Take a 50 ml syringe with 45 ml of normal saline
  - Into this syringe, draw up 5 ml of epinephrine from the cardiac amp (Cardiac amp contains Epinephrine 100 mcg/ml)
  - Now you have 50 mls of Epinephrine 10 mcg/ml
- Recipe 3 = 100mL
  - Draw up epinephrine 1 mg (preferred 1mg/mL but can use Cardiac amp contains Epinephrine 100 mcg/ml)
  - Inject epinephrine 1mg into NS 100 mL bag
  - You now have 100 mL of epinephrine 10mcg/mL
**Etomidate (Amidate)**

**Action/Mechanism:**
Short acting sedative and anesthetic agent with no analgesic property

**Indication:**
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.

**Contraindication:**
Dose should be adjusted in hemodynamically compromised patients.

**Precaution:**
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.
Effects may be enhanced when given with other CNS depressants.

**Adverse Effects:**
Nausea and vomiting, dysrhythmias, breathing difficulties, hypotension, hypertension, involuntary muscle movement, pain at injection site

**Dose:**
- Adult: 0.3mg/kg IV/IO push.
- Pediatric: Same as adult
Fentanyl

Action/Mechanism:
Fentanyl is a potent synthetic narcotic with similar actions to those of Morphine and Demerol, but action is more prompt (<5 min) 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.

Indication:
Patients with significant pain due to injury or medical condition

Contraindication:
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

Precaution:
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.

Adverse Effects:
Sedation/decreased level of consciousness, respiratory depression/arrest, bradycardia, hypotension or hypertension, mild nausea and/or vomiting, increased intracranial pressure. Rule out significant trauma prior to administration.

Dose:
- Adult: 1-2 mcg/kg slowly IV/IM. Expected dose: 25-50 mcg. Max Dose: 100 mcg
- Pediatric: 0.5-1 mcg/km slowly IV/IM. Max Dose: 50 mcg.
  - 2 mcg/kg Nasal Max Dose= 100 mcg (administer ½ in each nostril)
Glucagon (GlucaGen)

Action/Mechanism:
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.

Indication:
Treatment of severe hypoglycemia

Contraindication:
Known hypersensitivity to drug, and in patients with pheochromocytoma or with insulinoma (tumor of pancreas).

Precaution:
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.

Adverse Effects:
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.

Dose:
- Adult: Give 1 mg. IM, after reconstituting powder and sterile water, for symptomatic diabetic patient whose IV access has been difficult.
- Pediatric: 0.01-0.02 mg/kg (max dose of 1 mg) IM if no IV/IO access after reconstituting powder and sterile water, for symptomatic diabetic patient whose IV access has been difficult.
Oral Glucose

Action/Kinetics: Increases blood sugar levels

Indications:
Patient meets all of the following criteria:
  • Altered mental status - Known history of diabetes mellitus

Contraindications:
Unconsciousness, known diabetic who has not taken insulin for days, patient who is unable to swallow

Precaution:

Adverse Effects:
None when given properly. May be aspirated by the patient without gag reflex.

Dose: Administer one tube between the patient’s cheek and gums.
**Haloperidol (Haldol)**

**Action/Mechanism:**
Depresses cerebral cortex, hypothalamus, and limbic system, which control activity and aggression.

**Indication:**
Management of psychotic disorders, combative, explosive, and aggressive patients.

**Contraindication:**
Patients with severe CNS depression, Parkinson’s Disease, pregnancy, and seizure patients.

**Precaution:**
None

**Adverse Effects:**
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).

**Dose:**
- Adult: 5-10mg IM
- Pediatric: Not to be used in pediatric pre-hospital patients
Hydroxycobalamin (Cyanokit)

Action/Mechanism:
The action of Cyanokit in the treatment of cyanide poisoning is based on its ability to bind cyanide ions. Each hydroxocobalamin molecule can bind one cyanide ion by substituting it for the hydroxo ligand linked to the trivalent cobalt ion, to form cyanocobalamin, which is then excreted in the urine.

Indication:
Known or suspected cyanide poisoning.

Contraindication:
None

Precaution:
- Use caution in the management of patients with known anaphylactic reactions to hydroxocobalamin or cyanocobalamin. Consideration should be given to use alternative therapies, if available.
- Allergic reactions may include: anaphylaxis, chest tightness, edema, urticaria, pruritus, dyspnea, and rash.
- Blood pressure increase: Substantial increases in blood pressure may occur following Cyanokit therapy.

Adverse Effects:
Most common adverse reactions (>5%) include transient chromaturia, erythema, rash, increased blood pressure, nausea, headache, and injection site reactions.

Dose:
- Adult: The starting dose of Cyanokit is 5Gm, administered by intravenous infusion over 15 minutes. One 5Gm vial is a complete starting dose. – The recommended diluent is 0.9% Sodium Chloride injection. – Diluent is not included with Cyanokit
- Pediatric: Calculate dose at 70mg/Kg – Leaving total dose to be administered in vial, use Burette IV tubing to fill chamber to desired dose – Infuse over 15 minutes.
**Ibuprofen (Motrin/Advil)**

**Action/Mechanism:**
Ibuprofen is a non-steroidal anti-inflammatory agent (NSAID) with analgesic effects, anti-inflammatory, and antipyretic effects. NSAIDs are thought to exert their effects by inhibiting prostaglandin synthesis by inhibiting the cyclooxygenase (COX) enzyme, which catalyzes the conversion of arachidonic acid to prostaglandin and endoperoxide. Prostaglandins are a modulator of inflammation and are also involved in thermoregulation, pain transmission, and platelet aggregation.

**Indication:**
Mild to moderate pain. Fever Control.

**Contraindication:**
Avoid NSAIDS in women who are pregnant or could be pregnant. Not to be used in patients with history of GI Bleeding (ulcers) or renal insufficiency (i.e. chronic kidney disease). Not to be used in patients with allergies to aspirin or other NSAID drugs. Avoid in patients currently taking anticoagulants, such as Coumadin. Avoid use for immune-compromised patients (on chemotherapy, with autoimmune disorders, etc.) Not to be used in patients less than 6 months old.

**Precaution:**
Ibuprofen is not indicated for the treatment of abdominal pain.

**Adverse Effects:**
GI bleeding, Nausea/vomiting, Headache, Drowsiness, Abdominal pain, Dyspepsia, Diarrhea.

**Dose:**
- Adult: 400-600 mg PO q4-6h prn Max: 2400 mg/day
- Pediatric 6 months and older: 10 mg/kg PO (q6-8h prn) Max: 600mg
**Ipratropium (Atrovent)**

**Action/Mechanism:**
Inhibits vagally mediated reflexes by antagonizing acetylcholine at muscarinic receptors on bronchial smooth muscle.

**Indication:**
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.

**Contraindication:**
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.

**Precaution:**
Use 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.

**Adverse Effects:**
Dizziness, headache, nervousness, palpitations, hypertension, cough, blurred vision, rhinitis, epistaxis, GI distress, chest pain, flu-like symptoms.

**Dose:**
- Adult/Peds- 0.5mg added to the nebulized albuterol. May repeat neb of albuterol 2.5 mg with ipratropium 0.5mg x 1
Ketamine HCL

Action/Mechanism:
Ketamine is a dissociative anesthetic agent, structurally similar to phencyclidine (PCP). It is unique among sedative agents in that it provides analgesia along with its amnestic and sedative effects.

Indication:
As an induction agent in the performance of the Rapid Sequence Induction procedure. As a sedative in Excited Delirium. For pain and procedure-related anxiety management.

Contraindication:
Increased ICP, severe HTN, aneurysms, acute heart failure

Precaution:
Caution should be used in the hypertensive patient and in the patient with existing tachyarrhythmia

Adverse Effects:
Laryngospasm: this very rare adverse reaction presents with stridor and respiratory distress.
- After every administration of ketamine:
  - Prepare to provide respiratory support including bag-valve-mask ventilation and suction which are generally sufficient in rare cases of laryngospasm.
  - Institute cardiac monitoring, pulse oximetry and continuous waveform capnography
  - Establish IV or IO access, check blood glucose
  - Establish and maintain physical restraint.
- Emergence reaction: presents as anxiety, agitation, apparent hallucinations or nightmares as ketamine is wearing off. For severe reactions, consider benzodiazepine.
- Nausea and Vomiting: always have suction available after ketamine administration. Give antiemetic as needed.
- Hypersalivation: Suction usually sufficient. If profound hypersalivation causing airway difficulty, consult Medical Control for Atropine 0.5mg/IV.

Dose:
- Adult:
  - Violent patient:
    - Intramuscular (IM) – 4 mg/kg once (max 300 mg)
    - IV/IO – 1 mg/kg every 10 min to the desired effect (max dose 200 mg)
  - Pain or Procedural-related Anxiety:
    - IV/IO – 30mg diluted in 100mL of normal saline infused over 15 minutes OR until analgesia is attained. May repeat x 1. Max dose 60mg.
- Pediatric: ONLY FOR USE in patients over the age of 2.--move below to peds
  - Violent patient:
    - Intramuscular (IM) – 3 mg/kg once (max 300 mg)
    - IV/IO – 1 mg/kg once (max dose 200 mg)
  - Pain or Procedural-related Anxiety:
    - IV/IO – 0.1-0.3 mg/kg (max 30mg) diluted in 100mL of normal saline IV/IO drip over 15 minutes
Special Considerations:

- Some patients experience an “emergence phenomenon” in which a patient experiences disturbing dreams as they emerge from Ketamine induced dissociation.
- Emergence phenomena are less of a concern when Ketamine is used as an induction agent for RSI after which the patient is generally sedated with benzodiazepines for a substantial period.
**Ketorolac (Toradol)**

**Action/Mechanism:**
Inhibition of prostaglandin synthesis by competitive blocking of the enzyme cyclooxygenase (COX). Ketorolac is a non-selective COX inhibitor. Ketorolac is a potent non-steroidal anti-inflammatory drug (NSAID) often used as an analgesic.

**Indication:**
Moderate to severe acute pain management. Consider in isolated extremity injuries such as strains or sprains, non-complicated isolated fractures, known kidney stones, acute exacerbations of chronic back pain.

**Contraindication:**
Patients who are actively bleeding or have incomplete bleeding control, such as trauma. Patients at high risk for bleeding, including current use of Aspirin, NSAIDs, or blood thinners. Patients with known or suspected renal disease. Significant volume depletion or dehydration. History of peptic ulcer disease or GI bleed. Hypersensitivity to NSAIDS or ASA. Pregnant or nursing. Elderly (relative).

**Precaution:**
Separate use from other NSAIDs by 6 hours.

**Adverse Effects:**
Dyspepsia

**Dose:**
- Adult: 15mg IV/IO Single dose.
- Pediatric: 0.5mg/kg IV (max 15mg), single dose only, ONLY FOR USE in patients over the age of 2.
**Lidocaine**

**Action/Mechanism:**
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.

**Indication:**
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.

**Contraindication:**
Hypersensitivity to the drug. Stokes-Adams syndrome, Wolff-Parkinson-White syndrome, severe degrees of SA, AV, or intraventricular block (when no pacemaker is present).

**Precaution:**
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.

**Adverse Effects:**
Anaphylaxis, bradycardia, hypotension, cardiovascular collapse, seizures, malignant hyperthermia, respiratory depression, tremors, lightheadedness, confusion, tinnitus, blurred or double vision, and vomiting

**Dose:**
- **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 1-4 mg/min. Always preceded by a bolus.
- **Pediatric:**
  - Cardiac Arrest – 1 mg/kg IV/ET/IO. Maintenance IV/IO Follow bolus with continuous 20 to 50 mcg/kg/minute. Per manufacturer, do not exceed 20 mcg/kg/minute in patients with shock, hepatic disease, cardiac arrest, or CH
Lorazepam

Action/Mechanism:
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.

Indication:
Status epilepticus, acute anxiety states, acute alcohol withdrawal, Procedural (cardioversion) anxiolysis

Contraindications:
Hypersensitivity to the drug, acute narrow & open angle glaucoma, Hypotension, Head injury, CNS depression, Respiratory depression

Precautions:
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).

Adverse Effects:
Hypotension, Reflex tachycardia, Respiratory depression, Ataxia, Psychomotor impairment, Confusion, Nausea/Vomiting

Dose:
- Adult:
  - Status Epilepticus: 4 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 4 mg per dose) slow IV (<2 mg/min) or IM

Special Considerations:
- 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!
Magnesium Sulfate

Action/Mechanism:
Magnesium is an important cofactor for enzymatic reactions and plays an important role in neurochemical transmission and muscular excitability. Magnesium prevents or controls convulsions by blocking neuromuscular transmission and decreasing the amount of acetylcholine liberated at the end plate by the motor nerve impulse. Magnesium is said to have a depressant effect on the central nervous system, but it does not affect the mother, fetus or neonate when used as directed in eclampsia and pre-eclampsia. Magnesium acts peripherally to produce vasodilation.

Indication:
Parenteral anticonvulsant for the prevention and control of seizures in severe toxemia of pregnancy.
- Torsades de pointes
- Suspected hypomagnesemic state (e.g. chronic alcoholism and chronic use of diuretics)
- Refractory ventricular fibrillation
- Asthma Refractory to other treatment

Contraindication:

Precaution:

Adverse Effects:
Signs of hypermagnesemia include: flushing, sweating, hypotension, depression of reflexes, flaccid paralysis, hypothermia, circulatory collapse, depression of cardiac function and central nervous system depression. These symptoms can precede fatal paralysis.

Dose:
- **Eclamptic seizures**: 4 gm IV (mixed in 50/100 ml of D5W/NS and administered over 4 minutes). May repeat once at 2 gm IV (mixed in 50/100 ml of D5W/NS and administered over 5 minutes)
- **Torsades de pointes and refractory VF**: 1-2 gm IV (mixed in 50/100 ml of D5W/NS and administered over 1-2 minutes) followed by a maintenance infusion (1 gm in 250 ml of D5W/NS administered at 30-60 gtt/min)
- **Asthma**
  - Adult: 2 grams in 50/100 ml of D5W/NS over 20 min
  - Pediatric: 50 mg/kg (Max dose = 2 gm) in 50/100 ml of D5W/NS over 20 min

Special Considerations:
Magnesium Sulfate Injections USP, 50% must be diluted to a concentration of 20% or less prior to IV infusion. Because magnesium is removed from the body solely by the kidneys, the drug should be used with caution in patients with renal impairment. Monitoring magnesium serum levels and the patient's clinical status is essential to avoid the consequences of overdose in toxemia. Clinical indications that it is safe to give magnesium include the presence of patellar reflex (knee jerk) and absence of respiratory depression (approximately 16 breaths or more/minute). Calcium Chloride should be immediately available to counteract the potential hazards of magnesium intoxication in eclampsia. Intravenous use of magnesium sulfate should not be given to mothers with toxemia of pregnancy during the two hours immediately preceding delivery.
Morphine

Action/Mechanism:
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. Causes peripheral vasodilation, thereby decreasing venous blood return to the heart. Relieves pulmonary congestion, and lowers myocardial oxygen need. Metabolized in the liver and excreted in the urine. Onset 2-3 minutes, peak 30 minutes, and duration is 3-6 hours.

Indication:
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...

Contraindication:
Hypersensitivity to opiates, acute bronchial asthma, heart failure secondary to lung disease, upper airway obstruction, acute alcoholism, convulsive states, and paralytic ileus.

Precaution:
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.

Adverse Effects:
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 been seen.

Dose:
- Adult: For persistent pain, 2-10 mg IV titrated to obtain pain relief (use caution in presence of COPD)
- Pediatric: 0.1mg/kg IV/IM (Max 4mg)
Midazolam

Action/Mechanism:
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 CO₂ 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.

Indications:
Midazolam HCL can be given IV/IM/IN for:
- Anxiolysis / amnesia
- Sedation of intubated and mechanically ventilated patients
- Anticonvulsant effect in status epilepticus
- For procedure-related anxiety

Contraindications:
Hypersensitivity to midazolam or any component of the formulation; intrathecal or epidural
injection of parenteral forms containing preservatives (i.e., benzyl alcohol); use in premature
infants for parenteral forms containing benzyl alcohol; acute narrow-angle glaucoma.

Precaution:
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.

Adverse Effects:
Serious cardiac and respiratory events have been associated with the use of IV Midazolam HCl.
These include airway obstruction, apnea, hypotension, depressed saturations, respiratory and
cardiac arrest. 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. Other effects can include paradoxical behavior, excitement, coughing,
headache, hiccups, nausea, vomiting, and nystagmus (especially in children)

Dose:
- **Status seizure:**
  - ADULT (>5min duration):
    - IV -- 2.5 - 5 mg slowly (1-2 min)
    - IM -- 5 - 10 mg
    - IN -- 10 mg, divide dose between nostrils (use atomizer)
  - PEDIATRIC (>5min duration):
    - 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) Max 10mg
- **Agitation** (intubated patient, behavioral emergencies):
  - 2.5 – 5 mg IV or 5 – 10 mg IM
- **Cardioversion:**
  - 2.5 - 5 mg IV if patient alert
Naloxone (Narcan)

Action/Mechanism:  
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. Pure opioid antagonist that competes and displaces opioids at opioid receptor sites

Indication:  
Suspected opioid overdose

Contraindication:  
Hypersensitivity to the drug

Precaution:  
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 non-narcotic agents, or pathologic conditions.

Adverse Effects:  
VF, tachycardia, hypertension, nausea, vomiting, and diaphoresis, in higher doses. Tremors and withdrawal symptoms in narcotic-dependent patients

Dose:  
- Adult: If suspected narcotic overdose consider 2 mg Narcan IV. For physical findings consistent with narcotics overdose, may give 2 mg. Narcan IV.
- Pediatric: 0.1 mg/kg IV/IM/IN Max 2mg
Nitroglycerin

Action/Mechanism:
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.

Indication:
- Control of pain associated with angina pectoris/myocardial infarction
- Relief of pulmonary edema caused by left-sided heart failure.

Contraindication:
Hypersensitivity to nitroglycerin, other nitrates or nitrites, or any component of the formulation (includes adhesives for transdermal product); concurrent use with phosphodiesterase-5 (PDE-5) inhibitors (avanafil, sildenafil, tadalafil, or vardenafil); concurrent use with soluble guanylate cyclase (sGC) stimulators (e.g., riociguat).

Precaution:
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.

Adverse Effects:
Headache, transient episodes of lightheadedness related to blood pressure changes, hypotension, syncope, crescendo angina, rebound hypertension, and anaphylactoid reactions. Abd pain and vomiting may also be seen.

Dose:
- One tablet S.L. 0.4 mg
- May repeat same dosage every 5 minutes x 3 if SBP remains 100 or greater if medical control gives authorization.
Norepinephrine (Levophed)

Actions/Mechanism:
Stimulates beta1 and alpha1 receptors in sympathetic nervous system, causing vasoconstriction, increased blood pressure, enhanced contractility, and decreased heart rate.

Indications:
Severe hypotension- due to cardiogenic, septic, or neurogenic shock either refractory to intravascular fluid boluses or in which intravascular fluid bolusing is contraindicated (e.g. pulmonary edema).

Contraindications:
Hypersensitivity to drug, hypotension caused by blood volume deficit (except in emergencies until blood volume replacement is completed), profound hypoxia or hypercarbia, mesenteric or peripheral vascular thrombosis

Precautions:
- Use IV pump only to infuse
- Monitor IV site closely for extravasation
- Watch for signs of inadequate peripheral tissue perfusion, pale-cyanotic-black
- Never leave patient unattended during infusion
- Monitor VS Q 5 minutes
- Infusions should be reduced gradually, avoiding abrupt withdrawal

Adverse Effects:
- CNS: headache, anxiety
- CV: bradycardia, severe hypertension, arrhythmias
- Respiratory: respiratory difficulty
- Skin: irritation with extravasation, necrosis
- Other: ischemic injury

Dose:
- Adult dose: 1 to 4 mcg/min
- Maintenance dose: Adjust the rate for a low normal blood pressure (usually 80 to 100 mm Hg systolic). The average maintenance dose ranges from 1 to 12 mcg/min (maximum dose 30 mcg/min)
- Pediatric dose: 0.1 – 2 mcg/kg/min; 2 mcg/kg/min max

Note:
Overdosage with norepinephrine may result in headache, severe hypertension, reflex bradycardia, marked increase in peripheral resistance, and decreased cardiac output. In case of accidental overdosage, as evidenced by excessive blood pressure elevation, discontinue norepinephrine until the condition of the patient stabilizes.
**Ondansetron (Zofran)**

Action/Mechanism:
Selective 5-HT3 receptor antagonist which blocks serotonin, both peripherally on vagal nerve terminals and centrally in the chemotrigger zone

Indication:
When non-sedating antiemetic is desirable - Prevention and treatment of severe nausea

Contraindication:
Known hypersensitivity/allergy to Zofran, patient’s <1 yrs. of age

Precaution:
Use with caution in patients with impaired liver function. Rate of administration should not be less than 30 seconds but preferably over 2 to 5 minutes. NOTE: Zofran has no effect on motion sickness.

Adverse Effects:
Headache, dizziness, diarrhea, may cause pain at injection site.

Dose:
- Adult: 4mg IV (over 2-5 minutes) OR 4 mg 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 1 YRS OF AGE
Oxytocin

Action/Mechanism:
Stimulates contraction of the smooth muscles in the uterus, thereby constricting uterine blood vessels and controlling excessive bleeding or hemorrhage.

Indication:
Control of postpartum hemorrhage Contraindications: In the field oxytocin should not be used until after the baby is fully delivered. Be sure there is only one baby.

Contraindication:

Precaution:

Adverse Effects
- Fetal bradycardia (should not be administered prior to delivery of the infant)
- Uterine rupture
- Maternal hypotension, bradycardia and cardiac arrhythmia
- Nausea/vomiting
- Anaphylaxis

Dose:
Oxytocin may be started if bleeding continues:
- IM 10 units followed by IV/IO Infusion by adding 10-40 units to 500ml or 1000mL NS and titrating the infusion to decrease bleeding and patient comfort.
**Promethazine (Phenergan)**

**Action/Mechanism:**
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.

**Indication:**
- 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

**Contraindication:**
Comatose states

**Precaution:**
None

**Adverse Effects:**
- Pronounced sedation
- Tissue irritation if given subcutaneously
- Hypotension if given to rapidly

**Dose:**
- Adult: 12.5 - 50 mg IV/IM
- Pediatric: 0.5 mg/kg IV/IM
Rocuronium Bromide (Zemuron)

Action/Mechanism:
Rocuronium Bromide is a non-depolarizing neuromuscular blocking agent with a rapid to intermediate onset depending on dose and intermediate duration. It acts by competing for cholinergic receptors at the motor endplate. Has no analgesic properties and the patient maybe conscious, but unable to communicate by any means. Patients should be pre-medicated with a sedative (Etomidate/Ketamine) as Rocuronium has no effect on patient’s level of consciousness.

Indication:
To induce neuromuscular blockade for the facilitation of endotracheal intubation. Actions: First muscles affected include eyes, face, and neck; followed by limbs, abdomen, and chest; diaphragm affected last. Recovery usually occurs in the reverse order and may take longer than 60 minutes.

Contraindication:
None

Precaution:
Caution in patients with known significant hepatic disease, pulmonary hypertension and valvular heart disease.

Adverse Effects:
Anaphylactoid reactions, respiratory depression, apnea, bronchospasm, cardiac arrhythmias, MH, muscle fasciculation.

Dose:
- Adult: 1.0 mg/kg slowly administered (30-60 seconds)
Sodium Bicarbonate

Action/Mechanism:
Neutralizes excess acids, returning blood and body fluid to a more normal pH, in which metabolic processes and medications work more effectively.

Indication:
Metabolic acidosis caused by circulatory insufficiency resulting from shock or severe dehydration, severe renal disease, cardiac arrest w/prolonged CPR, tricyclic overdoses, and hyperkalemia.

Contraindication:
None

Precaution:
Not recommended for routine use in cardiac arrest patients. Sodium bicarbonate inactivates norepinephrine and forms a precipitate with calcium. Use with caution in the elderly with renal or cardiovascular insufficiency with or without CHF.

Adverse Effects:
Gastric distention, belching, flatulence, hypokalemia, metabolic alkalosis, hypernatremia, hyperosmolarity, hyperirritability or tetany. Extravasation of IV sodium bicarbonate may cause chemical cellulitis with tissue necrosis.

Dose:
- **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 1/2 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 1 mL/kg IV/IO up to 50 cc.
Succinylcholine (Anectine)

Action/Mechanism:
Competes with the acetylcholine receptor of the motor end plate on the muscle cell resulting in muscle paralysis.

Indication:
To induce neuromuscular blockade for the facilitation of endotracheal intubation.

Contraindication:
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.

Precaution:
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-depolarizing neuromuscular block.

Adverse Effects:
Anaphylactoid reactions, respiratory depression, apnea, bronchospasm, cardiac arrhythmia, MH, muscle fasciculation.

Dose:
- Adult: 1.5mg/kg
- Pediatric: 2.0mg/kg
Tranexamic Acid/TXA (Cyklokapron)

Action/Mechanisms:
Tranexamic acid is an anti-fibrinolytic agent that inhibits the conversion of plasminogen to plasmin and at the same time acts as a weak non-competitive inhibitor of plasmin thus arresting fibrinolysis. As a result, a stable clot can be formed and blood loss is reduced. TXA needs to be given broadly to save the most lives, so clinical judgement based on assessment is crucial. When given within 3 hrs of injury risk of bleeding death drops by 1/3. Studies have demonstrated improved outcomes when the interval from injury to administration is decreased, therefore early administration is recommended.

Indications:
- Blunt or penetrating trauma patient’s ≥ 14 years of age, at high risk of ongoing internal hemorrhage or significant external bleeding, that meet the following:
  - Injury sustained within 3 hrs prior to administration. TXA must be administered within 3 hrs of injury. Administer as early as possible following gross bleeding control and other lifesaving interventions.
  - Systolic BP < 90mmHg and signs of ongoing hemorrhage, AND/OR
  - Tachycardia > 110bpm with signs of hypoperfusion (altered mental status, pallor, cool extremities) and signs of ongoing hemorrhage.
  - Considered in paramedics judgement to be at high risk of significant hemorrhage.
- Also indicated for excessive hemorrhage following delivery or delayed placenta delivery if within 3 hours of delivery.

Contraindications:
- Injuries > 3 hours old
- Patients < 14 years of age.
- Known hypersensitivity to drug

Precautions:
- Notify receiving hospital of TXA administration.
- Clearly document mechanism of injury, time injury/incident occurred, indications for administration and time of administration of TXA.
- TXA should NEVER be administered at a “wide open” rate.

Adverse Effects:
Hypotension (with rapid IV injection), Seizures in high doses (>2-10 grams), allergic dermatitis, diarrhea, nausea, vomiting, blurred vision.

Dose:
Mix 1g/10 ml of TXA in 100ml NS. Infuse over 10 min.
Vecuronium (Norcuron)

Action/Mechanism:
Operates by competing for the cholinoceptors at the motor end plate thereby producing skeletal muscle paralysis.

Indication:
To induce neuromuscular blockade for the facilitation of endotracheal intubation.

Contraindication:
Use with caution in heart disease, liver disease, and myasthenia gravis.

Precaution:
Pregnancy class C. No studies done.

Adverse Effects:
Muscle paralysis, apnea, dyspnea, respiratory depression, sinus tachycardia, urticaria.

Dose:
- Adult: 0.1mg/kg IV/IO
- Pediatric: 0.01mg/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 11/2 times as long to recover.
PART VI. APPENDICES TO THE EMS PROTOCOLS

Appendix A - 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/pacing pads

Procedure:
1) Establish ABC’s, continue/begin CPR
2) Place defibrillation pads 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. Follow Post Cardiac Arrest (ROSC) protocol and 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. 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 an 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 B - 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

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 QRScomplex (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 C - 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 breathe 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 deteriorates, 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 D - Endotracheal 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/va;lve/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 tonsilar suction and suction catheters available
- Intubation monitoring device (bulb, syringe, or capnographer)

Procedure:

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 ½-1 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, an 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.

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 E – 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, eye shield), 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.
Appendix F – 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
- Pressure bag

**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
- Compartment Syndrome
Intraosseous - EZ-IO Device (Adult & Pediatric) Candidates

- The EZ-IO 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 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 VidacareTM EZ-IO in conscious patients causes mild to moderate discomfort but is usually no more painful than a large bore IV.

b. 10 mL infusion can cause severe discomfort for conscious patients.

c. Prior to 10 mL flush on alert patients, SLOWLY administer 40mg (or 2mLs) 2 IV Lidocaine through the EZ-IO 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 G – 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 H – 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 decreased 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. 1¾” 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 I – 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 J – Peripheral IV Access

Candidates:
Adult and pediatric patients determined to need fluid administration for volume expansion or as a route for medication administration. A Saline Lock may be placed for patients requiring IV access for medications only.

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
- Saline Lock
- Saline Flush

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 applying 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.

Procedure of Saline Lock
1. Follow steps 1-5 of IV procedures
2. After removal of needle, blood can be taken for laboratory procedures
3. Place Saline Lock on catheter
4. Use 10cc Saline Flush to flush Saline Lock
5. Follow steps 6-10
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 K – 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.

Taser barb removal X-26 model:
1. Make an “L” with you 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.
2. Holding tension, using needle-nose pliers (or similar tool) with gripping strength and grasp the end of the bard protruding out of the skin near the wire lead and firmly pullout the barb with one quick jerk motion.
3. Assess the skin where the barb was removed. Control any bleeding and dress the wound.

Taser barb removal Taser 7 model:
1. Use cartridge safety clip tool by sliding notch between the probe and the patient skin, catching the probe body and the dart point (see Taser 7 barb removal illustration below)
2. Pull the cartridge safety clip (and the probe with it) straight out, do not twist. Use thumb on top of the base of the probe to stabilize it (see Taser 7 barb removal illustration below).

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 etc.).

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.
Recommended TASER 7 Probe Removal Procedure

This document is meant to show Axon’s recommended guidelines for removing TASER 7 probes from a suspect once deployed. The TASER 7 cartridge features a probe front that can “breakaway” from the probe body, in order to improve attainment at extreme angles. The shipping guard for the TASER 7 cartridge is recommended to be used to assist users with removing probes from a body. The following diagrams can be used to display how the TASER 7 shipping guard can be used for probe removal.
Appendix L - Surgical Airways

Percutaneous Trans Tracheal 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-guage 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 too 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 Years 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 M - Transcutaneous/External Cardiac Pacing

Candidates:
Adult and pediatric patients with bradycardia who are clinically unstable, unconscious or unresponsive to Atropine. 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 conscious 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 maintain.