

Emergency Medical Services

STUDENT HEALTH SERVICES

Standard Delegated Orders
Effective February 1st, 2021

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Medical Director Statement

All TAMU EMS personnel practicing under the delegated authority of the Medical Director/Medical Authority (MD-1) and must function within the approved guidelines as written in the TAMU EMS Clinical Policies, Procedures and Standing Delegated Orders. These documents define the expected pre-hospital standard of care for TAMU EMS personnel. These protocols apply exclusively to TAMU EMS personnel in the pre-hospital setting who are working under the medical authority of the TAMU EMS Medical Authority within the established boundaries of Texas A&M University System or while responding to calls dispatched by TAMU EMS Communications for TAMU EMS.

The following treatment and procedure protocols are in effect as of this date, February 1, 2021 through January 31, 2023. Personnel must exercise prudent judgment and treat patients appropriately. Each employee of the agency is expected to know and understand these protocols up to their level of authorization and training.

Advanced protocols may be extended to an attendant partner, EMS student, and First Responders who have appropriate documented training on occasions deemed appropriate and under the direct supervision of the protocolled Paramedic.


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Texas A&M University EMS



Standard of Care Statement

The public expects a certain level of knowledge and skill from TAMU EMS personnel. Clinical competence and high standards are vital functions in providing quality pre-hospital emergency medical care to the customers who rely on our services. The general treatment protocols are in this section of the manual. They represent the minimal level of patient care that is to be provided whenever there is a request for service. The specific orders for each patient are found in the Standing Delegated Orders (SDO's). The general guidelines discuss treatment and patient philosophies. TAMU EMS embraces as fundamental components of its standard of care the following concepts:

- **The emergent patient benefits from early medical interventions**, especially the early and aggressive application of airway establishment and maintenance, early administration of oxygen, early protection of the cervical spine, and early initiation of definitive therapies.
- **The patient defines the emergency.** As EMS personnel you are often called upon to assist with social or psychological problems therefore you should respond as professionally and thoroughly to these as you do for medical or trauma patients. When possible and appropriate, pre-hospital personnel should follow the desires and wishes of patients and their families. TAMU EMS personnel should be expected to conduct themselves in a professional manner and treat all patients with dignity and respect. Our patients' medical information should be treated in a confidential manner.
- **Your role as EMS personnel is to truly act as the eyes, ears, and hands of the physician.** To successfully do so requires that we educate ourselves beyond first aid procedures and dedicate ourselves to being an integral part of the total health care team. TAMU EMS personnel are expected to use their knowledge, training, judgment and expertise in pre-hospital care when caring for patients under these standing orders. EMS personnel are not confined to only knowing their responsibilities. They may expand their knowledge to assist Medical Control with overall patient care.

TAMU EMS personnel's first priority in the field should be safety for themselves, patients and the public. This includes the use of appropriate personal protective equipment. Patients with the most severe, or life threatening, injuries or illness should be treated first, except in the event of a multiple patient scene/mass casualty incident where the field resources are overwhelmed. Every patient contact begins with the ABCs and or CPR as appropriate. Once adequate life support is established, EMS personnel should perform the primary and secondary survey to determine and then treat illness or injury.

Standard of Care is dynamic, changing and improving on a regular basis. It is not possible to produce a written document that addresses every clinical situation or that is perpetually up to date. It is therefore necessary for TAMU EMS personnel to continuously update their own knowledge and, at times, to rely upon clinical judgment not discussed in the written policy. Compassion for the patient tempered by intellectual honesty should direct TAMU EMS personnel when applying these protocols to patient care.



Standard Delegated Orders & Protocols

This Manual sets forth Standard Operating Procedures, Policies, and Protocols deemed by TAMU EMS to be within the acceptable standard of medical care and are the only ones to be utilized by TAMU personnel. It is specifically recognized that there are acceptable variations from these procedures and protocols, which may also satisfy standard of care. Therefore, variations from these procedures and protocols are not necessarily deemed to be outside the standard of care.

These are **assessment-based** protocols, meaning that the provider should arrive at a working differential of what the main problem is with the patient and then select the protocol which best matches that primary differential. Should a patient fall under a given protocol based upon the provider's differential, but not fit the criteria and history requirements to activate the standing orders, EMS personnel shall initiate the most appropriate treatment for the most emergent clinical problem within their respective scope of practice. **Personnel should consult with Medical Control for any additional assistance or support.**

Each patient may be treated with one protocol (for one differential) or with multiple protocols simultaneously (if the provider finds more than one concurrent illness or injury). Should a provider who is treating a patient with more than one simultaneous protocol be faced with choosing among medications or therapies within those protocols that conflict with one another, the following guidelines are to be used to determine which therapy shall prevail:

1. Treat the problem that is more life threatening first. Evaluate the problem against the "ABCs" and intervene in the one(s) that affect the airway first, then the one(s) that affect breathing and last the one(s) that affect circulation. For example, if you have a patient who is suffering from cardiac ischemia and pulmonary edema, treat the pulmonary edema ("B") first then the cardiac ischemia ("C").
2. If the above test does not resolve the conflict, treat the problem that is more underlying first. For example, if assessment of the present history indicates that hypertensive crisis caused pulmonary edema, then treat the hypertension first.
3. If a dysrhythmia is to be treated, do so in the following order:
 - First: Treat heart rate
 - Second: Treat rhythm
 - Third: Treat B/P**Note:** If hypotension and dysrhythmias are believed to be secondary to low intravascular volume, IV fluid infusion may be used first.

When a patient changes from one algorithm to another algorithm, do not administer more than the maximum total dose of a medication.



Standard Delegated Orders & Protocols

EKG Monitoring may be initiated and vascular access may be obtained in any patient at the discretion of the Paramedic. Oxygen may be administered to any patient at any time, but should be administered to maintain a saturation by pulse oximeter of 95% or greater. In addition to those therapies expressly listed in the SDOs, the following medications are available for use on standing order by advanced providers in any cardiac arrest situation where there is evidence that they are indicated:

Naloxone, D25% or D50%, Thiamine.

Categorization of SDOs:

The treatment protocols have been divided into groups for ease of utilization. The categories have been indexed such that any future change in a particular protocol may be performed without difficulty. The format developed facilitates organization and rapid access to the correct protocol for a given situation. The treatment categories are the following:

- Clinical Guidelines
- Adult Protocols
 - Cardiac Emergencies
 - Environmental Emergencies
 - Medical Emergencies
 - OB/GYN Emergencies
 - Respiratory Emergencies
 - Traumatic Emergencies
- Pediatric Protocols
 - Cardiac Emergencies
 - Environmental Emergencies
 - Medical Emergencies
 - Respiratory Emergencies
 - Traumatic Emergencies
- Procedures
- Medication Reference
- Appendix

Structure of Individual Standing Orders:

The outline format of the SDOs is strictly for rapid and uniform reference and does not imply or direct a mandatory sequence for patient care.

- Criteria and History Section:

Outlines clinically important parameters that when assessed will assist in the application of a specific SDO. It provides a list of possible Historical, Physical and/or EKG findings that may be present if a specific SDO is applied.
- Standby EMT Interventions Section:

Lists and emphasizes the assessment parameters, diagnostic tests and/or devices available to personnel authorized as first responders (TAMECT, Rec Sports). These treatments should be a primary consideration for all providers for the selected SDO. When obtained, the items listed could be advantageous in making a competent clinical decision regarding a treatment path.
- EMT-Basic Interventions Section:

This section lists the interventions available to personnel authorized as EMT-Basic, EMT-Intermediate, or Paramedic and include the “priorities” that should be considered upon initial patient contact and reconsidered throughout the call.



Standard Delegated Orders & Protocols

- **EMT-Intermediate Interventions Section:**
The treatments included in this section are available to be used by personnel authorized as EMT-Intermediate or Paramedic.
- **Paramedic Interventions Section:**
This section includes both essential and optional interventions for the specific SDO in non-sequential order that are available to personnel authorized at the Paramedic level. All Interventions above the Consult section are considered standing orders, requiring no on-line consultation.
- **Consult Section:**
Interventions that require online medical authorization prior to application. Medical control is defined as the receiving facility.
- The text on the right side of each guideline represents thoughts or actions that should be constantly evaluated and play a part in the decision making process.

Treatment and management principles common to the care of every patient are detailed at the beginning of each section, and are specific for each section. For example, every trauma patient should initially be assessed and managed the same way, as should every medical patient and OB/GYN patient. Therefore, each individual SDO addresses the initial assessment and management by referring to the general assessment and management SDO for that section instead of listing the same assessment parameters on each SDO.

While no fixed set of rules can span the variety of situations which may be encountered by EMS personnel, the following SDOs, protocols, policies and procedures are comprehensive guidelines covering most situations that are routinely encountered. The implementation of a standing order is at the discretion of the TAMU employee providing care, or the employee with the highest ranking medical certification. EMS personnel should use the protocol that is most closely associated with the patient's condition.

Once TAMU EMS personnel begin treatment under a particular SDO, the SDO serves as indirect medical control and should be used as a guideline for patient care until one of the following situations occurs:

1. The patient's condition changes:

If the patient's condition changes to another treatable rhythm during or after treatment, refer to that specific SDO, or contact Medical Control for a consult for guidance. Whenever a patient changes from one algorithm to another algorithm, DO NOT administer more than the maximum total dose of a medication.

2. The next step in the protocol is inappropriate for the patient:

For example, the medic believes that completing the next step in the SDO may cause harm to the patient such as giving a medication that the patient is allergic to, or potential side effects from a medication that may worsen the patient's condition. In these circumstances, contact Medical Control for consultation.



Standard Delegated Orders & Protocols

If a clinical improvement is noted after initial interventions, further standing orders may be withheld based upon the provider's clinical judgment. Some situations may necessitate the concurrent use of more than one SDO.

Always treat the problem which poses the greatest risk to life or loss of limb. If undeterminable, treat the most underlying problem first.

Initiation of patient transport is always encouraged at the earliest possible time in the flow of patient care. A delay in transport may occur in rare circumstances; however the delay should be well justified and only occur when a treatment considered a "critical intervention" cannot or should not be performed during transport.

Treat to the point of significant relief or appropriate clinical improvement.



Definitions

The following words and terms, when used in this Manual, shall have the following meanings, unless the context clearly states otherwise.

ABANDONMENT: Leaving a patient without medical care once patient contact has been established, unless emergency medical services (EMS) personnel are following a physician directive or the patient signs a release; turning the care of a patient over to an individual of less training when advanced treatment modalities have been initiated to include, but not limited to, IV's, intubation, and drug therapy. TDSHS Rule §157.2 (1)

A/C: Antecubital fossa

ACLS: Advanced Cardiac Life Support

ADVANCED DIRECTIVE: A legal document which defines a patient's wishes for initiation or withholding life saving interventions, up to and including CPR.

ADVANCED LIFE SUPPORT (ALS): Emergency prehospital treatment that involves invasive medical interventions including but not limited to, the delivery or assisted delivery of medications, defibrillation, and advanced airway management.

AFIB: Atrial Fibrillation

AHA: American Heart Association

AIR MEDICAL PROVIDER (AMP): Rotor-wing transport service utilized by field crews for transportation of patients from scene or nearby landing zone to a medical facility.

AMS: Altered Mental Status

APAP: Acetaminophen

ASA: Aspirin

ASPN: Associated Symptoms and Pertinent Negatives

ATTENDANT: A TAMU EMS employee authorized to practice on the ambulance at the attendant level.

BASIC LIFE SUPPORT (BLS): Emergency prehospital care involving noninvasive medical interventions. The provision of basic life support may be under the medical direction and/or supervision and control of a licensed physician.

BP or B/P: Systolic blood pressure

BRADYCARDIA: Heart rate less than 50 beats/minute

BSA: Body surface area

BVM: Bag valve mask



Definitions

CABC: C-spine, Airway, Breathing, Circulation

C-SPINE: Cervical spine

CENTRAL LINES: Means any IV catheter device which gains access to a patient's central circulation.

COPD: Chronic Obstructive Pulmonary Disease

CONSENT: Before providing care to a conscious and alert victim, consent should first be obtained. To obtain consent you should tell the victim who you are, ask the patient if they are willing to accept your help, inform them what it is that you plan to do to help them, ensure that they completely understand what you are saying, and then allow the patient to either give or not give consent.

Consult: Term used to describe On-Line Medical control via TAMU EMS Personnel for the purpose of requesting additional treatment options.

CPAP: Continuous Positive Airway Pressure

CPR: Cardiopulmonary resuscitation

DELEGATED PRACTICE: Permission given by a licensed physician either in person, by treatment protocols or by standing order, given to specific prehospital providers authorizing prehospital medical care.

DEPENDENT LIVIDITY: Venous pooling of blood in dependent body parts causing purple discoloration of the skin, which does blanch with pressure.

DUTY TO ACT: Most professional rescuers have a duty to act at the scene of an emergency (especially if you are being paid or working as a first responder, etc...). In other words, for the exception of safety concerns, one should go to the scene of an emergency when on duty.

EJ: External jugular vein

ECG (EKG): Electrocardiogram

EMERGENCY: Any combination of events or circumstances that results in injury or illness requiring immediate medical care of a person or persons. Any situation declared an emergency by a licensed physician should be considered to be an emergency by the TAMU EMS personnel. Situations where there is doubt about whether an emergency exists should be treated as emergencies.

EMERGENCY MEDICAL CALL: Means a medical situation in which an immediate response to a scene is required to prevent life or limb-threatening medical deterioration of a person requiring emergency medical treatment.

EMERGENCY MEDICAL SERVICES: A service with a coordinated arrangement of resources (including personnel, equipment, and facilities) organized to respond to medical emergencies and/or an individual's perceived need for immediate medical care.



Definitions

EMERGENCY MEDICAL PERSONNEL: Those individuals certified or licensed by the Department of State Health Services (DSHS) to provide emergency medical care. EMT-B; EMT-I; EMT-P; Lic-P.

EMERGENCY MEDICAL TREATMENT: Means those skills, techniques and judgments, as defined by the Medical Director, which are intended to maintain, improve or prevent deterioration of a patient medically due to a medical condition. The treatment has also been deemed appropriate to be delivered by trained personnel at the scene of a medical emergency outside the hospital and/or during transportation to the hospital.

EMERGENCY SERVICES: Those health care services provided to evaluate and treat medical conditions of recent onset and severity that would lead to a prudent layperson, possessing an average knowledge of medicine and health, to believe that urgent and/or unscheduled medical care is needed.

ET: Endotracheal

FIRST AVAILABLE: It is the time after arriving at a destination facility that the medic crew is able to respond to another call (corresponds to “Partially Available” status in computer aided dispatch program (CAD)).

FLUID BOLUS: Administration of 250-500 ml of NaCl 0.9% via rapid infusion in an Adult patient and 20 ml/kg in a pediatric patient.

GCS: Glasgow Coma Scale

GUIDELINES: Information in protocols and/or standard operating procedures that provide personnel additional information by which to make sound judgments or determine a course of action.

HHN: Hand Held Nebulizer

ICP: Intracranial pressure

IN CHARGE: A TAMU EMS employee authorized as the lead medic on a crew

IM: Intramuscular

INTERVENOR PHYSICIAN: A physician licensed by the Texas Medical Board, who without having established a prior physician/patient relationship with an emergency patient, accepts responsibility for the prehospital care, and who shall provide proof of a current medical license when requested.

IN SERVICE: A vehicle is considered in service if it is capable of response, patient transport or complete patient care.

IO: Intraosseous

IV: Intravenous

IVP: IV Push for administration of medications

J or j: Joule



Definitions

KVO: Keep vein open; same as TKO.

MASS CASUALTY INCIDENT (MCI): Any single occurrence resulting in multiple victims which taxes an EMS system's ability to handle the victims' entire emergency prehospital care needs and maintain adequate protection for the remainder of its service area; any occurrence that requires more resources to properly handle than are immediately available.

MDI: Metered dose inhaler.

MEDICAL CONTROL: Medical Control is a MD or other authorized person who may authorize specific treatment of the sick and injured.

MEDICAL DIRECTOR: A physician licensed by the Texas Medical Board who is responsible for all aspects of the operation of an EMS system concerning the provision of medical care. The Medical Director is that Physician who provides direction and guidance of the EMS system and who authorized EMS personnel to perform specific skills.

MOBILE INTENSIVE CARE UNIT (MICU): A vehicle that is designated for transporting sick or injured individuals, staffed by at least one EMT-Paramedic and another certified individual at or above the level of EMT-Basic, and meets minimum equipment requirements established for such vehicles by TDSHS.

MONA: Morphine, Oxygen, Nitroglycerine, Aspirin

MUTUAL AID: Emergency prehospital care provided in another EMS provider's service area at the request of the other EMS provider in order to assist that provider in maintaining adequate EMS protection in its service area. Assistance provided by one provider to another whose resources are overwhelmed.

NC: Nasal cannula is an oxygen delivery device used at a flow rate of 2-6 LPM.

NEGLIGENCE: If a failure to follow the standard of care or if a failure to act results in someone being injured or causes further harm to the victim, then there is negligence. For example—failing to provide care, providing care beyond your level of training, providing inappropriate care, or failing to control behaviors that could result in injury are all considered negligence.

NKDA: No Known Drug Allergies

NON-EMERGENCY: Means a situation in which an immediate response to a scene, hospital, health care facility or other place is not required to prevent life or limb-threatening medical deterioration of a person. May include responses to assist calls for citizens of other agencies.

NPO: Latin for "nil per os." Nothing by mouth.

NRB: Non-rebreather mask with oxygen at 10-15 LPM or enough to maintain adequate reservoir bag inflation.

NS: Normal Saline

NTG: Nitroglycerine



Definitions

N/V: Nausea/vomiting

OFF-LINE MEDICAL CONTROL: Delegated practice through the use of the SDOs, Protocols and Policies and Procedures.

ON-LINE MEDICAL CONTROL: Direct communication with Medical Control either in person, or via the use of a phone line, radio, or other form of telecommunication.

OOH-DNR: Out of hospital do not resuscitate order

OPQRST: An acronym used to help in the description of pain. O-onset of symptoms; P-provocation; Q-quality; R-radiation; S-severity; T-time

OUT OF SERVICE: A vehicle is considered out of service if it is incapable of response, patient transport or providing patient care.

PATIENT CONTACT: The point when initial contact is made between the EMS provider and the patient.

PEDIATRIC PATIENT: Patient < 45 kg in weight

PEEP: Positive end expiratory pressure

PMHx: Past medical history

PMS: Pulse, Motor, Sensation assessment parameters

PPV: Positive Pressure Ventilation. Administered via devices such as mouth to mask ventilation with oxygen, two person bag valve-mask technique with oxygen, etc.

PR: Per rectum

PRE-HOSPITAL CARE: Care provided to the sick or injured by EMS personnel in an out-of- hospital environment.

PRE-HOSPITAL PROVIDERS: All TDSHS certified or licensed personnel providing medical care in an out-of-hospital environment.

PRN: As needed

PROTOCOLS: Written instruction providing pre-hospital personnel with a standardized approach to commonly encountered problems in the out-of-hospital setting, typically in regard to patient care. Protocols may include standing orders to be implemented prior to, or in lieu of, establishing communication with direct medical control.

q: Every



Definitions

REC SPORTS MEDICS: Members of the Texas A&M EMS who are BLS first responders employed by the Department of Recreational Sports to provide standby medical coverage to members and guests of the University's Recreational Center and participants in various Club Athletic events and intramural sporting activities.

REFUSAL OF CARE: Every conscious and alert person has the right to refuse medical treatment. If we treat patients without their consent, this could be interpreted by the patient as assault. (*Note: Patient should be at least 18 years old or legal adult to give consent. Minors CANNOT refuse treatment)

ROSC: Return of spontaneous circulation

ROSR: Return of spontaneous respiration

SALINE LOCK: Intravenous access device which allows venous access without the use of IV tubing or continuous fluids.

SAMPLE: An acronym used to gather patient history during an event. S-signs/symptoms; A- allergies; M-medications; P-prior history or pertinent past medical history; L-last oral intake; E- events leading up to the incident

SECOND AVAILABLE: A vehicle and its crew are considered second-available when they are capable of taking a response, transporting a patient and providing patient care (corresponds to "Available" status in computer aided dispatch program (CAD)).

SL: Sublingual

Standby EMT: Individuals who are certified as Emergency Medical Technician or higher by the Department of State Health Services (DSHS) and approved by the TAMU Medical Director to become first responders for TAMU EMS. Due to their close proximity to emergency scene, first responders may administer either basic or advanced life support prior to arrival of an MICU.

S/S: Signs and symptoms

STANDARD OF CARE: Care equivalent to what any reasonable, prudent person, of like certification or license level would have performed in a similar situation based on local or regionally adopted standard emergency medical services curricula.

STANDING DELEGATED ORDERS (SDOs): Standing Orders are protocols which allow certain procedures to be carried out by properly certified personnel under certain defined circumstances before requesting a consult for on-line medical direction.

STANDARD OPERATING PROCEDURES (SOP): Standard Operating Procedures are those methods of operation which provide a consistent form of day to day operation. Standard Operating Procedures include protocols, special protocols, guidelines, and standing orders and establish the organizations Standard of Care.

SQ: Subcutaneous Injection

TACHYCARDIA: A heart rate > 100 beats/minute



Definitions

TAMECT: Texas A&M University Emergency Care Team; a volunteer first responder organization serving the Texas A&M University community by providing Basic Life Support at University and community standby events. The organization is part of the Texas A&M University EMS.

TAMU EMS: Texas A&M University – Emergency Medical Services; for simplification, this term may refer to Standby EMT, TAMECT, Rec Sports Medics, or TAMU EMS ambulance transport, collectively.

TBSA: Total body surface area

TCA: Tricyclic antidepressant

TCP: Transcutaneous pacing

TDSHS: Texas Department of State Health Services

TRAUMA CENTER: A Hospital who has been specially designated for the care of trauma patients.

VAGAL MANEUVERS: Having the patient cough, or holding their breath while bearing down in an attempt to stimulate the Vagus nerve and slow their heart rate.

VITAL SIGNS (V/S OR VS): A term to indicate taking a patient's blood pressure, pulse, respiratory rate and pulse oximetry.

VOLUNTEER: An individual who provides services without expecting or receiving money, goods, or services in return for providing those services, except for reimbursement for expenses necessarily incurred in providing those services.



General Therapies

The following procedures, therapies, and medications are authorized above and beyond those noted in a specific protocol for use at the EMS provider's discretion.

Thiamine

Thiamine may be administered to any adult patient when the provider has any reason to suspect malnutrition or chronic alcohol abuse. Thiamine should be given as 50 mg IM and 50 mg IV/IO. If an IV cannot be established, the provider may administer the entire 100 mg IM. Thiamine should be given prior to the initial administration of dextrose.

Dextrose

Dextrose may be administered to any patient whose blood glucose determination is < 60 mg/dl. In the hypoglycemic patient with an intact gag reflex when an IV cannot be established, dextrose may be given orally as a glucose paste. A patient refusal should not be accepted from any patient whose blood glucose level is < 60 mg/dl without a consult. Glucose may be given after a recent diabetic event where a blood sugar is above 60 however the patient is still showing signs and symptoms.

Vascular Access

Unless specifically limited or prohibited by a particular protocol, advanced EMS personnel (EMT-Advanced, EMT-Paramedics) may obtain vascular access on any patient at their discretion. EMT-Basics may attend patients from inter-facility transports with a pre-existing saline lock, as long as there is absolutely no fluid or medications being administered to the patient through the saline lock.

Oxygen

Oxygen may be administered to any patient. It should be administered to every patient who demonstrates hypoxemia by clinical presentation and/or pulse oximetry $< 95\% \text{ SaO}_2$

Zofran

Zofran may be administered to any patient complaining of nausea/vomiting. Zofran should be given in 4 mg increments for a max adult dose of 8 mg. Both ODT and IVP should be attempted prior to the administration of Phenergan.

Endotracheal Tube

Advanced EMS personnel may secure the airway of any patient they believe is at risk for airway compromise or who requires positive pressure ventilation. The airway may be secured with endotracheal intubation so long as the patient does not have any contraindications to the procedure. Endotracheal intubation may be by oral or nasal route based on clinical indications and contraindications.

Medications may be given via the endotracheal tube if:

- Vascular or Intraosseous access is delayed and intubation is accomplished
- Auscultation reveals clear lung fields
- Medications given via the ET tube for the adult require higher doses and dilution, and are very susceptible to bronchial/alveolar infiltrates and alveolar wall disturbances
- The "bolus" dose of any adult medication given via ET is to be doubled from the standard IV dose
- Medications which may be given via ET are:
 - Naloxone



General Therapies

- Atropine
- Epinephrine
- Lidocaine
- These medications should be instilled through a catheter passed beyond the tip of the ET tube, and followed by several positive pressure ventilations via a bag-valve device attached to the ET tube.

Acetaminophen

May be administered PO or PR to any febrile patient (without contraindications) as 975 mg for adult and as per dosing chart for pediatric patients.

General Pediatric Therapies

The number of encounters with children is far less than with adults. These protocols therefore address situations where advanced procedures in the field can directly affect a child's survival.

Control of the airway and rapid transport are the underlying principles of pediatric protocols and best serve the needs of the pediatric patient.

Airway and Ventilation

- Airway management by mouth-to-mouth-and-nose, mouth-to-mask, or bag-valve-mask ventilation should be used in neonates, infants, and children as a first maneuver for providing assisted ventilation.
- Remember that the correct position to maintain the optimal airway is age-dependent. In pediatric patients with suspected trauma, the airway maneuver of choice is a modified jaw thrust combined with cervical spine stabilization.
- Oxygen should always be provided at high concentration in the pediatric patient and should be humidified when feasible. There are no contraindications to high concentration oxygen in the pre-hospital setting for the pediatric patient.

Intubation

- When noted in the protocols, or when other maneuvers used to ventilate the pediatric patient are inadequate, endotracheal intubation should be attempted.
- Children suspected of having croup/epiglottitis might experience life threatening laryngeal spasms and close off their airways; exercise extreme caution during attempts at intubation.

Intravenous, Saline Lock or Intraosseous Access

- There should be limited attempts for each method in obtaining access to pediatric patients. Intravenous attempts should always precede IO access.

Pediatric Drug Dosage and Fluid Administration

- For drug dosage and fluid administration, refer to both the Broselow Tape and the Pediatric Appendix.
- When the patient is intubated and vascular or intraosseous access is not achieved, lidocaine, epinephrine, atropine, and naloxone may be administered via the endotracheal tube. The initial dose of the medications via the Endotracheal Tube is the same as the IV/IO dose. These



General Therapies

medications should be diluted to 3-5 ml total drug volume with normal saline (0.9% NS), instilled through a catheter passed beyond the tip of the endotracheal tube, and followed by several positive pressure ventilations via a bag-valve device attached to the endotracheal tube.



Diagnostic Tools and Procedures

Vital Signs

- A complete set of vital signs should be obtained on all patients assessed, **INCLUDING** children, infants, and neonates, within five (5) minutes of patient contact unless patient condition does not allow.
- Patients refusing treatment/transport should have one complete set of V/S taken and charted, if the patient allows.
- Patients transported to a hospital should have a minimum of two complete sets of V/S obtained and recorded. For patient contact and/or transport times shorter than 15 minutes in duration, it is acceptable to use vital signs obtained upon triage at receiving facility.
- “Stable” patients with non-life or limb threatening problems should have V/S repeated every 15 minutes.
- “Urgent” to “critical” patients should have V/S taken and documented every 5 minutes.
- Patients who are being transferred (Non-Emergency) should have at least one set of V/S taken. If the initial V/S are out of normal limits, then a second set should be taken.
- A complete set of vital signs (V/S) are defined as:
 - **Respiratory Rate**
 - **Pulse and Heart Rate**
 - ♦ The term “heart rate” refers most correctly to the rate of electrical depolarization (usually ventricular) noted on the ECG monitor. “Pulse rate” refers to the palpable rate of perfusion noted at a pulse point or displayed by the pulse oximeter. While in most patients these are identical values, this is not always the case. When reporting the rate on the ECG monitor, use the term “heart rate.” Crews should be certain that this rate correlates with the perfusing or palpable pulse rate.
 - ♦ **Special Allowance:** In the critical patient where time is a factor, the EMS personnel may use palpable pulses to estimate and document blood pressure. The acceptable values are as follows:
 - Palpable radial pulse: Systolic of 80 mm/Hg
 - Palpable brachial pulse: Systolic of 70 mm/Hg
 - Palpable carotid pulse: Systolic of 60 mm/Hg
 - **Capillary Refill**
 - ♦ Capillary Refill may be used as an adjunct to blood pressure in assessing the perfusion status of any patient.
 - ♦ Capillary refill may be substituted for blood pressure in the infant < 1 year of age.
 - ♦ Capillary refill is not an acceptable substitute for B/P in the patient > 1 year of age.
 - **Blood Pressure**
 - ♦ The accuracy of an obtained blood pressure is influenced by many factors, such as the size of the cuff used. A cuff too small for the arm will yield an elevated blood pressure, while one too large will result in a lower than normal reading. The cuff should easily go around the patient’s upper arm, but the air bladder should not overlap itself. The cuff itself should be 2/3 the length of the patient’s upper arm.
 - ♦ A systolic B/P (palpated B/P) is acceptable **ONLY**:
 - As an additional vital sign in the non-urgent patient in whom an auscultated B/P has already been obtained and was within normal limits.
 - In the critical trauma patient in whom serial palpated B/Ps are being obtained.
 - In the patient in whom an auscultated B/P absolutely cannot be obtained.
 - **Blood Glucose**

Diagnostic Tools and Procedures

- ◆ Blood glucose should be assessed on all patients with altered mental status. This includes patients who experience a seizure or a syncopal episode.
- ◆ A blood glucose measurement may be performed on any patient at the discretion of the EMS personnel.
- ◆ Those patients with altered mental status which appears to be secondary to trauma should also have their blood glucose assessed **IF** such assessment will not delay definitive interventions, such as airway management, cervical spine immobilization, hemorrhage control, transport, or vascular access.
- ◆ A patient refusal may not be accepted from any patient whose blood glucose level is not at least 60 mg/dl. A Medical Consult is required prior to refusing anyone with a blood glucose of < 60 mg/dl who has proper mental capacity.
- ◆ Blood glucose should be assessed on all patients 1 year of age or less in distress, regardless of findings or complaints. The only exception would be the pediatric patient who is suspected of having epiglottitis.
- ◆ After administration of D50%, the blood glucose value will remain elevated for quite some time as the cells attempt to uptake the glucose. Therefore, blood glucose measurements taken shortly after the administration of dextrose may not reflect improvement of the intracellular hypoglycemia. If a repeat blood glucose measurement is used, wait at least 10 minutes after D50% administration.
- ◆ The patient's clinical status as well as serial blood glucose measurements should be used to determine whether to administer additional dextrose.
- **Temperature**
 - ◆ Temperature should be assessed on the following:
 - Pediatric seizure patients
 - Patients with suspected diagnosis of sepsis
 - Patients whose complaints or findings indicate febrile activity
 - Patients whose findings indicate hypothermic or a hyperthermic state (Heat Stroke)
 - Critical Trauma patients
 - Drowning patients who present in cardiopulmonary arrest.
 - ◆ Temperatures should be taken orally in patients who are capable of holding the thermometer correctly. Temperature should be taken rectally in all other patients.
 - ◆ Neither rectal nor oral temperatures represent true "core" temperatures. For our purposes, an oral (or secondarily, a rectal) temperature is used to guide cooling or warming in conjunction with the patient's clinical response.
 - ◆ When reporting or documenting a temperature value, indicate the source (oral, rectal, temporal, or tympanic).
- **ECG Monitoring**
 - ◆ The ECG should be assessed within 5 minutes of patient contact if condition allows.
 - ◆ Record a strip of ECG for at least 12 seconds duration.
 - ◆ Record any changes in rhythm or any significant changes in rate.
 - ◆ Record "pre" and "post" ECG strips before and after any intervention that should affect the cardiac rhythm or rate (meds, electrical therapy, etc.)
 - ◆ **12-Lead**
 - 12-Lead ECG should be assessed on any patient who is experiencing cardiac related signs and symptoms.
 - If possible, a 12-Lead ECG should be obtained prior to any treatment (O₂, NTG, ASA) on patients experiencing cardiac related signs and symptoms.
 - ◆ **3-Lead**
 - 3-Lead ECG should be assessed on all patients with complaints or presentation of any of the following:



Diagnostic Tools and Procedures

- Chest pain (or other possible myocardial ischemia pain)
 - Shortness of breath and/or dyspnea
 - Syncope
 - Dizziness
 - Abdominal pain
 - Nausea/vomiting
 - Hypotension/hypertension
 - Tachycardia, bradycardia, and/or irregular heart beat
 - Altered mental status
- **Pulse Oximetry**
- ♦ Pulse Oximetry should be used to evaluate the oxygen saturation status of all patients in whom hypoxia or ischemia is suspected.
 - ♦ Pulse oximetry may be used to titrate oxygen delivery, and permits the EMS personnel to utilize delivery or flow rates that are most appropriate for patient condition.
 - ♦ Oxygen should be administered as necessary to maintain a $\text{SaO}_2 \geq 95\%$.
 - **Special Allowance:** While this may be our goal, it should be noted that patients with significant COPD history may not be able to achieve SaO_2 of 95%.
 - ♦ Pulse Oximetry readings are accurate only if the probe is able to “see” the arterial blood flow. The patient must be well perfused.
 - ♦ The probe should be firmly attached to a clean finger or toe. Nail polish may occlude the probe’s light beam, so unpolished nails are preferred.
 - ♦ Hypotensive, hypoperfused, or peripherally vasoconstricted patients are generally not good candidates for pulse oximetry (pulseless or cold extremities).
 - ♦ The heart rate from the pulse oximeter matches the patient’s palpable pulse rate.



Medication Standards

Medications may only be given:

- By an approved TAMU EMS Provider.
- When administered according to TAMU EMS protocol or by specific written orders.
- By direct order via a medical consult.
- Medications and IV fluids should be checked prior to administration to the patient to ensure that they are not expired and that they are clear and free of any contaminants.
- All patients SHOULD be asked for their allergies to medications prior to any medication administration.
- The crewmember requesting and receiving orders are responsible for confirming the orders.
- If, at any time, an order is unclear, ask for clarification.
- When more than one IV bag is infused in a patient prior to the arrival at the receiving hospital, IV bags should be labeled to indicate the bag number currently being infused.
- Any bag which has medications added shall be clearly labeled with the name of the drug, the quantity added, the time when the bag was hung, and the initials of the person preparing the bag for infusion.
- The In-Charge and Attendant are responsible for keeping all medications current and up to date as well as control of the controlled substance box.
- When any medications are administered, they should be documented on the patient care report.
- When narcotics are administered, if possible, obtain a witness of waste from a 3rd party, ideally hospital personnel and document on the narcotic usage form. A TAMU EMS crew member is sufficient if hospital ER staff is not available.



Protocol Deviations

This policy manual is an overview and summary of TAMU EMS policies and procedures that are currently in effect. As policies and procedures for the Clinical Department are revised, changes should be communicated to employees through standard communication channels.

It is difficult to cover all situations that may arise and challenge operations personnel in their efforts to provide timely, compassionate, and quality patient care to residents and visitors of Texas A&M University. Therefore, the policies and procedures contained in this manual constitute guidelines only. Any significant clinical issues should be considered on a case-by-case basis and should take into consideration any and all extenuating circumstances surrounding the event.

In the interest of patient care, should any deviation of SDO be performed, employees shall document the deviation and notify the Clinical Coordinator for review with the Medical Director. **The Medical Director for TAMU EMS is the final authority for all clinical and patient care issues.**



AOD Notification

MANDATORY ADMINISTRATOR ON DUTY NOTIFICATION

System certified providers operating within the TAMU EMS System do so under the authority of the Medical Director. As such, any incident which potentially has an adverse or negative impact on the patient or system ***should be immediately reported to the Administrator on Duty as soon as practical after the completion of the call*** so that an investigation may be initiated if warranted.

Administrator on Duty notification should include, but not be limited to, the following:

- Cardiac and/or respiratory arrest occurring after administration of a controlled substance.
- Cardiac arrest occurring after administration of a paralytic agent.
- Cardiac arrest occurring after administration of an antiarrhythmic agent in a previously stable patient.
- Any attempt (successful or unsuccessful) at needle and/or surgical airways.
- Incorrect medications administration or use (i.e., excessive amount, wrong dose, route, etc.).
- Any time the Patient Safety Restraint and/or Patient Safety Sedation procedures are utilized.
- Any cardiac and/or respiratory arrest or patient injury while attempting physical restraint.
- Any unusual circumstance or intervention that potentially causes or caused patient harm.
- A provider has operated outside of his/her level of certification, training, and/or level of authorization (i.e., state certified Paramedic, who is authorized by the Medical Director at the EMT-B level, initiating an IV or performing endotracheal intubation).
- Any potential employee exposure.

If any of the above incidents occur, the Administrator on Duty is responsible for contacting the Clinical Coordinator, EMS Manager and Medical Director appropriately.



Patient Status

Patient status updates allow for the prioritization of the patient's clinical status. When crews update the patient status it signifies that the crew has recognized the urgency of their patient. Additionally, it allows supervisory and dispatch personnel, as well as receiving facilities, to react accordingly.

Priority 1 (Critical)

- Critically ill or injured patient (immediately life-threatening illness or injury) needing immediate intervention
- Examples might include:
 - Cardiac arrest or post cardiac arrest
 - Head injury with GCS < 8
 - Penetrating trauma to the head, neck, chest or abdomen

Priority 2 (Urgent)

- Potentially life-threatening illness or injury
- Examples might include:
 - GCS 8 – 12
 - Altered level of consciousness
 - Status epilepticus
 - Unresponsive patient
 - Unstable vital signs and/or clinical signs of shock

Priority 3 (Stable)

- Non-urgent condition which may require medical attention, but not immediate treatment.
- Examples might include:
 - GCS 13 – 15
 - Stable vital signs
 - Minor injuries
 - "Hemodynamically stable chest pain with no evidence of ischemia."



Radio Report and Consult Guidelines

The following format should be used when contacting On-Line Medical Control to receive patient care orders:

1. Employee Name (First name is sufficient)
2. Level of Authorization (EMT-B, EMT-I, EMT-P, etc.)
3. Transport time to facility
4. What orders you are asking for (i.e. additional pain management or any other below-the-line treatment options)? Be specific with what type of pain management you are requesting).
5. Age of patient
6. Level of Consciousness or GCS
7. Chief Complaint
8. Pertinent past medical history (specific to patient's chief complaint now)
9. Vital Signs, including a Blood Glucose Level and ECG rhythm interpretation
10. Treatment administered by EMS

In the event that a consult is required and the EMS provider is unable to make contact with Medical Control or the receiving facility refer to the Communications Failure Guideline CG-08 and notify an AOD as soon as possible.



Communications Failure

In the event that an EMS unit cannot make contact with Medical Control for specific orders beyond those stated within the interventions section of each protocol, EMS personnel are required to follow the interventions that are listed in a particular protocol. Under no circumstances may EMS personnel administer a drug/narcotic or perform a procedure for which they are not authorized. There are no exceptions to this policy.

Each protocol defines the initial procedures the Bryan Fire Department personnel will use in treating the defined situation and continued treatment according to Medical Control. All interventions indicated below Medical Control require on-line physician orders.

Medical Control

Primary Medical Control:

Dr. Gore during normal business hours.

- Contact via cell phone – Call Beutel MC3 nurse station or Dr. Gore directly

If after hours or unable to establish contact with Primary Medical Control then

Secondary Medical Control:

ER physician at the receiving ED destination

- Contact via cell phone – Call the receiving ER ambulance number
- Contact via radio – Call on the receiving ER radio channel

Contact failure:

1. No answer after 10 rings to MC3 or Dr. Gore phone
2. No answer after 10 rings of the receiving ER ambulance phone
3. No successful radio contact

*****Perform any two of the listed procedures before following contact failure procedures*****

CONTACT FAILURE PROCEDURES

If a crew is unable to make contact with On-line Medical Control, then all therapies below the Medical Control line will be standing order. Attempt to notify the receiving facility about the patient through any means possible (ie. Dispatch relay)

The crew must notify an AOD as soon as possible. The crew will provide the Clinical Coordinator with a written report explaining the contact failure and any therapies used that were below the Medical Control line within 24 hours of the event. **The Medical Director for TAMU EMS is the final authority for all clinical and patient care issues.**



Chain of Command

Authority

- The In-Charge of the first arriving medic unit is responsible for all patient care activities and coordination of resources at the scene until that responsibility is delegated to another In-Charge or appointed individual.
- During MCIs and multi-unit response (> 2 units), the In-Charge assumes operational responsibility for coordination of prehospital resources until it can be delegated to another appropriate individual (for example, Fire Dept. Lieutenant or Battalion Chief). More than likely, coordination of resources and triage are mutually dependent on one another and will occur simultaneously. After arrival of appropriate supervisory personnel, incident command procedures are in effect.

Management

- The scene of an emergency shall be managed to minimize the risk of further injury or death to the patient as well as to other persons who may be exposed to the risks as a result of the emergency condition. Priority shall be placed upon the interests of those persons exposed to the more serious and immediate risks to life and health.
- Medical management at the scene of a medical emergency includes:
 - Medical Evaluation
 - Medical aspects of extrication and all movement of the patient(s)
 - Medical care
 - Patient destination and transport decisions
- EMS personnel shall not delegate patient care to other EMS personnel whose scope of practice limits their abilities to treat a patient.
 - Personnel trained in defibrillation may not hand over responsibility for defibrillation to personnel not trained in defibrillation.
 - ALS Personnel treating a patient requiring ALS intervention may not hand over responsibility for the patient to BLS personnel.



Non-TAMU Personnel on Scene

General Information

This policy establishes the guidelines for EMS personnel and identifies the limits that trained/civilian bystanders may assist during an emergency response.

Certified/Licensed Individuals Wishing to Assist

Individuals who possess valid EMS certification and/or other healthcare license but are NOT employed by TAMU EMS may be allowed to assist TAMU EMS personnel in rendering patient care under the following condition:

- The individual may only participate in patient care under the direct supervision of TAMU EMS personnel.
- Individuals who possess advanced certification should NOT be permitted to administer invasive treatment UNLESS the Medical Director specifically approves such treatment. Such treatment should only be approved during Mass Casualty Incidents (MCIs) when TAMU EMS resources are strained.

Non-Certified Bystanders

The use of non-certified bystanders in an emergency situation is not recommended and should be reserved for instances when their assistance could make a crucial difference in the outcome of the situation. Common situations in which a non-certified bystander might assist include, but are not limited to the following: CPR, manual C-spine stabilization, hemorrhage control, etc. It is appropriate to provide PPE to bystanders offering assistance in patient care activities. Thorough documentation indicating the justification for such assistance should be documented in the patient care report.

Fire Department/First Responder Personnel

- Fire department personnel are responsible for all fire suppression, hazard control, and heavy extrication.
- In all rescue and extrication operations, the role TAMU EMS personnel is to direct patient care and advise rescue teams on phases of the operation which might compromise the patient's condition. Unless specifically trained to do so, TAMU EMS personnel should not direct the technical aspects of patient rescue.
- First responder personnel should be utilized in a manner that allows them to practice their assessment and treatment skills.

Law Enforcement

- Law enforcement is responsible for traffic control, control of disruptive bystanders, and scene security.
- Law Enforcement personnel with specialized training in First Response/AED may be utilized in a manner that maximizes their training and best assists in the positive outcome of the emergency.

On-Scene Physician

Texas State Board of Medical Examiners Rule 197.5 addresses "On Scene Physician intervention" and shall govern situations involving an on scene physician who offers assistance in treating patients.



Non-TAMU Personnel on Scene

All physicians who are present at the scene of an emergency and who offer assistance should be treated with professional courtesy. Any physician who offers assistance will be required to provide proof of identity and credentials before being allowed to provide patient care on scene. Below is a summary of the rules governing Physician on Scene guidelines.

Patient's Doctor on Scene

When a patient's private physician is on the scene of an incident and has provided the appropriate credentials, TAMU EMS personnel should comply with his/her directions concerning treatment of the patient to the extent that those orders are consistent with established protocols. On-line medical control should be notified of all on-scene physician contacts wishing to assist.

1. When a physician elects to accompany his/her patient to the hospital, TAMU EMS personnel should respect the physician's wishes in the management of the patient during the entire course of patient care.
2. When the physician requests that the patient be transported immediately, TAMU EMS personnel should honor the physician's requests with all reasonable haste after obtaining the patient's consent.
3. It is not appropriate to re-evaluate a patient after the patient has been thoroughly evaluated by a physician and the physician has made an adequate report concerning the patient's condition to the responding crew prior to transporting the patient. Additional information concerning the patient should be obtained from the physician, his/her representative, or the patient, if necessary.
4. If TAMU EMS employees believe that the physician has not properly evaluated the patient, they should perform an assessment of the patient, provide all immediately necessary treatment, and move the patient to the ambulance for further assessment and treatment.
5. The patient's physician may write orders beyond TAMU EMS standing delegated orders. Employees shall attempt to carry out the physician's orders if the orders do not extend beyond the employees' training, certification, or capabilities, and the employees are in direct contact with the patient.

Disagreements with Physician(s) on Scene

1. An employee who disagrees with a patient's physician concerning the management of the patient, or who disagrees with the physician's judgment concerning the use of the EMS system, should NOT express his/her disagreement to the physician; rather, the employee should discuss the matter with the Administrator on Duty, Medical Control, or Clinical Coordinator.
2. Advise the physician that all TAMU EMS personnel function under written standing orders and/or on-line medical direction that have been established by the TAMU EMS Medical Director.
3. Advise the physician that he/she may continue to offer assistance by providing advice to on-scene TAMU EMS personnel or assisting with patient care under the direction of TAMU EMS current standing delegated orders.
4. If the physician insists on providing direction outside established guidelines, he or she should take complete responsibility for the care of the patient, including accompanying the patient to the hospital. Crew shall document all activities during transport.
5. If the physician assumes responsibility for the care of the patient, TAMU EMS personnel should comply with his/her directions as long as those orders are consistent with established standing orders.



Non-TAMU Personnel on Scene

6. If the orders proposed by the intervening physician are not consistent with TAMU EMS standing orders, TAMU EMS personnel shall respectfully decline to participate in that specific care. In this event, employees shall immediately contact the Administrator on Duty or Medical Control if applicable.
7. TAMU EMS personnel should document all events and interaction between an intervening physician and the crew, including direction given and care provided.

Once direct contact with a physician ends, EMS personnel shall give a progress report to the receiving Emergency Department and Administrator on Duty by telephone. The Medical Director should then be notified along with the EMS Manager and Clinical Department.



Medical Authorization Level

General Information

Authorization:

Authorization is separate from certification. Every provider should have a current certification issued by the Texas Department of State Health Services (TDSHS). The Medical Director is responsible for granting authorization.

Authorization is required to provide pre-hospital or out-of-hospital care to any patient within the TAMU EMS System. Certification level does not necessarily dictate authorization level. The Medical Director may authorize any provider to function at any level as per TDSHS Rule 157.11

To Obtain Authorization:

Prior to allowing any provider to function in a patient care delivery role, the applicant provides the following information:

- a. The individual's name, date of birth, address, social security number, and home phone number.
- b. The position for which the individual is applying
- c. All applicants should provide a copy of the most current Texas Department of State Health Services certification/licensure in accordance with the State of Texas Administrative Code, Title 25, Part I, Chapter 157, Subchapter C, Section 157.33, 157.34, 157.35, or 157.40. –The copy should clearly show the applicant's name, certification/licensure number, and expiration date.
- d. d. A copy of a valid driver's license that clearly shows the applicant's name, license number and expiration date.
- e. e. All applicants should meet the criteria to be insurable by the current vehicle insurance vendor for the University, should the applicant be seeking employment in a capacity that would require operation of University vehicle.
- f. f. All applicants are required to have a current (less than 2 years) AHA Health Care Provider CPR OR an equivalent course completion card with legible signatures and the date of the course.
- g. g. The following certifications are preferred for all applicants or should be obtained within 6 months of hire or first available class:
 - Advanced Cardiac Life Support (ACLS) course completion card from the American Heart Association – for Paramedics only
 - Basic Trauma Life Support (BTLS) course completion card is recommended. PHTLS may be substituted – for Paramedics and recommended for Basic and Advanced
 - Pediatric Advanced Life Support (PALS) or an approved equivalent pediatric course is recommended – for Paramedics only

All initial applicants for employment as pre-hospital care providers with TAMU EMS will be required to successfully complete a written general knowledge examination from an approved test bank with an overall score of at least 80%, skills evaluation as per the Medical Director, interview process, and physical agility/health screening (where applicable). Additionally, the applicant will be subject to a background check and verification of insurability with the University's vehicle insurance provider.

The applicant should be successful at each phase before moving on to the next phase.



Medical Authorization Level

The **Skills Evaluation** will be scenario-based evaluations with specific skills as per the Medical Director interjected at key points (i.e. an EMT-P skill evaluation might be based on an AHA-ACLS scenario with skill evaluations for ET Intubation, Defibrillation, Pacing, or IV establishment).

Medical Authorization will be granted to an employee only after a probationary period in which the individual's assessment, decision making, and treatment skills are evaluated.

The Education Coordinator in cooperation with the Clinical Coordinator shall establish a training and evaluation program for granting medical authorization.

The Medical Director maintains authority over all employees' ability to use medical skills. Therefore, the Medical Director or his designee may deny an employee the right to use his or her medical skills at any time during the course of employment with TAMU EMS.

The Medical Director or his/her designee may:

- Require an employee to undergo counseling;
- Require an employee to submit to remediation, including but not limited to Retraining, Testing, or Field/hospital preceptorship
- Place an employee on medical authorization probation
- Reauthorize an employee at another level
- Deauthorize an employee
- Recommend to the Texas Department of State Health Services that the employee be decertified.

To Maintain Authorization:

1. The employee should retain his certification/licensure with TDSHS. If, for any reason, there is a lapse in certification, the employee will be suspended immediately. The employee may not return to work in a patient care role until the problem has been rectified. The employee should show proof that TDSHS has reinstated the EMT certification/licensure. If any employee allows his/her certification to expire or be revoked more than once during employment, he/she will be de-authorized immediately.
2. The employee should maintain all of his/her card courses in current standing. If a card lapses, the employee will have thirty (30) days to replace that card. After the thirty (30) day period, the employee may be reauthorized to a lower level of practice and the EMS Manager will be notified.
3. The employee should participate in Continuing Education (CE) in accordance with the State of Texas Administrative Code, Title 2, Part I, Chapter 157, Subchapter C, Section 157.38 and in accordance with the defined policies of TAMU EMS.
4. Attend all mandatory TAMU EMS CE offerings.
5. If at any time the employee loses their EMS certification, driver's license, or is part of an incident that might impact their insurability, the employee shall immediately notify the Administrator on Duty and EMS Manager. The employee may be removed from active duty pending a review of the situation. If at any time the employee is under investigation by a law enforcement agency or the Texas Department of State Health Services, the EMS Manager or designee will be notified immediately. The EMS Manager shall determine the seriousness of the allegations as it relates to the individual's function as an employee. The employee may be removed from active duty pending a review of the situation.



Medical Authorization Level

6. No employee will function in an official capacity if they have any physical or mental impairment or disease which could reasonably be expected to either impair their ability to function or jeopardize the health and safety of the patient or public or fellow employees. If such a condition exists, the employee should immediately inform the Administrator on Duty or higher authority.

AUTHORIZED INTERVENTIONS BY LEVEL

The following represents patient care activities to be performed by EMS personnel at their current level of authorization. All BLS activities are authorized on standing orders to be used as needed. Authorization for ALS activities is indicated in the specific protocol or procedure for each intervention. All interventions listed below indicated with a (*) require individual training and authorization by the Medical Director or his/her designee.

Standby EMT – Basic Life Support (to include TDSHS certified TAMU EMS employees assigned to Special Events/Medical Standby's by TAMU EMS)

- Patient assessment
- Pulse oximetry
- Oxygen administration
- Blood Glucose assessment
- Use of oral adjuncts including oral and nasal airways, bag-valve mask device and oral suctioning
- Provisions of CPR as defined by the American Heart Association
- Vital signs
- Bandaging and splinting including traction splinting
- Cervical spine immobilization (SMR)
- Manual techniques for airway provision, maintenance and support, relief of airway obstruction as prescribed by AHA
- Control of external hemorrhage
- Automatic external defibrillator*
- Emergency Childbirth
- Tourniquet
- Nebulized Metered Dose Inhalers
- Administration of Aspirin
- Administration of Naloxone - IN
- Administration of oral glucose
- Administration of Acetaminophen - PO
- Administration of Ibuprofen
- Administration of Diphenhydramine - PO
- Administration of Nebulized DuoNeb
- Administration of Emergency Epi-Pen for anaphylaxis
- Administration of Epinephrine 1:1000 – IM
- Use of approved Supraglottic airway device
- Assist TAMU EMS providers or other EMS agencies on scene up to their approved medical authorization

Emergency Medical Technician – EMT Basic



Medical Authorization Level

- **All skills listed for Standby EMT-B**
- Administration of Zofran ODT
- Use of Qualitative CO2 detection
- Pelvic Binder
- Operation of AutoPulse
- Operation of CPAP device
- Operation of portable ventilator (Autovent)
- Use of PEEP
- Hemostatic dressing

Special Allowance: At the direction of an authorized Attendant Paramedic or In-Charge Paramedic, a properly trained Emergency Medical Technician – Basic may **ACQUIRE** a 12-lead ECG on patients, if 12-Lead ECG equipment is readily available.

Special Allowance: At the direction of an authorized Attendant Paramedic or In-Charge Paramedic, a properly trained Emergency Medical Technician – Basic may administer Nitroglycerine SL. It is the responsibility of the Paramedic to ensure that the treatment is appropriate.

Special Allowance: At the direction of an authorized In-Charge Paramedic, a properly trained Emergency Medical Technician – Basic may assist in any procedure if they have been trained and are proficient. It is the responsibility of the Paramedic to ensure that the treatment is appropriate.

Emergency Medical Technician – Advanced EMT

- **All skills listed above**
- Vascular access
- Intraosseous access
- All routes of medication administration (IV, IO, IM, IN, ET, SL, PO, PR)
- Fluid administration
- Administration of D50%
- Administration of Thiamine
- Administration of Naloxone IV/IO
- Administration of Ketorolac
- Orotracheal intubation
- Nasotracheal intubation
- Blood specimen collection
- All medications and therapies in protocols listed at skill level Advanced or above, if trained and proficient.

Personnel authorized at the basic or Advanced level **MAY NOT administer any controlled substance, including Delayed/Rapid Sequence Intubation**, or medications that are not specifically approved in the Clinical Policy or the Protocol.

Special Allowance: At the direction of an authorized Attendant Paramedic or In-Charge Paramedic, a properly trained Emergency Medical Technician – Advanced may **ACQUIRE** a 12-lead ECG on patients, if 12-Lead ECG equipment is readily available.



Medical Authorization Level

Special Allowance: At the direction of an authorized Attendant Paramedic or In-Charge Paramedic, a properly trained Emergency Medical Technician – Advanced may administer Nitroglycerine SL. It is the responsibility of the Paramedic to ensure that the treatment is appropriate.

Special Allowance: At the direction of an authorized In-Charge Paramedic, a properly trained Emergency Medical Technician – Advanced may assist in any procedure if they have been trained and are proficient. It is the responsibility of the Paramedic to ensure that the treatment is appropriate.

Attendant Paramedic

- **All skills listed above**
- Obtaining and interpreting ECG
- Obtaining and interpreting 12-Lead ECG
- Vagal maneuvers
- Defibrillation / Cardioversion
- Chemical sedation
- External Cardiac Pacing
- All medications and therapies in protocols listed above Medical Consult, if trained and proficient
- Any additional skill under the supervision of the In-Charge Paramedic

In-Charge Paramedic

- **All skills listed above**
- Nasogastric lavage
- External jugular cannulation
- Chest decompression
- Surgical airway
- Rapid Sequence Intubation (RSI)
- Delayed Sequence Intubation (DSI)

Clinical Coordinator / EMS Manager

- **All skills listed above**
- All Therapies within the protocols including extended medical authorization and other special procedural skills as developed.

Attendant level personnel may practice under the supervision of a fully authorized paramedic to the full extent of their authorization. Clinical authorization is assigned to an individual, and not to the operational position.

Practicing Beyond Your Certification

TAMU EMS personnel who are asked by a physician, nurse, paramedic, or other person to perform procedures that are outside of their level of training, certification, or protocol should adhere to the following guidelines:



Medical Authorization Level

1. Employees should inform the person giving the directive that their training, certification, and/or protocol does not cover the requested procedure and that they should respectfully decline to perform the procedure.
2. Employees should document the procedure requested, the name and position of the person who requested the procedure, and the outcome of the employee's refusal to perform the procedure.

Failure to follow this policy may result in the suspension and/or revocation of an employee's medical authorization.

Employees should not perform any skill that they have not been trained, certified, and authorized to perform.

Geographical Area and Duty Status

The TAMU EMS System SDOs shall be utilized under the Medical Director's approval in the TAMU EMS 911 service area, mutual aid areas, special event areas, and anywhere in the State of Texas where emergency medical care is needed and not available at the time.

TAMU EMS System personnel shall utilize these protocols under the Medical Director's approval when acting in their official capacity when representing TAMU EMS as defined in the Standard Operating Procedures. TAMU EMS personnel shall also utilize these protocols in situations where emergency medical care is needed and not available. These situation include, but are not limited to, motor vehicle accidents, cardiac arrests, and other witnessed medical emergencies. The approved TAMU EMS System protocols shall NOT be used when working for another EMS system.

Employee – Student Relationship

Employees enrolled in Texas Department of State Health Services (TDSHS) approved certification courses and assigned to a unit in a student capacity may perform advanced skills within the scope of the course in which they are enrolled. The skills are to be performed under the direct supervision of an approved preceptor. All other rules and regulations regarding student conduct should be observed.

Employees enrolled in TDSHS approved certification courses should not perform advanced skills beyond their current certification level while in the course or their normal job duties.



Special Event Authorization

Medical Authorization for Attendant Level Paramedics and Non-Paramedic providers assigned to Special Events and/or Standbys

This policy establishes patient care activities for Special Events and/or standbys for employees currently authorized by the Medical Director as Paramedics, EMT-Advanced and/or EMT-Basics at the attendant level within the TAMU EMS System.

General Information

Attendant Level Paramedic personnel assigned to a MICU for Special Events and/or Standbys may serve as In-Charge, but are still limited to interventions listed in CG-11 under Attendant Paramedic Authorization.

One (1) employee should have a minimum of six (6) month's employment with TAMU EMS.

The Administrator on Duty and EMS Dispatch should be notified whenever a Standby unit is placed in service with Attendant Level employees as well as the location of the standby.

Both employees should sign the Controlled Substance sign-in log as outlined in CG-30.

Units dedicated to any event usually do not transport patients from the site. When the crew encounters a patient, EMS Dispatch should be contacted for a new incident number and, if the patient requires transport, another unit should be sent to their location.



First Responder Scope of Practice

Current Standby EMTs shall provide pre-hospital care at the BLS level only. This includes those who are currently certified as ALS providers (Refer to Medical Authorization Levels Standby EMT).

TAMECT members are guided in their treatments under the direction of the Standby EMT. Their purpose is to facilitate patient care and aid in the assessment and treatment of the Standby EMT. TAMECT members are to function under the current AHA Guidelines for CPR and basic first aid.

Upon arrival of an advanced level of care (TAMU EMS, CSFD, etc.), the goal of the Special Event EMT and TAMECT members is to assist the advanced providers as directed up to their skill level.

The Standby EMT is allowed to ride in a TAMU EMS vehicle to assist in patient care if asked by the In-Charge Paramedic.

Exceptions:

Off-Duty TAMU EMS employees: Medical control is extended to off duty EMS personnel functioning within the boundaries of the Texas A&M University – College Station campus.



EMS Transfer Policy

EMS Transfer Protocol

When called to an ambulatory care clinic because assessment has already been made by a physician that transport is necessary, it is the duty of the EMS provider to transport the patient. The determination for EMS transport constitutes a Medical Decision made by the transferring physician and constitutes a medical order. EMS personnel are under no obligation to volunteer other transportation alternatives to the patient and should avoid doing so.

If the patient spontaneously states that they do not want to be transported prior to the initiation of transport, the transferring physician must be notified immediately and TAMU EMS personnel may not leave until that physician has made a decision how to proceed.

In cases where the patient states they do not want to be transported by EMS after transport has begun, the physician ordering transport must be notified immediately. Even if the patient is willing to sign a waiver of transport, the trip may not be terminated until the door of the receiving medical facility is reached.

In all cases, if the initiating physician cannot be reached, the EMS Medical Director should be notified.

In cases where the patient transport involves a psychiatric or emotional evaluation, those refusing EMS transport cannot be released, waiver or not, until the physician is notified and has made a decision on how to proceed.

Packaging for transport should follow standard procedure unless other orders are given by the initiating physician.

If EMS is called to an ambulatory care clinic for a patient who has not been evaluated by a physician (after hours, etc.), standard protocols will apply.

If EMS personnel have concerns about a physician's directive, the EMS Medical Director should be notified so that the matter can be resolved on a physician to physician basis as necessary.

Garry Gore, MD
Medical Director
Texas A&M University EMS



Encountering Emergencies

The purpose of this policy is to provide employees with guidelines for taking action when encountering an emergency while on duty and responding to a call or hospital.

TAMU EMS has a duty to act when confronted with any emergency scene encountered within its territory.

The following guidelines should be followed if an employee encounters an emergency while “on the air:”

- Incidents with no injuries should be reported to EMS Communications if creating a hazard.
- Major accidents or incidents with obvious illnesses or injuries should be reported to EMS Communications. The crew should stop and assess, treat, and/or transport as necessary.

The following guidelines should be followed if an employee encounters an emergency while responding to a call or to a hospital:

- Incidents with no injuries should be reported to EMS Communications if creating a hazard.
- Major accidents or incidents with obvious illnesses or injuries should be reported to EMS Communications.
 - The dispatcher should determine whether the unit should proceed to the original call or be assigned to the new incident.
 - If transporting a non-urgent/non-critical patient, stop, assess the scene for injuries. At least one crew-member should stay with the patient being transported.
 - If transporting an urgent/critical patient, contact EMS Communications and advise of the incident, but do not stop and assess.

The following guidelines should be followed if an employee encounters an emergency in a neighboring service area:

1. Notify EMS Communications of the incident and have the appropriate service respond.
2. Stop and render aid.
3. Await the arrival of the appropriate unit.
4. TAMU EMS will transport patients if asked to do so by representatives of the agency assigned to that territory. All patient care provided by TAMU EMS personnel should adhere to the Standing Delegated Orders and Guidelines provided by the TAMU Medical Director.



Potentially Violent Scenes and Staging

The purpose of this policy is to establish guidelines to be followed by TAMU EMS personnel when responding to any incident that may place crewmembers in a potentially dangerous situation.

Staging

Staging refers to the positioning of the medic unit in a secure location until law enforcement has cleared the scene or the crew has assured that the scene is safe.

EMS Communications may advise a medic unit to stage when it receives information that is indicative of a hazardous or dangerous situation. If EMS Communications advises a medic unit to stage, the unit's crewmembers should position the unit at a safe distance from the scene.

Medic units should be staged by EMS Communication in the following situations:

- Assaults/sexual assaults
- Any scene with known or possible firearm involvement
- Known/suspected GSW or stabbing
- Domestic disturbances
- When violent/psychiatric/suicidal patients are involved
- When advised to stage by law enforcement
- During other situations deemed dangerous by EMS Communications or In Charge Paramedic

When a unit has been advised to stage within eight minutes of a certain location crewmembers shall respond non-emergency to the staging area. If that unit has a response time over eight minutes to a specified staging area, the crew shall respond emergency traffic to the staging area.

Self-Defense

Self-defense is the act or acts of an individual used to defend or protect himself/herself from harm. TAMU EMS personnel can defend themselves against a combative patient, but can only use the amount of force necessary to protect themselves.

TAMU EMS personnel may take any action necessary, including the use of reasonable force, to protect themselves or others against a combative person. However, TAMU EMS personnel are not authorized to seek revenge in a punishing manner.

TAMU EMS personnel confronted by a combative individual at the scene of an incident should make every effort to avoid confrontation by departing the scene and making an immediate request for law enforcement assistance. If efforts to avoid confrontation prove unsuccessful and personal injury to TAMU EMS personnel appears imminent, crewmembers on the scene may have to use reasonable force to address the situation. Crewmembers should inform law enforcement and the Administrator on Duty of the situation as soon as possible.

Reasonable Force

"Reasonable force" is the amount of force necessary to keep an individual from causing injury to himself/herself or others. Stated differently, the amount of force used by TAMU EMS personnel cannot exceed the force being used against TAMU EMS personnel. TAMU EMS personnel should only use reasonable force after efforts to avoid confrontation have failed.



Potentially Violent Scenes and Staging

Patient Restraint

Restraining is an act of force used to prevent someone from doing something, particularly something that may be physically harmful, or to keep them under control. EMS personnel should consider restraining a patient when careful assessment of the patient reveals that the individual, due to a medical or psychiatric condition, is a danger to himself/herself or others.

TAMU EMS personnel should adhere to the following guidelines when restraining patients:

- The objective should be to place whatever reasonable restraints are necessary on the patient as quickly as possible, with the least amount of discomfort to the patient, and with the least amount of force.
- Restraint should be individualized and afford as much dignity to the patient as the situation allows.
- Any restraint should be humanely and professionally administered.
- The method of restraint should be the least restrictive means necessary for the protection of the patient and others.
- When encountering a “pre-violent” patient, keep him/her under constant observation and be alert for signs of escalating anxiety. Do not take personal chances; never attempt to subdue or physically restrain a person if you are alone. Never hesitate to back off and obtain adequate assistance. Such a time-out may promote de-escalation of anxiety.
- Remember that the restrained patient has no way of exiting the unit in an emergency and is therefore totally dependent on the crew for his/her welfare.
- The use of restraints should be carefully documented. Such documentation should include the reason for and means of restraint, and the periodic assessment of the restrained patient.



Coordination with Law Enforcement

This policy establishes guidelines to be followed by employees responding to or dealing with any suspect/known criminal activity and/or functioning in or around a crime scene

General Information

In order to effectively serve the public, it is necessary for TAMU EMS personnel to maintain a positive working relationship with all of the law enforcement agencies within Brazos County.

Patient Interrogation

Patient care shall always remain the primary concern of TAMU EMS personnel during any joint EMS/law enforcement operation. Law enforcement officers conducting an investigation are permitted to detain and question patients at the scene as long as such questioning does not interfere with the treatment of urgent/critically injured patients or jeopardize the patient's health.

Patients in Custody/Prisoner Transport

Any patient that is in custody or "under arrest" shall receive the same quality of care expected to be given to any other patient.

If a patient in custody requires transport or if the arresting officer requests transport, TAMU EMS personnel shall transport the patient to the most appropriate facility. If the arresting officer does not feel that the patient requires transport, and this conflicts with the opinion of TAMU EMS personnel, crewmembers shall exercise due diligence to convince the arresting officer of the necessity to transport the patient to a medical facility. At a minimum, the arresting officer shall follow the patient to the hospital and have the patient handcuffed during transport. If at all possible, the patient should be cuffed in front or with hands at his or her side to facilitate vascular access. If crewmembers become uncomfortable riding alone with the patient, they may request that an officer accompany them in the back of the ambulance. Any questions should be directed to the Administrator on Duty.

Patients/prisoners should never be handcuffed to the stretcher or directly to the ambulance.

Belligerent and Violent Patients

If not already en route or on location, law enforcement should be called to assist with the patient. Unless instructed to do so by law enforcement or the patient is an obvious threat to himself/herself or employees, belligerent or violent patients should not be restrained.

When the belligerent or violent patient requires transport for any medical, mental, or safety reason, but refuses to be transported, TAMU EMS personnel should ask that law enforcement assume responsibility and place the patient in protective custody. Transportation of the patient shall then occur as with any patient in custody.

A belligerent patient may refuse treatment and transport, and then refuse to sign the release. TAMU EMS personnel should assure that the patient is competent and not a threat to himself/herself or anyone else prior to letting the patient refuse care. Law enforcement should be called to the scene and asked to sign as a witness on the release form.



Coordination with Law Enforcement

Intoxicated/Under the Influence

Patients who present to employees “under the influence” and require medical care are entitled to the same quality of care as given to any other patient. Several disorders, including hypoglycemia, epilepsy, and even some psychological disorders present as intoxication. Therefore, employees should not dismiss a patient as “under the influence” unless the patient confirms that the nature of the illness is the result of a moderate consumption of alcohol or other mind-altering substances.

Any patient that presents with signs of intoxication and does not require medical care shall be referred to Law Enforcement. If Law Enforcement officers are not on location, employees should stand-by on location until their arrival.

Preserving Evidence/Crime Scene Management

Upon arriving at the scene of a suspected or known crime prior to law enforcement, employees should assure that the scene is safe. If employees suspect criminal activity, crews should pay particular attention to the environment and the patient. While the importance of preserving evidence should be kept in mind, it is emphasized that this should be secondary to patient care and resuscitative measures.

In an effort to keep disruptions of the crime scene to a minimum, crewmembers should use the same pathway into and out of the crime scene. Unless necessary for crew safety or patient care, nothing in the crime scene should be touched or moved.

Injured Patient

When patient care necessitates moving the patient, evidence, or objects, crewmembers should be prepared to make written notes of what was moved, the location of object prior to moving, who moved the object, and why the object was moved.

The following guidelines should be adhered to when moving evidence or objects at a suspected or known crime scene:

- When evidence is moved, crews should always use gloved hands.
- Weapons should be picked up using rough surfaces such as a handle.
- Tweezers and hemostats can also be used to pick up evidence.
- All evidence should be placed in a paper bag for preservation.
- Avoid cutting or tearing areas of a patient’s clothing that might contain markings from entrance or exit wounds. The patient’s clothes should be cut along seams to prevent disruption of potential evidence.
- Place any clothing or other patient belongings into a paper bag to give to the investigating officer.
- Evidence can be very inconspicuous; crewmembers should be observant and cautious not to disturb any fingerprints, footprints, or other evidence. If immediate transport is not necessary, crews should remain on scene until the arrival of law enforcement to preserve scene integrity.
- All non-essential personnel and onlookers should not be allowed into the crime scene area.

Dead on Scene (DOS)

If the patient is obviously dead and the death appears to be due to other than natural causes, the following procedures are to be followed:

1. Do not touch or move the body.



Coordination with Law Enforcement

2. Immediately request the appropriate Law Enforcement agency, if not already on the scene.
3. Do not touch or move any weapons, medications containers, suicide notes, or any other items that may be pertinent to the incident investigation.
4. Avoid touching doors, windows, light switches, etc.
5. Scene telephones should only be used after clearance by a Senior Law Enforcement Officer.

Suicides

Law Enforcement should be notified of all suicides or attempted suicides. Upon arriving at the scene of a suicide, do not remove the body unless it is absolutely necessary. When a body should be moved, a sketch shall be made to help in the investigation of the suicide. If the suicide was due to hanging and patient assessment or treatment makes it necessary to cut the patient down, do not cut or untie any knots. If it is determined that the patient is dead, leave the noose intact about the neck. If the patient is alive and immediate transport is necessary before law enforcement arrives, take any suicide notes or evidence necessary to preserve your findings and the crime scene. As soon as possible, have law enforcement notified of the transport destination. If law enforcement is on the scene, leave the suicide note and any other evidence with law enforcement officer(s).

Narcotics

Unless a patient's condition warrants immediate transport, crews should remain on scene and await the arrival of law enforcement when an incident involves narcotics or other controlled substances.

- When a patient's condition warrants immediate transport, if possible, crewmembers should take a sample of the narcotic as the doctor will need it for analysis. Crewmembers should never handle an unknown substance with their bare hands as several street drugs can be absorbed through the skin.
- If law enforcement is not on location when patient is transported, they should be notified as soon as possible as to where the substance will be, how much was transported, and with whom it will be left at the hospital.
- If at all possible, crewmembers should remain at the hospital with the evidence until the arrival of law enforcement.

Requesting Law Enforcement Assistance

Employees should call for law enforcement assistance any time a crewmember feels threatened or assistance is needed in controlling a scene or combative patient.

Communications Shall Automatically Notify Law Enforcement When Any of the Following Occurs:

- Assaults/sexual assaults
- Domestic disputes/disturbances
- Animal bites
- Motor Vehicle Accidents (MVAs)
- Overdoses
- Shootings
- Stabbings
- Attempted suicides
- Suspected/known DOAs
- Suspected child and/or elderly abuse
- Unknown type emergencies



Coordination with Law Enforcement

When crews arrive on the scene of an incident and feel an immediate threat to their own safety, they should immediately withdraw from the scene to a secure location and notify Communications.

Jail Responses

When responding to incidents at any detention facility within Brazos County, employees should adhere to the following guidelines:

- Communications should only dispatch the medic unit unless the information received suggests that more personnel may be required.
- Equipment brought into the detention facility should never be left unattended in the prisoner area.
- Never proceed through the detention facility unescorted; always have law enforcement escort both into and out of the facility.
- Personnel should never be left unattended at a detention facility.
- If the prisoner is transported, a law enforcement officer should accompany the prisoner. All patients who are in custody should be handcuffed and accompanied by a law enforcement officer.
 - A law enforcement officer shall follow the medic unit to the transport destination.
 - If at any time the crew becomes uncomfortable riding alone with the patient, request that a law enforcement officer accompany the patient/prisoner in the back of the ambulance.
- If possible, patients should be cuffed with their arms to their sides to facilitate vascular access.
- Patients/prisoners should never be handcuffed to the stretcher or directly to the ambulance.
- Any questions should be directed to the Administrator on Duty.



Requests for Assistance

This policy establishes guidelines to be followed by TAMU EMS personnel needing to request additional assistance while on the scene of an incident.

General Information

TAMU EMS crews have the authority to call for additional assistance in any situation or condition in which they do not have available the resources or ability to manage the scene. It is a good idea to collaborate with the responding ambulance about these requests.

Additional assistance may be requested for any one or more of the following:

- Medic units
- Medical personnel
- Helicopter transport
- Fire apparatus
- Rescue equipment
- Law enforcement
- Specialized services (e.g. Pastoral, CPS, or APS services)

Upon arriving on location of any incident, TAMU EMS personnel need to determine as quickly as possible if any additional equipment, supplies, and/or manpower will be required. Crews shall notify Communications of their specific needs.

A crew requesting additional assistance should provide Communications with the following information:

1. Type of assistance needed
2. Reason for request
3. Exact location
4. Any special conditions or circumstances



Transporting Patient Valuables

It shall be the goal of employees to ensure that all of a patient's personal belongings stay with the patient and arrive at the destination with the patient. If articles are unintentionally left in the ambulance, they should be returned as soon as possible.

TAMU EMS discourages the unnecessary handling of patient belongings.

It is the responsibility of the field crew to ensure that all patient belongings are appropriately handled. Employees should document all personal belongings of the patient that are handled by employees during patient contact. Employees should make an inventory listing of the items on the computerized patient report in the "Personal Effects" field and obtain a signature for the disposition of the items.

If contact with patient valuables (purse, wallet, etc.) is necessary, it should be done in the presence of at least one witness not employed by the TAMU EMS, such as a law enforcement officer or other official. If removal of patient valuables is justified by a need to reduce possible injury or for a medical procedure, removal should be witnessed by a law enforcement officer or other official and placed in a safe location.

In all circumstances, the handling of valuables (and their description) should be clearly documented on the ambulance run form, and the witness to the handling of the items should be identified.

Employees should consult local hospital policies regarding valuables because some hospitals may require that all patient valuables be turned over to hospital security or other authorized personnel.



Patient Consent

This policy establishes guidelines for obtaining patient consent for emergency care.

General Information

TAMU EMS personnel shall not refuse transport to any patient under any circumstances.

Patient Consent for Service

Texas Health and Safety Code § 773.008 provides that:

Consent for emergency care of an individual is not required if:

(1) the individual is:

- 1. Unable to communicate because of an injury, accident, or illness or is unconscious; and*
- 2. Suffering from what reasonably appears to be a life-threatening injury or illness;*

(2) a court of record orders the treatment of an individual who is in an imminent emergency to prevent the individual's serious bodily injury or loss of life; or

(3) the individual is a minor who is suffering from what reasonably appears to be a life-threatening injury or illness and whose parents, managing or possessory conservator, or guardian is not present.

Consent to Treatment of Child by Non-Parent

Texas Family Code § 32.001 provides that the following persons may consent to medical treatment of a child when the person having the right to consent as otherwise provided by law cannot be contacted and that person has not given actual notice to the contrary:

§ 32.001 Consent by Non-Parent

(1) The following persons may consent to medical, dental, psychological, and surgical treatment of a child when the person having the right to consent as otherwise provided by law cannot be contacted and that person has not given actual notice to the contrary:

- 1. a grandparent of the child;*
- 2. an adult brother or sister of the child;*
- 3. an adult aunt or uncle of the child;*
- 4. an educational institution in which the child is enrolled that has received written authorization to consent from a person having the right to consent;*
- 5. an adult who has actual care, control, and possession of the child and has written authorization to consent from a person having the right to consent;*
- 6. a court having jurisdiction over a suit affecting the parent-child relationship of which the child is a subject;*
- 7. an adult responsible for the actual care, control, and possession of a child under the jurisdiction of a juvenile court or committed by a juvenile court to the care of an agency of the state or county; or*
- 8. a peace officer who has lawfully taken custody of a minor, if the peace officer has reasonable grounds to believe the minor is in need of immediate medical treatment.*

The Texas Youth Commission may consent to the medical, dental, psychological, and surgical treatment of a child committed to it under Title 3 when the person having the right to consent has been contacted and that person has not given actual notice to the contrary.

1. *This section does not apply to consent for the immunization of a child.*
2. *A person who consents to the medical treatment of a minor under Subsection (a)(7) or (8) is immune from liability for damages resulting from the examination or treatment of the minor, except to the extent of the person's own acts of negligence. A physician or dentist licensed to practice in this state, or a hospital or medical facility at which a minor is treated is immune from liability for damages resulting from the examination or treatment of a minor under this section, except to the extent of the person's own acts of negligence.*

Consent to Treatment by Child

Texas Family Code § 32.003 provides that a child may consent to medical treatment if the child:

§ 32.003 Consent to Treatment by Child

- (a) *A child may consent to medical, dental, psychological, and surgical treatment for the child by a licensed physician or dentist if the child:*
 - (1) *is on active duty with the armed services of the United States of America;*
 - (2) *is:*
 - (A) *16 years of age or older and resides separate and apart from the child's parents, managing conservator, or guardian, with or without the consent of the parents, managing conservator, or guardian and regardless of the duration of the residence; and*
 - (B) *managing the child's own financial affairs, regardless of the source of the income;*
 - (3) *consents to the diagnosis and treatment of an infectious, contagious, or communicable disease that is required by law or a rule to be reported by the licensed physician or dentist to a local health officer or the Texas Department of Health, including all diseases within the scope of Section 81.041, Health and Safety Code;*
 - (4) *is unmarried and pregnant and consents to hospital, medical, or surgical treatment, other than abortion, related to the pregnancy;*
 - (5) *consents to examination and treatment for drug or chemical addiction, drug or chemical dependency, or any other condition directly related to drug or chemical use; or*
 - (6) *is unmarried, is the parent of a child, and has actual custody of his or her child and consents to medical, dental, psychological, or surgical treatment for the child.*
- (b) *Consent by a child to medical, dental, psychological, and surgical treatment under this section is not subject to disaffirmance because of minority.*
- (c) *Consent of the parents, managing conservator, or guardian of a child is not necessary in order to authorize hospital, medical, surgical, or dental care under this section.*
- (d) *A licensed physician, dentist, or psychologist may, with or without the consent of a child who is a patient, advise the parents, managing conservator, or guardian of the child of the treatment given to or needed by the child.*

- (e) *A physician, dentist, psychologist, hospital, or medical facility is not liable for the examination and treatment of a child under this section except for the provider's or the facility's own acts of negligence.*
- (f) *A physician, dentist, psychologist, hospital, or medical facility may rely on the written statement of the child containing the grounds on which the child has capacity to consent to the child's medical treatment.*

Legal Competency and Present Mental Capacity to Consent or Refuse Evaluation or Treatment

TAMU EMS personnel are obligated to offer evaluation and/or treatment to anyone with evidence of illness or injury regardless of whether or not they initially refuse such evaluation and/or treatment. However, a patient must have the legal competency and present mental capacity to consent before consent is deemed to be valid.

- **Mental competency:** a legal term, and there is a presumption of legal mental competency unless one has been declared mentally incompetent by the courts. Legally competent individuals have the right to refuse medical treatment.
- **Present mental capacity:** refers to one's present mental ability to understand and appreciate the nature and consequences of his/her condition and to make rational treatment decisions.

While there are criteria for determining legal competency and present mental capacity as defined in this policy, it is not possible to anticipate or cover every potential circumstance with this guideline. Therefore, we should always effect a patient disposition that is safe and appropriate given the circumstances.

When evaluating a patient for the ability to consent to or refuse treatment, the provider must determine whether or not the patient possesses the present mental capacity to understand and appreciate the nature and consequences of his/her condition and to make rational treatment decisions. Such an evaluation must take into consideration not only the patient's orientation to person, place, time, and event, but also their memory function, their ability to engage in associative and abstract thinking about their condition, their ability to respond rationally to questions, and their ability to apply information given to them by the providers.

A thorough test of the patient's mental status is one that assesses orientation, registration (memory), attention, calculation, recall, and language. This can be accomplished fairly rapidly.

- **Level of Consciousness (AVPU)** – The use of appropriate stimuli is acceptable to assist in determining a patient's level of consciousness. This may be in the form of painful stimuli through the application of pressure to the fingernail bed, however a "sternal rub" is not appropriate.
- **Awake, alert, and oriented** – Elicit and document specific/detailed responses when questioning your patient to determine A&O status.
- **Registration** – Give your patient the name of 3 unrelated items (dog, pencil, ball) and ask them to repeat and remember them because you will ask again later.
- **Attention and calculation** – Ask the patient to spell a five-letter word backwards (pound, earth, space, ready, daily, etc.) or count backwards from 100, subtracting 7's.
- **Recall** – Ask the patient to recall the 3 items identified in "registration."
- **Language** – State a simple phrase ("no ifs, ands, or buts") and ask the patient to repeat. Also, test the patient's ability to respond to verbal commands by asking the patient to do something with an object ("hold this piece of paper" or "fold this paper in half") or identify two objects held up such as a watch or pencil.



Patient Consent

Patients with impaired present mental capacity may generally be treated under implied consent. If the patient does not have the legal competency and present mental capacity to consent, and the principles of implied consent do not apply, Medical Control should be contacted for specific orders and the patient should be transported to a medical facility for further evaluation.

Patients who are treated under implied consent must have the factual findings of all present mental capacity evaluations that were performed documented in the patient care report. Factual documentation of such evaluations should include objective assessments and direct quotations whenever possible, and should avoid statements that are subjective, formed on the basis of opinion, or that represent general conclusions about the patient's mental state.

Patient Refusal of Service

All conscious, self-sufficient persons with present mental capacity retain the right to refuse service (see above for mental capacity evaluation). TAMU EMS personnel are charged with the responsibility of assuring that patients are informed of the reasonable consequences of treatment and refusals. TAMU EMS personnel shall attempt to have the patient (if minor: parent, guardian, etc.) read and sign the statement of refusal of care and transport. Such statement is located on the patient report. TAMU EMS personnel shall record in their narrative report the refusal and their statements concerning information provided, any attempts at medical aid, and conditions under which the signature was obtained. The findings must be documented with facts, not conclusions, and such documentation must be sufficient to demonstrate the patient's mental status and understanding of his/her condition and the consequences of refusing treatment.

Bystanders shall witness signatures for such informed refusal, if possible. If there are no bystanders, then signatures for such informed refusal shall be witnessed by another member of the department, a fire or law enforcement officer, or other medical personnel present at the scene.

Refusal of Signature

If an individual refuses to sign the refusal of care statement, TAMU EMS personnel should have the refusal witnessed by a third party, preferably someone not employed by TAMU EMS. A statement regarding the circumstances of the individual's refusal to sign the statement should appear on the patient report accompanied by signature of a witness, if possible.

Refusal of Specific Treatment

Any treatment refused by the patient and ordered by a physician (standing order or verbal) shall be reported to the hospital staff upon delivery of the patient. TAMU EMS personnel should explain to the patient complications that may arise from such refusal. TAMU EMS personnel should record such refusal of specific treatment(s) and the complications about which the patient was informed. An authorized Attendant Paramedic or In-Charge Paramedic shall attend to the patient during transport.



Patient Refusal

The purpose of this policy is to provide EMS personnel with clear rules for managing situations in which the patient or the patient's representative declines or refuses care or transportation by EMS.

If a patient (or legal patient representative) requests evaluation, treatment, and/or transport from TAMU EMS, they will be actively encouraged to seek medical care from a physician regardless of the nature of that request.

Under no circumstances will TAMU EMS personnel refuse or deny treatment or EMS transportation to any patient (or legal patient representative) who requests medical assistance, through any means, from the agency.

TAMU EMS personnel should not discourage any patient (or legal patient representative) from seeking medical care from a physician or from accepting EMS transport to a hospital.

All Patient Refusals involving individuals exhibiting deficits in mental capacities, or with question as to possessing legal custody of themselves, should go through the current Medical Control system in place.

All patients should have the following assessment and documentation regardless as to whether the patient is refusing transport. If the patient meets the criteria below and refuses to allow part or parts of the patient assessment, the EMS provider shall comply with the patient's request unless otherwise directed by Medical Control or law enforcement. The patient should then read and sign the Patient Refusal/Non-Transport statement documenting the fact that he/she was offered specific treatment and refused to allow that treatment. If any information is not available to the medic on-scene, then the narrative should reflect that in the documentation.

A patient has to meet certain criteria prior to accepting a refusal of care. The patient should be able to demonstrate **present mental capacity** (see CG 20) in addition to:

- His/her own name
- Where he/she is
- What day of the week it is OR what month and year it is
- What happened
- Patient is without neurological deficit

If the above criteria are not met, EMS should reject any acceptance of a patient refusal unless approval is obtained via consult.

There are specific categories of patients where consent may become ambiguous. The following is a guideline to assist in making the best decision for the patient.

Diabetic (hypoglycemic) patients unconscious on scene

- If advanced care is rendered on scene and the patient becomes conscious and had an obtained blood glucose level of equal or greater than 60 mg/dl and does not wish to be transported, a Patient Refusal/Non-Transport statement should be filled out and signed.
- It is the responsibility of the on-scene medic to attempt to ensure that the patient is left in the company/custody of a family member, friend, or other individual that **agrees to watch over that**

patient and is informed of the potential for recurrent hypoglycemia. That responsible party should also be aware of the need for medical evaluation/EMS activation should hypoglycemia return.

Suicidal or Threatens himself/herself or others

- Make sure the scene is safe and that the crew is safe prior to entry.
- If the patient states that he attempted suicide, a patient refusal may not be accepted.
- If the patient refuses transport, law enforcement should be called to the scene. Law enforcement will determine whether to place the patient in protective custody. If the patient is not placed in protective custody, then Medical Control should be contacted.
- Law enforcement should not transport the patient who has ingested medications or has physical injuries. If law enforcement does transport the patient, the patient refusal should be signed by the highest-ranking law enforcement officer on-scene.

Patients in Law Enforcement Custody

- **Law Enforcement may mandate transport** of a patient in custody regardless of the patient's wishes. If the patient is in custody and is in need of transport, law enforcement shall provide an officer who should either ride in the ambulance or follow the ambulance.
- **If the patient determines that he/she wants out of the ambulance during transport and law enforcement is not available, the patient should be released from the ambulance at the safest possible time.**

Incompetent Adult patients (mentally handicapped, mentally ill, Alzheimer's, OBS, etc.)

- If the patient's guardian is **on scene** with a **Durable Power of Attorney**, the patient may not refuse treatment or transport for himself.
- If the guardian is **not oriented**, Medical Control should be contacted.
- If the patient's guardian **cannot prove Durable Power of Attorney**, Medical Control should be contacted.
- If the patient's guardian is **not present**, Medical Control should attempt to contact the guardian.
- If the patient's **condition is urgent**, the patient should be transported by standing order prior to guardian contact.

Emancipated Child Patient

- Emancipation is defined as a minor (17 years or less) who is living apart from his legal guardian and who is not financially supported by his guardians.
- The following patients shall be handled as adults:
 - Pregnant female
 - Person enlisted or commissioned in the U. S. Armed Forces
 - Person legally declared an adult by the courts

Minor patient – Guardian present (Minor = less than 18 years of age)

- If oriented, the guardian should decide all patient care.
- If the patient is a refusal, the guardian should be given the instructions and sign the paperwork.
- If abuse of the patient is suspected, law enforcement should be notified by the communications center prior to leaving the scene. Law enforcement should make the final determination as to whether there is enough evidence to necessitate taking the child into protective custody and imposing medical care against the guardian's wishes.

Minor patient – Guardian not present (Minor = less than 18 years of age)

- Minor patients who need to be transported, but are not urgent or critical, should be transported if the parent or guardian cannot be contacted after reasonable attempts have been made.
- The contact of a parent or guardian should be made through dispatch on a recorded line to serve as a record of consent or refusal.

Recent Alcohol Ingestion

- When obtaining a patient refusal from a patient who has recently ingested alcohol, the patient must be in the present mental capacity to refuse treatment and transport.
- It is the responsibility of the on-scene medic to attempt to ensure that the patient is left in the company/custody of a family member, friend, or other individual that agrees to watch over that patient and is informed of the potential risks associated with alcohol ingestion. That party should also be aware of the need for medical evaluation/EMS activation should the patient condition deteriorate.

Documentation on all patient refusals requires:

- Demographic and operational information as outlined in the Documentation Policy
- Assessment information including the patient's/guardian's mental status, physical assessment/general appearance, and vital signs
- The patient/guardian was advised of any complications that may arise from not seeking medical attention
- Proper signature from the patient
- Medical Control personnel involved if Medical Control was contacted

“No Patient” is defined as:

- No patient upon arrival of EMS, **OR**
- False call, **OR**
- Person or people on scene did not request an ambulance **AND**
 - Deny any physical complaint, **AND**
 - EMS personnel cannot visualize any injury or evidence of injury or illness **AND**
 - The person on scene is competent to make such a decision.
- If the patient called for the ambulance, the “No Patient” classification no longer applies.

AMA Refusal of Care/Transport

The purpose of this policy is to ensure that EMS personnel actively encourage a patient whose illness or injury is categorized below to accept treatment and transport. **Any patient whose complaint or injury is categorized below should be an AMA refusal if the patient refuses treatment and/or transport.**

- ANY TIME ONE OF THE EMS CREWMEMBERS BELIEVES TRANSPORT IS INDICATED
- Cardio-respiratory signs and symptoms
- Stabbing/shooting
- Overdose/poisoning
- Neurological
 - Seizure
 - Dysphasia

- Hypoglycemic patients whose BG determination is < 60 mg/dl and show signs and/or symptoms of neuro-deficit. A second BG should be obtained.
- Pregnancy
- Elderly (65 years or older)
- Acute medical or surgical problem
- Deceleration injury, near-drowning, electrocution
- Mechanism of injury
- Damage done to specific area in which the patient was sitting
- Death of a person in the same vehicle
- Abuse
 - Although these patients may not always be transported, the proper law enforcement agency should be contacted prior to leaving the scene.
- MVAs involving:
 - Ejection, rollover, or lateral impact
 - Significant vehicle damage

MICU

Oxygen should be maintained at the following levels to perform at peak effectiveness:

- Onboard (main) cylinders:
 - Onboard main oxygen should have a minimum of 300 psi
 - Anything less than 300 psi does not provide optimum use
- Portable cylinders:
 - All portable oxygen cylinders should have a minimum of 500 psi
 - Anything less than 500 psi does not provide optimum use



Third Riders

Third riders are considered to be approved probationary employees, students, and/or observers that are assigned to a particular response vehicle. Only authorized persons will be allowed to ride on an EMS vehicle.

The following guidelines shall apply:

- Riders should be at least 18 years of age, or have expressed **written** permission from the EMS Manager and a parental release signature on the Waiver of Liability form.
- The Administrator on Duty or Manager should approve riders.
- Third riders shall be scheduled at least twenty-four hours in advance.
- All third riders should sign an Observer's Release form prior to riding a shift.
 - A new release form should be signed each time an individual rides.
- The rider should be familiar with HIPAA and completed in accordance with SOPs.
- Third riders should follow all requirements and rules prior to and while riding as an observer.
- It is the responsibility of all EMS personnel to assure that the rider has been approved to ride and an Observer's Release form has been signed and is on file in the administrative office.
- It is the responsibility of all EMS personnel to note the personal appearance of each rider when she/he reports to the shift.
 - If he/she does not meet the rules and regulations pertaining to dress, he/she should be advised of such by the EMS personnel and should not be permitted to ride until she/he has complied with the rules.
- Students and observers may be asked to leave at a moment's notice due to operations and training requirements.
- The department reserves the right to limit the number of shifts of any rider.

Observers

Observers are individuals who for some personal reason may desire the experience of pre-hospital care by observation. Frequently, this is to gain a sense of EMS roles in the community and to understand the interactions of various agencies. The EMS Manager or his/her designee shall approve all citizen observers.

Non-certified observers should not be involved in the patient care process, and are only allowed to observe the EMS personnel render care to the patient. Certified observers may participate in basic level patient care at the discretion and under the direct supervision of the In-Charge Paramedic.

Be aware that representatives of the media or legal profession may observe events that they feel compelled to make public. These persons should be screened carefully and made aware of the terms of the Observer's Release form before being allowed to ride. Observers are restricted to riding between the hours of 0700-2200. Observers are not allowed later than 2200 unless prior approval and arrangements have been approved by the Administrator on Duty.

New Hires/Trainees

Probationary members may participate in patient care to their certification level at the discretion, and under the direct supervision of, the senior medical member on their assigned unit.

Student Interns



Third Riders

TDSHS approved courses wishing to have students ride on TAMU EMS units should have a signed affiliation agreement on file with the administrative office.

Students from outside organizations should be scheduled in advance. Administration should ensure the presence of medical liability insurance and student qualifications.

The student's role is to interact in the patient care process by performing duties in accordance with the training program's affiliation agreement and/or training objectives. The amount of involvement is to be determined by the senior medical staff member on the ambulance. Interns should perform the skills, as determined by the senior medical team leader, which fall within the practice for the certification the student is obtaining.

Interns are "in training" and should not be left in the role of providing sole care for the patient except under extraordinary conditions. Interns should not treat patients unless or until the In-Charge Paramedic approves all decisions concerning treatment.

Acceptable Uniform

EMS third riders are to dress neatly and conservatively at all times. The generic third rider uniform shall consist of:

- Conservative-type shoes including black athletic-type shoes or boots may be worn. It is recommended that sturdy shoes be worn. Sandals are prohibited.
- Black or navy EMS-type pants should be worn.
- White uniform shirt or dress shirt, or plain white polo-style shirt should be worn.
- Blue jeans, shorts, and t-shirts are prohibited.
- Hair should be groomed. Cleanliness and appropriate physical hygiene are required at all times.

Observers from approved first responder organizations will be allowed to wear their department uniform.

Recognized EMS training programs may negotiate an acceptable, alternative uniform for EMS students.

The EMS Manager or his/her designee may approve specific apparel for special circumstances such as physicians, nurses, or media representatives.

Run Records

Students and observers should not complete official run records for TAMU EMS. Probationary employees may complete records under the direct supervision of the preceptor. That person should co-sign the run record. All third riders' identities should be documented on medical reporting forms.

Conduct

All EMS observers are to conduct themselves with proper decorum. Observers are to refrain from the following:

- First use of alcoholic beverages 12 hours prior to and during the shift
- Use of profane or abusive language
- Use of excessive conversations which may interfere with radio communications while riding in unit



Third Riders

- Making remarks or voicing opinions to patients or family members, bystanders, police officers, fire personnel, or first responders in any manner which would tend to provoke or degrade anyone or escalate tension/anxiety
- Making known to any person not authorized any information concerning the emergency call, patient information, or outcome
- Using information gained through EMS third rider program for personal gain
- Wearing on their clothing any article, sign, or symbol that advertises any product, business, or organization

Conclusion

All third riders are subject to removal for any violation of the above rules and regulations. Crewmembers are responsible for the appearance and conduct of third riders. Should problems arise, it is recommended that the Administrator on Duty be notified of the incident.



Non-Emergency Assist Calls

TAMU EMS will respond to all requests for assistance. In all cases, EMS personnel should attempt to aid the person requesting assistance.

Non-Emergency Assists

TAMU EMS personnel should respond non-emergency to known non-emergency assist calls. Should there be doubt of the emergency nature of the request, personnel should respond emergency traffic.

Chronic System Abuse

Instances of repeated abuse of the EMS system by a member of the public should be reported to the Administrator on Duty. Personnel should make every attempt to professionally educate the calling party of a more appropriate method of obtaining assistance.

Repeated EMS system abuse, despite good faith efforts to intervene, should be referred to the EMS Manager. If determined necessary, the EMS Manager may refer the situation to the Medical Director.

Malicious False Alarms

In instances of malicious false alarms, EMS personnel should advise Communications of the nature of the event. Law enforcement assistance should be requested if the calling party can be identified. TAMU EMS personnel should not confront the alleged calling party.



Confidentiality

Healthcare professionals have an important ethical and legal duty to guard and respect the confidential nature of the information conveyed during patient contact. All personnel implicitly promise to preserve patient confidentiality.

Under the *Texas Health & Safety Code Ann. § 733.091(g)*, the following items are not considered confidential information and may be disclosed:

- Information regarding the presence, nature of injury
- Information regarding the presence, nature of illness
- Age
- Sex
- Occupation
- City of residence of a patient

Confidentiality is not absolute. Confidential patient information may be disclosed when patients or their legal guardians agree to the disclosure, when mandated by law, or when there exist compelling or overriding ground for the disclosure, such as prevention of substantial harm to identifiable other persons. See *Tex. Health & Safety Code Ann. § 733.091-095*.

Disclosure of confidential patient information is a serious transgression, and in some cases is considered a criminal offense. Employees that violate patient confidentiality should be called upon to justify their actions and may be subject to disciplinary action.

Employees may be questioned about past responses by law enforcement, attorneys, insurance agencies, or other agencies. When this occurs, those persons should be directed to the Administrator on Duty or the custodian of records. Patient Care Records are confidential and can generally only be released by a subpoena.



OOH DNR and Death On Scene

Out of Hospital Do Not Resuscitate (DNR)/Dead on Scene (DOS)

Withholding, Terminating, and Limiting Resuscitation

This protocol shall provide the guidelines, standards, and orders for managing situations involving the withholding, termination, or limitation of resuscitative efforts in the terminally ill or fatally injured patient.

This protocol addresses the following issues:

- Apparently non-viable cardiac arrest cases (dead on scene)
- “Do not attempt resuscitation” requests
- Directive to physicians, living will directives, or other directives which limit care to a terminally ill patient

Apparently Non-Viable Cardiac Arrest (Dead on Scene)

The criteria for this component of the protocol is a **pulseless and apneic patient** in whom there is some question as to whether to initiate or continue resuscitative measures.

TAMU EMS personnel are authorized to withhold or discontinue resuscitative measures in cases of:

- Multi-patient incidents as described in the Multi-Patient/Triage protocol
- Decapitation
- Decomposition
- Rigor mortis (in the non-hypothermic patient)
- Dependent lividity
- Incineration
- Visible trauma to the head or chest that is **clearly** incompatible with life
- Valid Do Not Attempt Resuscitation directives as described in this protocol

When any patient meets the above criteria, access to the scene should be limited as much as possible with special attention to disturb the scene as little as possible. Every effort should be made to provide support for the family, friends, and survivors, as well as any witness to the event.

A directive to withhold resuscitative measures shall not prevent EMS from providing appropriate emergency care to ease suffering such as oxygen administration, airway suctioning, authorized analgesia, and palliative care.

State of Texas Out-of-Hospital Do-Not-Resuscitate Orders:

The individual executing the OOH DNR agrees to have **ALL** of the following procedures withheld:

- Cardiopulmonary resuscitation
- Advanced airway management
- Artificial ventilation
- Transcutaneous pacing
- Other life-sustaining treatment specified by Texas Board of Health

Palliative Care

The provision of palliative (comfort) care and pain management is acceptable if the patient presents with a pulse and spontaneous respirations. Examples of palliative care include:

- Oxygen therapy



OOH DNR and Death On Scene

- Suction
- IV therapy
- Hemorrhage control
- Pain management

To **withhold** resuscitation in the patient who becomes pulseless or apneic the following criteria **SHOULD** be met:

- An **official colored** TDSHS OOH DNR identification bracelet or necklace is being worn by the patient
OR
- An **official or photocopied** TDSHS OOH DNR order is presented upon patient contact with all necessary patient information, signatures and boxes completed and present on the form. (**SB 1260** changes this section to read “**photocopy or other complete facsimile of the original** written out-of-hospital DNR order executed under this subchapter may be used for any purpose which the original written order may be used under this subchapter.”)
OR
- The patient’s private physician is either on-scene or via phone directs the provider to withhold any resuscitative efforts

The Texas DNR form is **not** to be honored and full resuscitative efforts, including BLS and ACLS are to be initiated, if any of the following conditions exist:

The Patient:

- Destroys the form and removes the identification device
OR
- Directs someone in their presence to destroy the form and remove the identification device
OR
- Communicates to the responding health care professionals or attending physician that it is his/her intent to revoke the order
AND
Notifies the attending physician (if not present) that the order has been revoked

The Person who executed the order:

- Destroys the form and removes the identification device
OR
- Directs someone in their presence to destroy the form and remove the identification device
OR
- Notifies the attending physician (if not present) that the order has been revoked

The attending physician: (or his/her designee)

- If present at the time of revocation, records in the patient’s medical record the time, date, and place of the revocation
OR
- If not present, records the time, date and place that the physician received notice of the revocation
AND



OOH DNR and Death On Scene

Enters the word “VOID” on each page of the copy of the order in the person’s medical record

In addition to the above, the Texas DNR order is not to be honored if:

- The patient is known to be pregnant
- Unusual or suspicious circumstances are involved (suspected homicide or suicide)
- Suspected criminal activity involving the patient

If any of these reasons for revocation are met, the Provider should:

- Initiate full resuscitative efforts
- Record the time, date, and place of the revocation for DNR order revocation incident reporting to the Texas Department of State Health Services by the TAMU EMS Clinical Department

Note: Senate bill 1260 provides for the consolidation of all chapters related to Out-of-Hospital DNR orders and advanced directives. These changes became effective September 1, 1999.

- The person initiating a DNR does not have to be diagnosed with a terminal condition.
- The document specifies the treatment rather than the procedures a person or legally authorized representative directs health care providers in an out-of-hospital setting not to initiate or continue.
- The out-of-hospital setting, as a location in which health care professionals are called for assistance, is expanded to include hospital outpatient or emergency departments and physicians’ offices.
- Requires the form to include certain physicians, a separate section for execution of the document by at least one, rather than two, qualified relatives, and a statement that allows certain persons to make certain decisions (medical power of attorney)
- **Out-of-STATE DNR orders are** acceptable if there is no reason to question the authenticity of the orders or device.

All other cases should require authorization from on-line medical control physician.

In **ALL** DNR cases, the EMS crew should be completely confident in the authenticity of the documentation or device and in the patient’s identification. If there is any doubt about the validity of the paperwork involved, always begin patient care. The on-line physician should determine whether to continue or terminate care.

Resuscitation efforts may not be withheld from a person known by the health care professional to be pregnant.

Documentation requirements for out of hospital DNR:

- Assessment of the patient’s physical condition
- Type of device used to confirm DNR status including patient identification number
- Any problems related to the implementation of the DNR order
- Patient’s attending physician
- Full name, address, telephone number, and relationship to patient of any witnesses used to identify the patient
- If the patient is transported, the original DNR should be kept with the patient



OOH DNR and Death On Scene

- If the patient is not transported, the original DNR order should be left with the concerned parties or health care facility

Should the patient expire prior to initiation of transport by EMS, the EMS crew shall:

1. Discontinue all medical care.
2. Prepare the body for viewing by the family and/or friends.
3. Allow the family/friends to view the body as they wish. Upon your arrival, answer any questions regarding the patient's clinical status and/or your actions, to the best of your ability.
4. Notify Medical Control of the situation.
5. Notify, via the dispatch center, the appropriate law enforcement agency of an out-of-hospital death.
6. Complete all appropriate documentation.
7. Release the scene to law enforcement upon their arrival, providing them with a copy of the documentation.

If a patient who is under a valid DNR directive becomes pulseless and apneic *during* transport, the EMS crew shall:

1. Note the time the patient became pulseless and apneic.
2. Continue any care that is in progress at that point (e.g., oxygen administration, etc.).
3. DO NOT initiate any additional medical care.
4. Continue transport, in non-emergency traffic mode, to the destination facility.
5. Upon arrival at the destination facility, release the patient to the appropriate health care professional. Notify the receiving health care professionals that the patient became pulseless and apneic during transport and that, as per the patient's binding directive, EMS did not treat the cardiac arrest.
6. Complete all appropriate documentation and leave copies with the receiving facility.

Limitations of Care

Competent adult patients have the right to select the care they receive from health care professionals. This right extends to emergency situations, the out-of-hospital care arena, and even to resuscitation and end-of-life cases.

This right may be exercised verbally by a competent adult patient (as described and defined in the Consent and Refusal policy). This right may also be exercised by written directive, executed by a patient when s/he was competent, even if that patient is no longer competent to consent to or refuse care. Last, selection and limitation of healthcare options and procedures may be exercised by a duly authorized representative of the patient (family member or representative empowered to do so by a Durable Power of Attorney) in cases where the patient is incompetent or unable to communicate their wishes.

A directive to withhold or limit resuscitative measures shall not prevent EMS from providing appropriate emergency care to ameliorate suffering, such as oxygen administration, airway suctioning, or authorized analgesia.

Should EMS personnel encounter a patient with an apparent terminal condition or in whom there is reason to believe the patient and/or family may wish to limit the care administered to the patient by EMS, the EMS personnel shall:



OOH DNR and Death On Scene

1. Determine the presence or absence of any written or verbal directive pertaining to limitations of care. If there is a written directive, review it carefully and clarify any unclear components with the patient and/or patient's authorized representative.
2. Discuss the treatment options available to the patient from EMS with either the patient (if competent and able to communicate) or the patient's authorized representative.
3. Clarify the interventions to which the patient (or representative) does and does not consent prior to initiating transport.
4. Comply with the patient's limitations and/or directives. If there is any doubt or concern about the validity or appropriateness of a directive to limit or withhold care, contact Medical Control immediately.
5. Document the directive(s), either written or verbal, received from the patient or representative on the EMS chart.



OOH DNR and Death On Scene

Figure: 25 TAC §157.25 (a)(2) Page 1 of 2

**TEXAS DEPARTMENT OF STATE HEALTH SERVICES
STANDARD OUT-OF-HOSPITAL DO-NOT-RESUSCITATE ORDER**

This document becomes effective immediately on the date of execution. It remains in effect until the patient is pronounced dead by authorized medical or legal authority or the document is revoked. Comfort measures will be given as needed.

All persons who sign the form must sign again under number 3.

1. _____ Date of Birth: _____ Male/Female (Circle One)
Patient's full legal name—printed or typed

2. COMPLETE ONE OF THE FOUR BOXES: A, B, C, or D. If using Box A, B, or C, Witnesses and Physician's Statement must be completed.

A. Patient's Statement: I, the undersigned, am an adult capable of making an informed decision regarding the withholding or withdrawing of CPR, including the treatments listed below, and I direct that none of the following resuscitation measures be initiated or continued: Cardiopulmonary Resuscitation (CPR), Transcutaneous Cardiac Pacing, Defibrillation, Advanced Airway Management, Artificial Ventilation.

Signature _____ Date _____ Printed or Typed Name _____

B. Only use this box if the order is being completed by a person acting on behalf of an adult patient who is incompetent or otherwise unable to make his or her wishes known.

I am the patient's: ☐ legal guardian; ☐ agent under Medical Power of Attorney; ☐ or Qualified Relative (see back); AND:

☐ I attest to issuance of an Out-of-Hospital DNR by the patient by nonwritten means of communication; OR
☐ I am acting under the guidance of a prior Directive to Physicians; OR
☐ I am acting upon the known values and desires of the patient; OR
☐ I am acting in the patient's best interest based upon the guidance given by the patient's physician.

I direct that none of the following resuscitation measures be initiated or continued on behalf of the patient: Cardiopulmonary Resuscitation (CPR), Transcutaneous Cardiac Pacing, Defibrillation, Advanced Airway Management, Artificial Ventilation.

Signature _____ Date _____ Printed or Typed Name _____

C. Only use this box if the order is being completed by a person acting on behalf of a minor patient who has been diagnosed with a terminal or irreversible condition.

I am the minor patient's: ☐ Parent; ☐ legal guardian; or ☐ managing conservator.

I direct that none of the following resuscitation measures be initiated or continued on behalf of the patient: Cardiopulmonary Resuscitation (CPR), Transcutaneous Cardiac Pacing, Defibrillation, Advanced Airway Management, Artificial Ventilation.

Signature _____ Date _____ Printed or Typed Name _____

WITNESSES: (see qualifications on reverse) We have witnessed all of the above signatures.

Witness 1 Signature _____ Date _____ Witness Printed or Typed Name _____
 Witness 2 Signature _____ Date _____ Witness Printed or Typed Name _____

PHYSICIAN'S STATEMENT: I, the undersigned, am the attending physician of the patient named above. I have noted the existence of this order in the patient's medical records, and I direct out-of-hospital health care professionals to comply with this order as presented.

Date _____ Physician's signature _____ Printed name _____ License number _____

D. Only use this box if the order is being completed by two physicians acting on behalf of an adult who is incompetent or otherwise unable to make his or her wishes known, and who is without a legal guardian, agent, or qualified relative.

☐ I attest to issuance of an Out-of-Hospital DNR by the patient by nonwritten communication; OR
☐ The patient's specific wishes are unknown, but resuscitation measures are, in reasonable medical judgement, considered ineffective in these circumstances or are otherwise not in the best interest of the patient.

I direct that none of the following resuscitation measures be initiated or continued on behalf of the patient: Cardiopulmonary Resuscitation (CPR), Transcutaneous Cardiac Pacing, Defibrillation, Advanced Airway Management, Artificial Ventilation.

Signature _____ Treating Physician _____ Date _____ Printed or Typed Name _____
 Signature Second Physician who is not involved in treating the patient _____ Date _____ Printed or Typed Name _____

3. ALL PERSONS WHO SIGNED MUST SIGN HERE (Pursuant to H&SC 166.083(b)(13). This document has been properly completed.

Signature of Patient, Agent or Relative (A, B, or C) _____ Signature of Second Physician (D) _____ Signature of Attending Physician _____
 Signature of Witness _____ Signature of Witness _____ Date _____

SHOULD TRANSPORT OCCUR, THIS DOCUMENT OR A COPY MUST ACCOMPANY THE PATIENT.



OOH DNR and Death On Scene

Figure: 25 TAC §157.25 (b)(2)

OUT-OF-HOSPITAL DNR INSTRUCTIONS

Page 2 of 2

PURPOSE:

This form was designed to comply with the requirements as set forth in Chapter 166 of the Health and Safety Code (H&SC) relating to the issuance of Out-of-Hospital Do-Not-Resuscitate (DNR) orders for the purpose of instructing Emergency Medical Personnel and other health care professionals to forgo resuscitation attempts and to permit the patient to have a natural death with peace and dignity. This order does NOT affect the provision of other emergency care including comfort care.

APPLICABILITY:

This form applies to all health care professionals operating in any out-of-hospital setting to include hospital outpatient or emergency departments and physician's offices.

IMPLEMENTATION:

A competent adult may execute or issue an Out-of-Hospital DNR Order. The patient's attending physician will document the existence of the directive in the patient's permanent medical record.

If an adult patient is capable of providing informed consent for the order, he/she will sign and date the out-of-hospital DNR order on the front of this sheet in Box A. In the event that an adult patient is unable to provide informed consent, his/her Legal Guardian, agent under Medical Power of Attorney, or Qualified Relative may execute the order by signing and dating the form in Box B. If an adult patient is unable to provide informed consent and none of the persons listed in Box B are available, the treating physician may execute the order using Box D with the consent of a second physician who is not treating the patient and/or is a member of the health care facility ethics committee or other medical committee.

The following persons may execute an out-of-hospital DNR order on behalf of a minor: the minor's parents, the minor's legal guardian or the minor's managing conservator. A person executing a DNR order on behalf of a minor may execute the order by signing and dating the form in Box C. An out-of-hospital DNR order may not be executed unless the minor has been diagnosed by a physician as suffering from a terminal or irreversible condition.

The form must be signed and dated by two witnesses except when executed by two physicians only (Box D).

The original standard Texas Out-of-Hospital DNR form must be completed and properly executed. Duplicates may be made by the patient, health care provider organization or attending physician as necessary. Copies of this completed document may be used for any purpose that the original may be used and shall be honored by responding health care professionals.

The presence of a Texas DNR identification device on a person is sufficient evidence that the individual has a valid Out-of-Hospital DNR Order. Therefore, either the original standard form, a copy of the completed standard form, or the device is sufficient evidence of the existence of the order.

For information on ordering identification devices or additional forms, contact the Texas Department of State Health Services at (512) 834-6700.

REVOCATION:

The Out-of-Hospital Do-Not-Resuscitate Order may be revoked at ANY time by the patient OR the patient's Legal Guardian/Agent/Managing Conservator/Qualified Relative, Parent (if a minor), or physician who executed the order. The revocation may involve the communication of wishes to responding health care professionals, destruction of the form, or removal of all or any Do-Not-Resuscitate identification devices the patient may possess.

AUTOMATIC REVOCATION: This Out-of-Hospital DNR order is automatically revoked if the patient is known to be pregnant or in the case of unnatural or suspicious circumstances.

DEFINITIONS:

Attending Physician: The physician who is selected by or assigned to a patient who has primary responsibility for a person's treatment and care and is licensed by the Texas State Board of Medical Examiners or who is properly credentialed and holds a commission in the uniformed services of the United States and who is serving on active duty in this state. (H&SC 166.002 (3) & (12))

Qualified Relatives: Those persons authorized to execute or issue an out-of-hospital DNR order on behalf of a person who is comatose, incompetent, or otherwise mentally or physically incapable of communication under Section 166.088 H&SC. Section 166.088 refers to 166.039: "One person, if available, from one of the following categories, in the following priority...: (1) The patient's spouse; (2) the patient's reasonably available adult children; (3) the patient's parents; or (4) the patient's nearest living relative."

Health Care Professional: Means physicians, nurses, physician assistants and emergency medical services personnel, and, unless the context requires otherwise, includes hospital emergency department personnel. (H&SC 166.081 (5))

Witnesses: Two competent adult witnesses must sign the form acknowledging the signature of the patient or the person(s) acting on the patient's behalf (except when signed by two physicians in Section C). Witness One must meet the qualifications listed below. Witness Two may be any competent adult. Witness One (the "qualified" witness) may not be: (1) person designated to make a treatment decision for the patient; (2) related to the patient by blood or marriage; (3) entitled to any part of the estate; (4) be a person who has a claim against the estate of the patient; (5) the attending physician or an employee of the attending physician; (6) an employee of a health care facility in which the patient is being cared for, if he or she is involved in providing direct patient care to the patient; or (7) an officer, director, partner, or business office employee of a health care facility in which the patient is being cared for or any parent organization of the health care facility.

Please report any problems with this form to the Texas Department of State Health Services at (512) 834-6700.

Revised July 19, 2005
Texas Department of State Health Services



Destination Determination

Approved Transport Facilities

Personnel should attempt to balance the needs of the patient with the needs of the system in selecting a destination. Also, consideration should be given to the current hospital status listed on EMSystems.

Routine Destinations

The following Hospitals are within our transportation area and are approved for transport on a routine basis:

- CHI St. Joseph Health College Station Hospital
- CHI St. Joseph Regional Health Center
- Baylor Scott and White Hospital – College Station

Other Facilities

The following facilities are within our transportation area and are approved for transport on a special-needs basis:

- A.P. Beutel Student Health Services – requires authorization from the receiving Immediate Care physician prior to transport
- Rock Prairie Behavioral Health – requires that patient be accepted for psychiatric evaluation prior to transport
- The Physician’s Centre – authorized in cases where stable TAMU athletes are being transported and the team physician and athletic trainers request transport to The Physician’s Centre for surgical intervention.
- Caprock Hospital – Though the Bryan location is a licensed hospital, specialty services including surgery, cardiac cath lab, and intensive care units are not available. TAMU EMS providers should transport patients who may need these services to a more appropriate facility.

Please refer to the Facility Diversion Guidelines for more specific information on diversion.

Designated and non-designated facilities play an important integral role in the trauma system. Patients with multi-system, blunt, or penetrating trauma who are hemodynamically unstable and/or have respiratory compromise or altered mental status should be triaged and transported by EMS personnel to the nearest appropriate trauma facility. Mechanism of Injury alone does not mandate transport to a trauma facility in the patient without hemodynamic or anatomic criteria. The definition of “appropriate facility” is as follows:

A hospital, not necessarily the nearest hospital, with the resources and capability to care for a patient based upon the patient’s medical needs.

Non-designated facilities play a very important role in trauma care. These facilities, based upon their available resources and capabilities, should transfer trauma patients rapidly to an appropriate level trauma center in accordance with applicable transfer laws.

Patient rights should be respected in the determination of hospital destination. In the event a competent trauma patient requests a destination discordant with the destination recommendation of the EMS provider, the EMS system on-line direction source should be contacted.



Destination Determination

EMS systems should promptly notify facilities in order to allow for timely facility-specific trauma team alert mechanisms to be activated.

Trauma Designations of local receiving facilities:

- | | |
|-----------------------------------------------------|-----------|
| • CHI St Joseph Health College Station Hospital | Level III |
| • CHI St. Joseph Regional Health Center | Level II |
| • Baylor Scott and White Hospital – College Station | Level III |
| • Baylor Scott and White Hospital – Temple | Level I |
| • Memorial-Hermann Hospital – Houston | Level I |

Level I:

Comprehensive trauma facility and tertiary care facility that has the resources and provide total care for every aspect of injury continuum from research and prevention through rehabilitation.

Note: Level I facility has neurosurgery available 24 hours/day.

Level II:

Major trauma facility that has the resources and capabilities to provide definitive trauma care to injury patients but may not be able to provide the same spectrum of care as a Level I trauma center.

Note: Facility does not do research.

Level III:

General trauma facility that has the resources and capabilities to provide resuscitation, stabilization, and assessment of trauma patients and can either provide treatment or arrange for appropriate transfer to a higher level trauma facility.

Note: Facility has trauma surgeon available 24 hours/day.

Level IV:

Basic trauma facility that has the resources and capability to provide resuscitation, stabilization, or arrange for appropriate transfer of all trauma patients with major and severe injuries to a higher level trauma facility.

Note: Facility **does not** have trauma surgeon available 24 hours/day.

All facilities with Level III and Level IV designations are members of a trauma network. They are able to transfer patients to a more appropriate facility very quickly, often making transfer arrangements while the patient is being evaluated and stabilized. However, with a local Level II facility, trauma patients with a perceived need for these services should be transported to the Level II.



Destination Determination

Acute Coronary Syndrome Patients – Cath capable facilities

- CHI St Joseph Health College Station Hospital
- CHI St. Joseph Regional Health Center
- Baylor Scott and White Hospital – College Station

Strokes – Onset Symptoms < 2 hours*

- CHI St. Joseph Regional Health Center
- CHI St Joseph Health College Station Hospital
- Baylor Scott and White Hospital – College Station

Strokes – Onset Symptoms 2-7 hours*

- CHI St. Joseph Regional Health Center

Strokes – Onset Symptoms > 7 hours or undetermined*

- CHI St Joseph Health College Station Hospital
- CHI St. Joseph Regional Health Center
- Baylor Scott and White Hospital – College Station

***Eligibility, inclusion, exclusion evaluation criteria may require up to 1 hour of the treatment window at any facility—please consider this in your destination selection.**

Burns

- Burn patients with the following qualification(s):
 - Inhalation burns
 - Burns to hands
 - 30% TBSA 2nd degree or higher
 - < 12 or > 65 years of age
 - 2nd degree or higher to a joint or genitalia
- University of Texas Medical Branch – Galveston
- Memorial-Hermann Hospital – Houston
- San Antonio Military Medical Center – San Antonio



Facility Diversion

Diversion is a courtesy extended by TAMU EMS to a hospital facility, rather than a right to be demanded by hospitals. This policy reflects the guidelines for diversion established by the TAMU EMS. The most current status of a hospital is available on the EMSsystem.

Definitions

- **Appropriate Facility:** A hospital, not necessarily located nearest the scene of an incident, that possesses the resources and capability to care for a patient based upon the patient's specific medical needs.
- **Bypass:** The intentional movement of a patient from the scene of an incident to a specific hospital, not necessarily the nearest hospital, based upon the patient's medical needs.
- **Diversion:** The intentional movement of a patient from the scene of an incident to an alternate hospital capable of caring for the patient at the request of that hospital because they advise that current circumstances indicate that hospital lacks the available resources or capability to treat the patient.
- **Transfer:** The movement of a patient from one hospital to another hospital based upon the patient's medical needs. This procedure is also known as inter-hospital transport.

Diversion Activation

It is the responsibility of the designated hospital administrator to update the EMSsystems status board through their individual log-on entry. The system requires frequent updating. Currently, that is the system in place for indicating a hospital status.

Diversion Activation Categories

A request for diversion may be honored if any of the following conditions is reported by the requesting hospital:

- Emergency Department (ED) saturation
- Intensive Care Unit (ICU) saturation
- Operating Room (OR) saturation
- Equipment repair or maintenance
- Internal disaster

TAMU EMS personnel should absolutely honor a hospital's diversion requests based on internal disaster.

Communication of Diversion Status

- ***A hospital should update the EMSsystem status board frequently if status changes.***
- ***A hospital should indicate the reason for their listed status.***
- Communications should notify the Administrator on Duty and duty crews of diversion status and reason for diversion.

Time Period for Diversion Status

- A hospital may deactivate a diversion request at any time.
- Diversion requests are effective for up to 4 hours, however, may be extended if necessary.



Facility Diversion

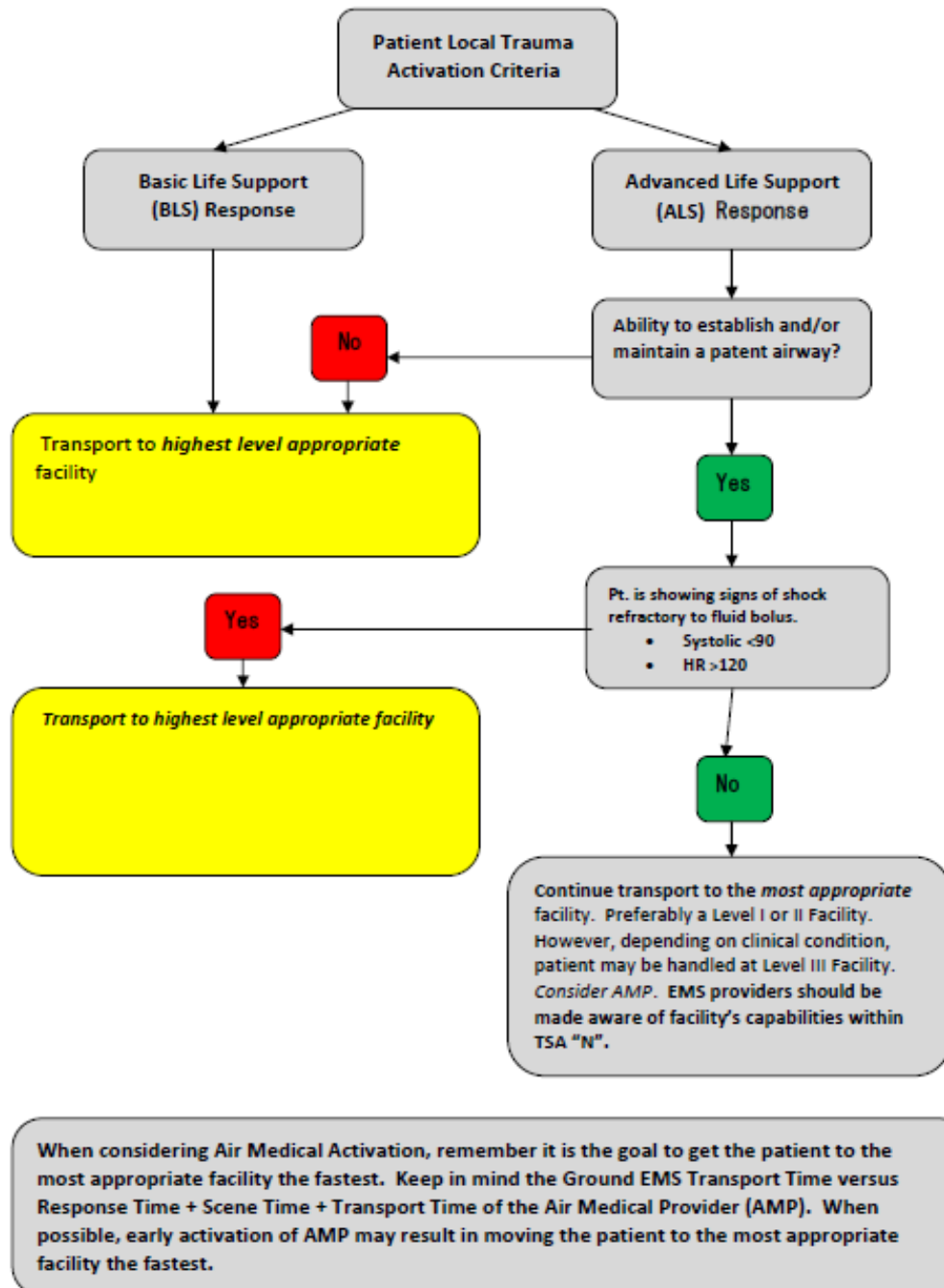
- A hospital should update EMSsystem to indicate continued status.
- Failure by a hospital to update the system may be considered to be off diversion status.

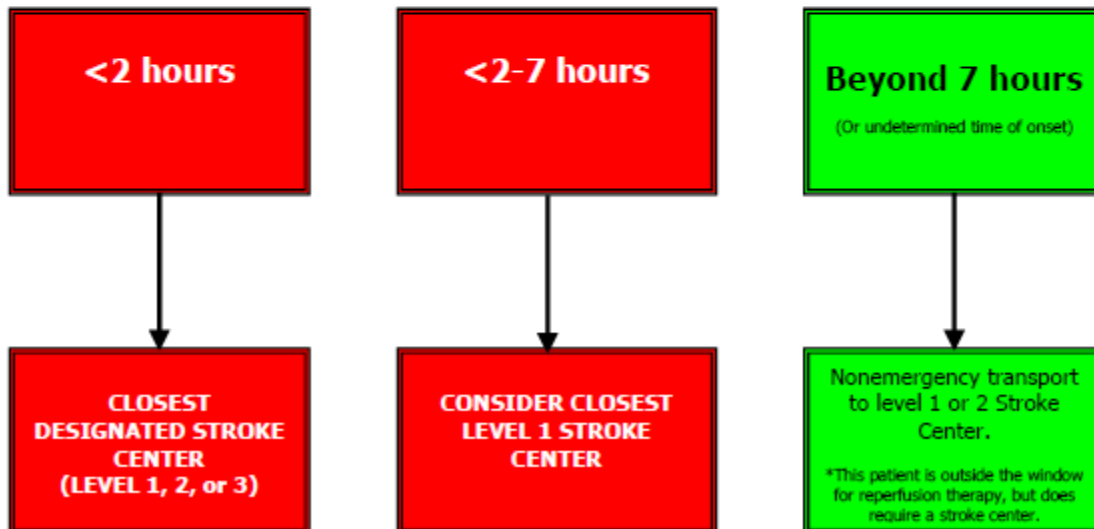
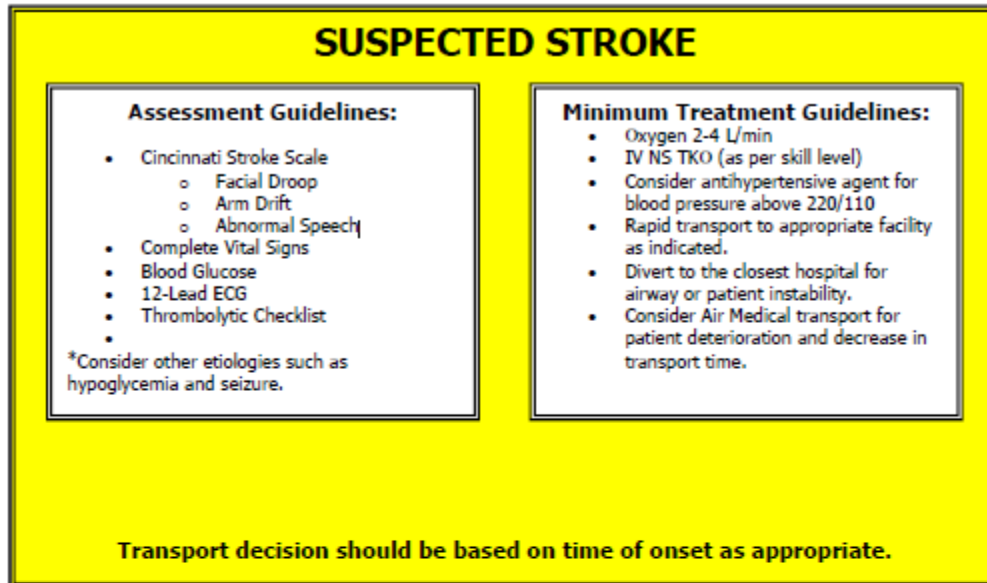
Authorization for Override of Diversion Requests

When a facility requests to be placed on diversion status, TAMU EMS personnel should attempt to divert appropriate patients to other facilities whenever possible. TAMU EMS personnel should consider the condition of the patient, distance to alternate facilities, and the diversion status of alternate facilities in determining the destination for the patient.

System Monitoring and QI

TAMU EMS should document and report to the BVRAC QI Committee those situations in which a diversion request has not been honored or has been overridden by the on-line medical direction source.







BVRAC Stroke Alert Criteria

Level 1 Stroke Center

(capable of treating beyond 3 hour IV tPA window)

Level 2 Stroke Center

**CHI St. Joseph Health Regional
College Station Medical Center
Baylor Scott & White Medical Center**

**Bryan
College Station
College Station**

Level 3 Stroke Centers

**CHI St. Joseph Health, Madison
CHI St. Joseph Health, Grimes
CHI St. Joseph Health, Burleson
Baylor Scott & White Medical Center, Brenham**

**Madisonville
Navasota
Caldwell
Brenham**



Air Medical Utilization

Due to extended transport times to definitive trauma centers, it is sometimes in the best interest of the critically ill and/or injured patient to have them transported via helicopter. The utilization of helicopters as a means of rapid transport for critically ill or injured patients is an additional tool that allows TAMU EMS to provide the highest level of care.

Indications for Air Medical Utilization

Utilization should be based on the following criteria:

- The aircraft can deliver the patient to definitive care faster than ground transportation.
- When transportation to a Level I or Level II Trauma Center is indicated and ground transportation time is greater than 30 minutes.
- When specialized services are required that local receiving hospitals are not equipped to provide.
- Severely injured patient(s) with extended extrication times (> 30 min)
- Mass casualty situations where EMS resources are exhausted.
- Known or suspected head or spinal injuries with significant neurological deficits.
- New neurological deficits/impairment in the presence of signs and symptoms suggestive of an acute intracerebral process that meets criteria established by BVRAC.
- Burns that fulfill one or more of the following qualifications:
 - Significant (urgent or critical) burns requiring a burn center.
 - Burns associated with significant injuries.
 - 2nd degree burn involving hands, feet, genitalia, joints and face.
 - Inhalation burns
 - Significant Chemical burns
 - Significant Electrical burns
- Pediatric trauma and/or burns of any significance

Air Medical resources **should not** be used in the following instances:

- Pending arrest
- Trauma that can be managed at a Level III and/or Level IV facility

It is acceptable practice to transport a trauma patient to a closer facility for evaluation by the emergency department physician. Oftentimes patients appear to be more seriously injured than they actually are. Following these guidelines allows TAMU EMS to utilize trauma facilities and Air Medical services in a way that best meets the needs of the patients and communities they serve.

Coordination of Air Medical Utilization

Responsibility for overall command and control rests with the Incident Commander (IC) as outlined in the Joint EMS/Fire Department Operations policy. The highest-ranking TAMU-EMS on-scene should assume the role of EMS Sector Officer and have the ultimate responsibility for patient care. EMS Sector is responsible for keeping the Incident Command (IC) informed of patient condition and status and any manpower, equipment, or other needs that may arise.

An Air Medical Provider (AMP) may be **placed on standby** by:

- Calltaker
- Responding EMS unit
- First Responders on scene



Air Medical Utilization

- Fire personnel on scene
- Air Medical pilot

Air Medical **should not** be launched until one of the following occurs:

- EMS unit is on scene and has made a determination that AMP is needed

The person requesting Air Medical Provider assistance shall provide Communications with the following information:

1. Medic number
2. Brief report of patient condition
3. A precise location of the patient
4. Any unusual circumstances (bad weather, power lines down, etc.)

Communications should provide the following information to the AMP communicator:

1. Requesting agency's name and callback number
2. Exact scene location including street address, etc.
3. Reason for the request
4. Type and extent of injury if known
5. Number of patients
6. Ground contact and the radio frequency to be utilized

Once the aircraft is en-route, the authority to terminate a request for services shall lie solely with the EMS sector officer, who, if different from the In-Charge providing primary patient care, should rely on the judgment of the In-Charge providing primary patient care.

Additionally, the pilot has the authority to terminate the air medical response.

The primary responsibility for patient care lies with the TAMU EMS In-Charge.

The Incident Command is responsible for overall scene safety and may designate a Safety Sector officer to assist in that role. The IC and or the EMS sector officer should directly relay patient information to the helicopter when requested by the Air Medical pilot.

The pilot is responsible for all aspects of the aircraft and shall make the final determination regarding any safety issues that directly affect safety of the aircraft and crew (LZ location, weather, additional riders, etc.).

Landing Zone (LZ) Requirements

During normal daylight hours the LZ should be at least 60 x 60 feet. Additionally, it should be marked with one traffic cone at each corner and one traffic cone on the upwind side.

During nighttime hours the LZ should be at least 100 x 100 feet with lighted cones at each corner and one lighted cone on the upwind side. Additionally, all emergency vehicles should turn off all emergency lights, especially strobe lights.



Controlled Substances

Intent

The following policy will define the usage and tracking of all scheduled injectables (controlled medications) within the TAMU EMS System. The goal of the policy is to ensure chain of custody as well as documentation of two (2) TAMU EMS employee signatures that all controlled medications are accounted for at the beginning and end of each shift.

The procedures contained in this document constitute guidelines only. The Clinical Department cannot anticipate all extraordinary circumstances that may occur during patient care and the administration of controlled medications. Unusual events should be investigated and addressed on a case by case basis and reviewed by the EMS Manager and the Medical Director to ensure necessary safeguards are in place to maintain the chain of custody required by Federal and State Rules and Regulations. Failure at any time to maintain the chain of custody for controlled medications as described in these guidelines could result in disciplinary action for all involved TAMU EMS employees up to and including termination.

General Information

Ideally, the controlled medications should be signed for at the beginning of each shift with the “off-going” and “on-coming” In-Charge Paramedics present. The sign in sheet should reflect the number of controlled medications counted with documentation of each of the unique numbers assigned or a Controlled Substance Usage and Tracking Form to account for any controlled medications administered during the previous shift that have not been replaced by a pre-approved individual with access to the bulk narcotics. The on-coming Paramedic should sign in the “on-coming” space as receiving the controlled medications and the Paramedic leaving signs as “off-going” to document transfer of medications. Failure to count and sign for the controlled medications at the beginning of shift may result in disciplinary action for all In-Charge paramedics involved, including, but not limited to the following:

- 1st Offense: Written warning (coaching/counseling form)
- 2nd Offense: 1st level notice
- 3rd Offense: 2nd level notice
- 4th Offense: 3rd level notice (termination)

It is unacceptable for the In-Charge paramedic on shift to sign out BEFORE the end of shift (you should not sign in and out at the same time). Failure to comply may result in disciplinary action.

Policy violations remain on file for a twelve-month period. If an employee has no other occurrences during that time the policy violation is expunged from their record.

Late Calls

In the event that a medic unit is assigned an emergency response near the end of shift before transfer of the controlled medications can be completed as described above, or the oncoming In-Charge Paramedic arrives on the scene of an assigned response and assumes patient care, the following guidelines should be followed. The In-Charge paramedic should complete the sign-in sheet as soon as possible after the call is completed with his/her attendant partner as the witness. Signatures go in the “on-coming” signature box to ensure chain of custody and document the Incident Number of the late call in the “off-going” signature box on the tracking form. This will indicate to the Clinical Department as well as the Administrator on Duty why the signature is missing and that disciplinary action is unnecessary.



Controlled Substances

Peak and Special Event Units

TAMU EMS employees assigned to a Peak Unit (In-Charge and Attendant) or covering a Special Event (refer to CG-12 in protocols), when a face-to-face exchange of the controlled medications with an off-going crew is not practical, the controlled medications should be counted with their partner and both employee signatures should be in the “on-coming” space. At the end of shift, this process should be repeated as the “off-going” crew and the controlled medications should be secured.

Administration and Replacement of Controlled Medications

Controlled medications are administered only after a person with appropriate medical authorization has ensured that the patient meets criteria as outlined in the specific SDOs. Paramedic students are allowed to administer controlled medications and other medications under the direction of their preceptor.

After administration of a scheduled injectable, the Paramedic administering the medication should complete the appropriate fields of a Controlled Substance Usage and Tracking Form. Scheduled injectables will not be replaced by the supervisory staff without complete documentation of usage. TAMU EMS employees or hospital staff should witness the disposal of any unused controlled medication and their name and signature should be documented on the replacement form. It is preferable that a 3rd party, ideally hospital staff, sign the narcotic usage form. If the controlled medication was administered by a student, the preceptor should complete the top portion of the replacement form and have his/her partner witness the waste of controlled medications that were not administered to the patient. Contact the staff with access to the bulk narcotics as soon as possible for replacement.

The completed usage and tracking form should remain with the controlled medications as it documents why a specific medication is missing. Additionally, the unique tracking number assigned to the controlled medication should be documented in the PCR.

As long as the scheduled injectable usage has been properly documented, the ambulance may remain in-service with the minimum of one of each scheduled injectable while awaiting

Expired Controlled Medications

All medications should be checked frequently for expiration dates and may be administered through the end of a month (e.g. expires 7/15), unless the expiration date specifies the day of the month (e.g. 7/20/15). If possible, medications nearing their expiration date should be administered first in appropriate situations, as scheduled injectables cannot be returned or exchanged. A preapproved staff member with access should be contacted for replacement before the medication expires. Units with expired medications may result in disciplinary action for all In-Charge Paramedics who have been responsible for maintaining the chain of custody for the controlled injectables.

Reverse Controlled Medication Disposal for Expired Medications and/or Compromised Security Seals

To ensure compliance with Federal DEA and State Laws, the following procedure will be followed for replacing expired controlled medications:

1. Contact the Administrator on Duty and advise them you have controlled medications that are expired/expiring.



Controlled Substances

2. The expired controlled medications should be exchanged with the Administrator on Duty with the Tamper Resistant Seal intact and completed paperwork. The Administrator on Duty will return the expired controlled medications to the central stock for disposal.
3. Controlled medications that are discovered with broken seals should be exchanged as they are with an unusual occurrence report attached to the Controlled Substance Usage and Tracking Form describing how you found the controlled medication. The replacement form and the compromised controlled medication should be returned to the central stock for disposal.



Medication Storage

The Texas Food Drug and Cosmetic Act states that a drug or medical device is deemed adulterated if it is stored under conditions that result in the product's safety or effectiveness being compromised. Drugs and medical devices that are stored in places that do not have proper environmental controls may become ineffective or dangerous. Products that are stored improperly in vehicles (i.e. ambulances, personal vehicles) are considered adulterated products and unsafe for human use. Guidelines for the proper storage of drugs and medical devices are generally recommended by the manufacturer of the product. Where no guidelines are listed on drug labels, the United States Pharmacopoeia recommends that products are stored at room temperature, away from humidity, and where necessary, away from light. For those devices that are not labeled with storage requirements, care should be taken to avoid extremes of temperature, humidity and light. All labels should be read and checked prior to storage. It is the responsibility of the operator to make sure that proper storage requirements are met. The Texas Department of State Health Services has the authority to detain and take action against those products that do not meet storage criteria. **Rule Reference:** 25TAC 157.11

Interpretation:

The EMS provider licensure or relicensure applicant shall provide evidence of an operational policy which shall list the pharmaceuticals authorized by the medical director and which shall define the storage and maintenance procedures for each in accordance with the manufacturers and/or FDA recommendations. Compliance with the policy shall be incorporated into the provider's Quality Management process and shall be documented on the unit readiness reports.

TAMU EMS has adopted the following policy to assure compliance with the above mentioned rule. Medications and medical devices listed within this manual shall make use of the vehicle climate control system when the vehicle is in operation. During times when the vehicle is not in use, a generator-powered climate control system shall be utilized to maintain a constant temperature range. Extra items stored at stations for replacement shall be stored within a cabinet inside each station. Temperature control shall be maintained by keeping a thermostat at a consistent setting within the station.



File Transfer of Patient Care Records

A Patient Care Record (PCR) shall be accurately completed for each ambulance response to a 9-1-1 call for service and contain all available requested information regarding call demographics, patient assessment, care rendered, and patient response to care. This also includes non-emergency responses and dedicated standbys with or without patient transport, calls where a unit has responded and there is no patient contact or response is cancelled before scene arrival, and all transfers whether scheduled or non-scheduled. Completed PCRs may not be altered or changed unless done by the individual that completed the form, except to add or change billing information, or add name and other pertinent demographic information if it was unknown at the time of the call. Intentional failure to complete a PCR when required may result in disciplinary action.

Completed PCRs are confidential patient medical records and access is limited to responding personnel, State EMS authority as part of an administrative investigative process, authorized medical facilities that received the transport, and ambulance provider service payer sources. Copies of completed PCRs may be provided to other sources only as legally permitted. The records may also be provided to the patient or patient responsible party by valid medical record release.

PCR Completion and Dispersal

- Documentation of patient assessment and treatment information contained on PCRs is the responsibility of personnel providing patient care. All TAMU EMRC EMS employees providing patient care are required to sign the patient care record.
- Completed PCRs may not be altered or changed except by the individual that completed the form, except as previously noted. If a paper PCR is utilized, any documentation error shall be lined through, and the correction shall have the patient attendant's initials beside it. Any changes made to an automated PCR shall have documentation of those changes retained in the computer database and correction logbook.
- Each PCR shall be accurately completed with all available and relevant information as described in the documentation standards for TAMU EMRC-EMS. Use of usual and customary abbreviations is permitted in the narrative section of the record or as defined in automated PCR pre-designated picklists.
- Each PCR shall be accurately completed as soon as possible after the response or patient transport is completed and copies should be provided to the receiving facility in the customary manner. If the transport personnel are unable to complete the form prior to leaving the facility, the PCR shall be completed and returned to the receiving facility as soon as possible, but in no case later than 24 hours after completion of the call. If extenuating circumstances prevent this from taking place, the Clinical Department should be notified so that copies of the PCR may be forwarded to the facility.
- Wait and return transfers receive two (2) incident numbers (one incident number to transport the patient to destination and the second to return to originating location). Therefore, two (2) reports should be written.
- File transfers of PCRs SHOULD take place daily. This transfer should occur regardless of any open calls. Crews are encouraged to complete PCRs as soon as possible after the incident occurs.
- Employees with open calls transferred should report to the Administrator on Duty within 48 hours to complete the PCR. Failure to complete the PCR within this time may result in Clinical Suspension of Authorization and the employee should not be paid to complete the report.



File Transfer of Patient Care Records

- Employees with reasonable explanations for not completing the PCR may be exempt from Clinical Suspension. Each incident will be reviewed and exemption determined on an individual basis by incident.

Daily transfer of the patient care record is important from a clinical as well as a billing aspect. Therefore, in an effort to improve this, procedural guidelines have been developed for file transfers to occur.

Units that are on station at shift change should still attempt file transfer before 0700 hrs. Units that are responding to emergency calls should have until 0900 hrs. to complete this procedure. Peak trucks should file transfer before they sign out and go home.

File transfers are to occur daily regardless of any open calls. If the on-coming crew notices calls from the previous shift, they **SHOULD** perform a file transfer as soon as they are able. If you are unable to complete the file transfer, please notify the Administrator on Duty. This ensures that the Electronic Patient Care Record System server is working properly or has been reset. Remember, you can file transfer as many times per shift as you choose or as time allows.

Patient Care Records that are transferred without being closed **SHOULD** be completed within two (2) business days or 48 hours after the response. It is the responsibility of the employee to schedule time to complete the record. Any employees with open calls after two (2) business days or 48 hours will be placed on Clinical Suspension and **WILL NOT** be allowed to return to work until all reports are completed.

When an employee has received two (2) Clinical Suspensions for open calls, the third step in the disciplinary process will be one (1) shift off without pay. The employee **MAY NOT** be allowed to use PTO time or work an extra shift during the same week that he/she is suspended without pay. Once the fourth incident occurs, the employee may be reported to the Texas Department of Health for violations of the Texas Administrative Code Rule 157.36 (b), (1), (2), (3) and (28), and may be subject to a non-emergency suspension, decertification, and revocation of their certification or licensure (see attached TDS rules).

We understand there will be circumstances when employees may not be able to meet the 2-business day and/or 48-hour deadline. Each incident will be reviewed on a case-by-case basis. It is the responsibility of the employee to contact the Administrator on Duty or the Clinical Department before the deadline occurs to make appropriate arrangements to complete the documentation process. The Administrator on Duty should document that the employee called as well as the reason for non-compliance with the deadline time. An appointment should be made with the employee to complete the report as soon as possible. Documentation of this interaction will be placed in the employee file. Failure to contact the Administrator on Duty to initiate this process will result in Clinical Suspension until the patient care records are completed.

It is a requirement of all operation's employees to complete reports in a timely manner during normal shift hours. Overtime will not be paid to complete open calls unless late calls, posting assignments, or Electronic Patient Care Record System failure prohibits the procedure. Again, each incident will be considered on a case-by-case basis. If overtime pay is appropriate for the situation, the EMS Manager may approve the employees' time to complete the report. The employee **SHOULD NOT** be paid for time spent writing a report beyond his/her normally scheduled shift **UNLESS** there is written documentation from the EMS Manager that authorizes the overtime.



Allied Health Care Providers

The purpose of this policy is to ensure compliance with the rules of the Texas State Board of Medical Examiners, the Texas State Board of Nurse Examiners, and the Texas Department of State Health Services. In accordance with these rules, Allied Health Care providers may accompany EMS personnel during the ambulance transport of a patient for the purposes of:

- Providing additional personnel to allow the efficient and effective provision of care to critically ill or injured patients
- Monitoring and managing equipment, adjuncts, and medications with which the EMS personnel are not familiar (e.g. IV pumps, ventilators, or unusual IV medications)

For the purpose of this policy, Allied Health Care providers are defined as:

- Nursing personnel (LVNs, GN's, and RN's)
- Respiratory Therapists or Respiratory Care Practitioners
- Nurse Practitioners, Physician Assistants

Allied Health Care providers are authorized to accompany ambulances in the TAMU EMS System when they are requested by the attending EMS personnel, the transferring physician, or the on-line medical control personnel.

The attending Paramedic is ultimately responsible for the management of the patient while in the care of the EMS system. Allied Health Care providers may not independently treat patients while those patients are in the care of the EMS system.

Either the protocols or the on-line physician must authorize all treatments and therapies. Orders from the transferring physician concerning care to be rendered during transport that is not in the current protocols must be given as written orders and turned in with the patient care report.

When a transferring physician requires specialized drugs or narcotics that are not in the TAMU EMS stock, the physician shall provide the EMS personnel with the drugs/narcotics needed. The drugs/narcotics must be accompanied with a written order from the transferring physician. Drugs/narcotics not used will be wasted as the Controlled Substance Policy.

The presence of Allied Health Care providers does not exempt the EMS unit from proper staffing requirements set forth by TDSHS Rule § 157.11 or proper paperwork.



Primary Survey/CABCs

Throughout the Protocols, the acronym “CABCs” is used to indicate the primary survey of every patient. Our patient survey consists of the evaluation and, if needed, management of the following components:

- Cervical spine
- Level of consciousness
- Airway
- Breathing
- Circulation

The following is an outline for the assessment and management of these components.

The patient survey includes (in order):

1. Obtain manual control of cervical spine, if indicated.
2. Quickly establish level of consciousness (AVPU).
3. Evaluate airway. Establish patent airway if needed.
4. Evaluate breathing. Initiate ventilation or ventilatory assistance if needed. Assess for open chest wounds. Occlude any found.
5. Check for presence and adequacy of circulation. Initiate chest compressions if needed. Check for external bleeding. Control any significant bleeding found.

Cervical Spine

If there is any possibility of a spinal injury through mechanism of injury or level of medic’s suspicion, the provider should assume that one exists and approach the patient accordingly. Once permission to assess the patient is obtained, by verbal consent, the provider’s next step on any patient with the possibility of spinal injury is to manually obtain control of the c-spine. This manual c-spine stabilization should be maintained until:

- Further assessment clearly rules out the need for spinal motion restriction.
OR
- Movement spine is adequately restricted with adjuncts which relieve the need for manual stabilization.
OR
- The patient refuses further treatment or transport.

According to BTLS, the following are indicators from the mechanism of injury that a potential spinal injury exists and that these patients may require spinal motion restriction:

- Blunt trauma above the clavicles
- Diving accident
- Motor vehicle collision or bicycle accident
- Fall
- Stabbing or impalement anywhere near the spinal column
- Shooting or blast injury to the torso
- Any violent injury with forces that could act on the spinal column or cord

Patients who are found unconscious on the floor are considered to have a possible cervical spinal injury unless a bystander or family member can give an accurate account of how the patient got to the floor. The spine should be stabilized in accordance with the **Spinal Motion Restriction Procedure** (PROC 0.0).



Primary Survey/CABCs

Level of Consciousness

The level of consciousness should be briefly assessed next, to determine only the patient's rating on the "AVPU" scale (**A**lert, responsive to **V**oice, responsive to **P**ain, **U**nresponsive). Further assessment of the level of consciousness is to be deferred until the secondary survey.

Airway

The patient's airway should next be evaluated for patency. If there is any indication of a compromise in the patient's airway or any threat that such a compromise will develop, the provider should immediately intervene to secure the airway. Indications of compromise may be as overt as apnea or a visible obstruction, or may be indicated by a less obvious sign such as airway noises (stridor, snoring, gurgling, etc.)

The airway should be secured first with positioning, using a jaw-thrust if spinal injury cannot be ruled out or a head-tilt/chin-lift if spinal injury is not a concern. If material should be physically removed from the airway, this should be done next using abdominal or chest thrusts, a finger sweep, and/or oral suctioning as appropriate. If the patient's level of consciousness is diminished, an airway adjunct should be placed next. Use an oral airway if the patient will tolerate it, otherwise use a nasal trumpet. Manual positioning should be maintained concurrently with the use of such an adjunct. If possible, the airway should next be definitively secured with ET intubation. Even in the patient whose airway is initially patent, the provider should continuously reassess and be prepared to intervene against any airway compromise.

Breathing

The next component to be assessed is the patient's respiratory status. If the patient is not breathing spontaneously, ventilation with supplemental oxygen should be initiated immediately. If the patient is breathing spontaneously, the adequacy of the patient's respiratory effort should be evaluated. If the patient's rate or tidal volume is inadequate, assisted ventilation with supplemental oxygen is to be provided immediately. The patient's chest should also be rapidly assessed for open wounds which would compromise respiration. If any open chest wound is found, it should be immediately occluded, initially with the provider's gloved hand and then with an occlusive dressing.

The bag-valve-mask device with oxygen at 10-15 liters per minute and a reservoir bag is the preferred method of providing ventilation. If possible, the airway should always be secured with ET intubation if positive pressure ventilation is to be instituted. As with the airway, the provider should continuously reassess the ventilatory status of even the most stable patient and be prepared to rapidly intervene if respiratory compromise develops.

Circulation

The patient shall next be assessed for:

- Adequate circulation
- AND**
- For the presence of major external hemorrhage

If the patient is awake, or at least responsive, to verbal or physical stimulus, the provider shall assume that circulation is adequate for the moment and move on. If the patient is unresponsive, the provider should assess for the presence and adequacy of a palpable carotid pulse. If the patient does not have a palpable carotid pulse, or has a pulse of less than 30 BPM in the adult (less than 40 BPM in a child or less



Primary Survey/CABCs

than 60 BPM in an infant), the provider should initiate chest compressions. A more accurate evaluation of the patient's perfusion status should be done during the secondary survey. Next, rapidly assess the patient for external bleeding. If major bleeding is found, it should be immediately controlled with direct pressure.



Focused and Detailed Exam

FOCUSED AND DETAILED EXAMINATIONS

The focused exam is an assessment that is pertinent to the patient's chief complaint. The detailed physical exam is a systematic, whole body assessment that evaluated physical findings and significant history. It is performed after the initial assessment has determined that there is no life threat, or interventions have been made to lessen that threat. The amount of time expended or even the necessity of these exams is directly dependent on the patient's condition. All remarkable findings, associated symptoms, and pertinent negatives (ASPN) are to be documented.

This is also the time that an interview is conducted for history. This information is to be included in the patient report to the health care provider who receives this patient as well as in the patient care report. The SAMPLE mnemonic is easily remembered as:

- | | |
|-----------------------------------------------------------|----------------|
| S – Signs/symptoms | |
| A – Allergies | |
| M – Medications (prescribed, over the counter, or elicit) | |
| P – Pertinent past medical history | |
| L – Last oral intake | |
| E – Event that lead up to calling EMS | |
| | |
| O – Onset of symptoms | A – Associated |
| P – Provocation | S – Symptoms |
| Q – Quality of pain | P – Pertinent |
| R – Radiation of pain | N – Negatives |
| S – Severity | |
| T – Time | |

TRAUMA SURVEY

A helpful mnemonic to assess trauma patients comes from the Basic Trauma Life Support class. Head, Neck, Chest, Abdomen, and Extremities can be systematically checked using DCAP-BTLS, or if you prefer, DCAP-BLSTIC.

- | | |
|----------------------|-----------------|
| D – Deformity | B – Burns |
| C – Contusions | L – Lacerations |
| A – Abrasions | S – Stability |
| P – Penetrations or | T – Tenderness |
| Paradoxical Movement | I – Instability |
| | C – Crepitus |



Focused and Detailed Exam

TRAUMA HEAD-TO-TOE SURVEY

Head, Face, Eyes

- Deformities
- Depressions
- Contusions
- Hematomas/Battle's Signs
- Lacerations
- Pupil size, equality, reaction to light
- Extraocular motions
- Raccoon's eyes
- Blink Reflex
- Foreign Bodies
- Penetrations
- Burns
- Facial Symmetry
- Fractures
- Discharge from ears, nose
- Loose teeth, Dentures
- Oral Secretions, vomitus or bleeding
- Contact or Glasses

Neck

- Point tenderness
- Alignment
- Neck Veins: Flat or Distended
- Trachea: Midline or Deviated

Abdomen

- Localized Tenderness
- Rebound Pain/Referred Pain
- Pulsatile Mass
- Distention

Pelvis

- Deformities
- Pain on Palpation
- Contusions, Abrasions, Hematomas
- Ecchymosis
- Genitalia Trauma

Back

- Pain
- Deformities
- Contusion, Abrasions

Chest

- Paradoxical Motion
- Breath/Heart Sounds
- Sternal Inspection
- Crepitus
- Retractions with Respirations
- Contusions, Abrasions, Hematomas
- Sucking Chest Wound Phenomenon
- Rigidity
- Bowel Sounds
- Ecchymosis

Extremities

- Distal Circulation
- Range of Motion
- Motor/Sensory Response
- Abnormalities/Deformities
- Contusions, Abrasions, Hematomas
- Skin Color/Turgor



Focused and Detailed Exam

MEDICAL/CARDIAC HEAD-TO-TOE SURVEY

Head, Face, Eyes

- Pupil Size, Equality, Reaction to Light
- Extraocular Motions
- Conjunctiva Color
- Blink Reflex
- Contacts or Glasses
- Facial Symmetry
- Skin Color and Quality
- Discharge from Ears, Nose
- Mouth Odors
- Loose Teeth, Dentures
- Mucous Membrane Color

Neck

- Carotid Artery Bruits
- Neck Veins: Flat or Distended
- Trachea: Midline or Deviated
- Nuchal Rigidity

Abdomen

- Localized Tenderness
- Rebound Pain/Referred Pain
- Pulsatile Mass
- Distention
- Rigidity
- Bowel Sounds
- Ecchymosis

Extremities

- Distal Circulation
- Range of Motion
- Motor/Sensory Response
- Abnormalities/Deformities
- Skin Color/Turgor
- Cyanosis, Clubbing, Edema

Chest

- Paradoxical Motion
- Breath/Heart Sounds
- Retractions with Respirations

Occasionally, EMS personnel will encounter a patient whose injury can only be treated definitively with surgery. When confronted with such a patient, the attending EMS personnel shall institute the basic interventions noted here and begin transport to an appropriate facility **AS SOON AS POSSIBLE**.

Rapid transport includes utilizing the helicopter to transport the patient, when doing so expedites the transport of the patient to the most appropriate facility. See the “Air Medical Utilization” protocol for specific guidelines regarding this issue.

ONLY THE FOLLOWING INTERVENTIONS ARE TO BE DONE PRIOR TO INITIATING TRANSPORT:

- Spinal Motion Restriction
 - Spinal Motion Restriction procedures may need to be modified and abbreviated to achieve rapid transport in some situations. Such deviations should be well documented and should still ensure that the patient is adequately and appropriately secured and immobilized.
 - The KED should not be used to immobilize sitting patients in a rapid transport situation.
- BLS airway and ventilation procedures (Oxygen administration, OPA, BVM, etc.)
- Defibrillation (only the initial shock)
- Intubation **IF** it can be accomplished rapidly (two attempts)
- Surgical airway
- Occlusion of open chest wounds
- Vital signs (may use peripheral pulses to estimate—See “Diagnostic Tools and Procedures” rationale)
- Freeing patient from entrapment



Focused and Detailed Exam

All other interventions are to be done once en-route to the hospital. IF entrapment delays transport, other interventions may be instituted on-scene while awaiting the patient to be freed (e.g., bandaging/splinting, IV initiation, cardiac monitoring, etc.).

The following represents patients for whom rapid transport is suggested:

- Patients meeting the BTLS guidelines for “load and go situation”
- Adult and Pediatric Critical Trauma as defined in “Destination Determination” protocol
- Head Injury or CVA with evidence of increasing ICP
- Suspected aortic aneurysm
- Suspected ectopic pregnancy, abruptio placenta, or uterine rupture
- All abdominal pain patients with unstable vital signs (tachycardia with normotension, hypotension)
- Obstetrical emergencies resulting in possible fetal distress, such as limb presentation, breech delivery, or prolapsed cord
- GI bleeding with unstable vital signs (tachycardia with normotension or hypotension)
- Any other patient requiring urgent surgical intervention



Recertification/Upgrade in Certification

Employees recertifying their Texas Department of State Health Services certification through examination should have scored a minimum of 70% on their National Registry Examination and provide the Clinical Department with a copy of their Texas Department of State Health Services certification.

Upgrading Authorization

In order for an employee to upgrade his/her certification from an EMT to EMT-Advanced or EMT-Advanced to EMT-Paramedic, he/she should provide the Clinical Department with a copy of the new TDSHS certification and test scores.

All employees wishing to upgrade authorization must complete training and evaluation procedures as outlined by the Training Department.

As a final step, the employee is expected to successfully complete a protocol exam at the new level of certification to verify a firm understanding of the clinical practices of TAMU EMS.

Authorization is separate from certification. Every provider should have a current certification. The Medical Director is responsible for granting authorization.

*Authorization is required to provide pre-hospital or out-of-hospital care to any patient within the TAMU EMS system. **Certification level does not necessarily dictate authorization level.** The Medical Director may authorize any provider to function at any level as per TDSHS Rule 157.11.*

AT NO TIME prior to receipt of the Letter of Authorization will the employee be permitted perform any procedure or treatment modality which is reserved for the new level of authorization as outlined in the protocols. This may be considered practicing beyond the scope of authorization, and may be considered to be a termination offense, and one that is reportable to Texas Department of State Health Services.

Upon successful completion of these steps, a letter of authorization will be placed in the employee's file.



Continuous Quality Improvement

Total Quality Management

TAMU EMS embraces the opportunity to continuously monitor and improve the standards that have been established by TAMU EMS for the delivery of pre-hospital health care. Furthermore, TAMU EMS believes that all employees want to do the best they can for every patient and should provide a high level of pre-hospital care to every patient they encounter as long as the following are intact:

- The acceptable standard of care as well as employee performance expectations are clearly defined and measurable

AND

- The employee(s) are provided adequate and appropriate equipment and/or tools to adhere to TAMU EMRC EMS standards

Quality Improvement is a non-punitive process designed to provide opportunities for personal and/or professional growth for the individual as well as the agency.

Additionally, Quality Improvement (QI) within the TAMU EMS system is established upon the principles of raising standards in all departments: patient care, vehicle maintenance, communications, operations and clinical, as well as billing and community outreach programs. This approach to QI relies upon the participation of all TAMU EMS employees to be successful.

Quality Improvement within the TAMU EMS system is based upon the following components:

- Training and education of all levels of field personnel, directed at documented needs.
- Assessment and evaluation of all patient-care oriented activities.
- Involving all levels of personnel in establishing and ensuring the standard of care, protocols, procedures, and the assessment of care.
- Effective hiring and selection process, orienting and training procedures, and evaluation of new personnel.
- Establishing regular review of patient-care oriented standards, protocols, and evaluation systems.

The **goals** of the clinical QI program are to:

- Continuously and accurately evaluate the patient care oriented activities of all the EMS personnel in the system.
- Continuously and accurately evaluate the operational, administrative, and procedural activities of our system as they relate to the delivery of patient care.
- Accurately determine the training and educational needs of both individual EMS providers and the EMS system as a whole.
- Provide continuous training and education to our providers which address their actual training and educational needs.
- Identify and address areas of potential improvement in our system in all areas of patient care and operation.
- Respond to complaints or concerns from both outside and inside the system about patient care or related activities in a timely and satisfactory manner.
- Regularly evaluate and re-evaluate protocols, procedures, and patient care standards, and improve and update them as needed.
- Allow the field personnel at all levels to actively influence the system's operations as they relate to patient care.



Continuous Quality Improvement

- Provide organizational management and administration with an accurate assessment tool for evaluating employee performance in patient care related activities.

This approach to a successful QI program requires that TAMU EMS make and maintain a commitment to continuous evaluation and improvement focused on response to such evaluations. The following are critical to the success of the program:

- Utilization of objective assessment criteria
- Assessment of methods of patient care by comparing documented and observed clinical care to established criteria
- Utilization of appropriate methods to solve the identified problem with the focus being on improving individuals as well as the service as a whole
- Reassessment of the problem area identified to ensure that the problem has, in fact, been corrected

Critical QI functions extending beyond routine evaluation of field clinical performance and clinical care include:

- An interface with continuing education that the findings of the QI process contribute materially to the content of the continuing education program
- Evaluation of on-line medical consults
- Incident investigations

The above items are accomplished from a proper mixture of the following:

- **Prospective:** defined as actions that take place prior to the actual patient encounter (i.e. education, continuing education, development of standing delegated orders, medication and supply inventory requirements, etc.)
- **Intermediate:** evaluation of medical consults, on-scene evaluations by a preceptor, or scenario/realism training
- **Retrospective:** consisting of clinical chart audits for documentation and treatment as well as accurate and complete performance evaluations of each employee. May also include feedback received from hospital follow-up and customer satisfaction surveys.

If an audit (chart or field) finds no procedural or clinical exceptions, an audit report shall be filed as supportive evidence of the employee's performance for inclusion in a performance appraisal.

If an audit (chart or field) finds clinical exceptions, then copies and the audit report should be reviewed by the Medical Director, thus beginning the exercise of problem solving. The Medical Director or his/her designee should consider the following minimum factors during his/her review of the case:

1. Was the exception a system failure?
2. Were there extenuating circumstances on scene or en-route that contributed to the situation?
3. Did lack of training contribute to the situation?
4. Did the treatment and/or procedure cause permanent harm or injury to the patient?
5. Was the treatment and/or procedure performed appropriate for the patient's illness/injury?
6. Was the employee authorized to provide the treatment and/or procedure performed?



Continuous Quality Improvement

Once the factors and principles have been identified, the administrative staff should carry out action and/or training as recommended by the Medical Director. Each investigation is conducted on a case-by-case basis with consideration given to each of the previously listed items.



Handling Child and Elderly Abuse/Neglect

General Information

State law requires all professionals to report suspected cases of abuse (Texas Family Code § 261.101). Therefore, all employees are required to report actual and suspected cases of abuse. However, it is not the responsibility of TAMU EMS personnel to confront and attempt to remediate abusive situations. When abuse is suspected, provide all assessment and treatment as indicated. Attempt to persuade the patient to be transported to the hospital regardless of the severity of the injuries.

- **Transport Situations** – Upon arrival at the emergency room, privately and discreetly advise the nurse and/or physician of your suspicions.
- **Non-transport Situations** – If transport is refused, leave the scene and request to meet with law enforcement to meet at a near by location. When law enforcement arrives, advise them of your suspicions. Notify the Administrator on Duty of the incident.

In either situation, Child Protective Services or Adult Protective Services should be contacted by the TAMU EMS employee(s) responding to the call and or witnessing the event.

Documentation

In all cases, employees should include a detailed assessment of the actual or suspected abuse situation in the patient's report. The assessment should describe the patient's condition, emotional state, and the surrounding environment. Also, employees should include details in the patient's report concerning the circumstances that created their suspicions of abuse and the employees' actions. The appropriate agency should be contacted within 24 hours after the employee witnesses the actual or suspected abuse.

Child and Elderly Abuse should be reported to Adult Protective Services (APS) or Child Protective Services (CPS). **1-800-252-5400** or <https://www.txabusehotline.org>



Care and Transportation of Minors

Minors may only receive the treatment necessary to preserve life and prevent further injury in the absence of a consenting parent, guardian, or adult family member. Parents and guardians retain the right to consent to and refuse treatment for minors in their charge who are under eighteen (18) years of age unless the minor qualifies to consent to treatment. When a minor's parent(s) or guardian(s) refuse treatment for the minor, TAMU EMS should not force any treatment but shall encourage treatment or recommend that the minor patient be transported to a hospital. If a minor's life is endangered by the parent's or guardian's refusal for treatment, or if personal abuse is suspected, the supervising Emergency Department physician shall be notified immediately and his or her instructions followed. TAMU EMS personnel are required by law to report all cases of suspected abuse. Refer to the TAMU EMS Field Operations Guidelines concerning Child Abuse for further guidance.

Married Minors

Married minors reserve the right to consent to or refuse treatment.

Unmarried, Pregnant Minors

Unmarried, pregnant minors may consent to or refuse treatment for pregnancy-related conditions only. Treatment for other conditions requires parental consent or refusal of treatment.

Abandoned Children

Section 262.301 of the Texas Family Code, as amended, requires TAMU EMS personnel, without a court order, to take possession of a child who is thirty (30) days old or younger if the child is voluntarily delivered to the employee by the child's parent and the parent did not express an intent to return for the child.

A TAMU EMS employee who takes possession of a child under these circumstances shall perform any act necessary to protect the physical health or safety of the child. The employee should notify the Administrator on Duty of the situation as soon as possible.



Inventory Minimums

Airway and Oxygen Supplies

Oropharyngeal Airways (5 total)	1 set	Laryngoscope Handle – Adult & Pedi	1
Nasopharyngeal Airways (6 total)	1 set	Mac Blades 1,2,3,4	1 ea
BVM – Adult, Pedi, Infant	1 ea	Miller Blades 0,1,2,3,4	1 ea
CPAP Circuit & Mask	1	Magill Forceps – Adult & Pedi	1 ea
PEEP Valve	1	Cricothyrotomy Kit	1
Nasal Cannula	2	EtCO ₂ In-line Adaptor	1
Non-Rebreather Mask	2	EtCO ₂ Cannula	1
Nebulizer	1	Disposable SpO ₂ – Adult & Pedi	1 ea
Aerosol Mask – Adult & Pedi	1 ea	Meconium Aspirator	1
Endotracheal Tube – 2.5-8.5	1 ea	NG tube – 18 fr	1
ET Introducer – Adult & Pedi	1 ea	60 cc Syringe with Cath Tip	1
ETT Securing Device – Adult & Pedi	1 ea	Rigid Suction Catheter with Tubing	1
EtCO ₂ Colorimetric Device – Adult & Pedi	1 ea	Suction Catheters 5/6,8,10,14,18fr	1 ea
O ₂ Nipple and Nut Connector	1	Onboard Suction Unit with Canister	1
Portable O ₂ Key	1	Portable Suction Unit with Canister	1
Pneumothorax Kit	1	Onboard O ₂ Cylinder with Regulator	1
Supraglottic Airways – Size 2,3,4,5	1 ea	Portable O ₂ Cylinder with Regulator	2
Lubricating Jelly	2		

IV Equipment

0.9% NaCl IV Fluid (500 or 1,000ml)	2	18 ga Needle	2
0.9% NaCl IV Fluid (100 or 250ml)	1	21/22 ga Needle	2
Dextrose 5% in Water (100 or 250 ml)	1	25 ga Needle	2
IV Start Kit	2	14 ga IV Catheter	1
Saline Lock	2	16 ga IV Catheter	2
Prefilled Saline Flush	2	18 ga IV Catheter	2
10gtt/ml Primary IV Set	2	20 ga IV Catheter	2
60gtt/ml Primary IV Set	1	22 ga IV Catheter	2
Buretrol IV Set	1	24 ga IV Catheter	1
Alcohol Prep Pad	5	Scalp Vein Set	1
1 cc Syringe	2	IO Drill	1
3 cc Syringe	2	IO Needle – 25, 45mm	1 ea
10 cc Syringe	2	Illinois IO Needle	1
20 cc Syringe	2	Mucosal Atomization Device	1
60 cc Syringe with Luer Lock Tip	1	Carpus Device	1

Medications

Acetaminophen Elixir	500mg	Dextrose 10%	25mg
Acetaminophen Tablets	500mg	Dextrose 50%	25mg
Adenosine	12mg	Diltiazem	100mg
Albuterol 2.5mg and Atrovent 0.5mg	1 bullet	Diphenhydramine	50mg
Amiodarone	300mg	Dopamine	400mg
Aspirin – 81 mg tablet	8 tab	Epinephrine 1mg/1ml	1mg
Atropine Sulfate	2mg	Epinephrine 1mg/10ml	3mg
Atropine Multi-dose Vial	8mg	Ketorolac	60mg
Calcium Chloride	1mg	Labetalol	10mg



Inventory Minimums

Lidocaine 2%	200mg	Oral Glucose	15g
Lidocaine Pre-mix infusion	2g	Promethazine	25mg
Magnesium Sulfate	1g	Sodium Bicarbonate	50mEq
Methylprednisolone	125mg	Tetracaine Drops	1 bottle
Naloxone	2mg	Thiamine	100mg
Nitroglycerin tabs	4 tabs	Tranexamic Acid	1g
Ondansetron	8mg		

RSI Medications

Etomidate	20mg	Rocuronium	100mg
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Controlled Substances

Diazepam, as available	10mg	Lorazepam (when diazepam unavailable)	2mg
Fentanyl	100mcg	Midazolam	10mg
Ketamine	500mg	Morphine	10mg

Monitoring Equipment

Monitor/Defibrillator with Cables	1	BP Cuff – Adult	1
ECG Electrodes	10	BP Cuff – Large Adult	1
ECG Paper	1 roll	BP Cuff – Child	1
Defib Pads – Adult & Pedi	1 ea	BP Cuff – Infant	1
Prep Razor	1	Stethoscope	1
Spare Monitor Battery	1	Glucometer	1
Wall Charger for Monitor	1	Test Strips for Glucometer	5
Thermometer – Oral/Rectal	1	Lancets	5

BLS Equipment

Kerlix	2	OB Kit	1
Triangle Bandages	2	Sterile Water for Irrigation	1
Cold Packs	2	Sterile Saline for Irrigation	1
Heat Packs	3	KED	1
Tape – 3"	1	Traction Splint	1
Tape – 1"	1	Vacuum Splints (S, M, & L)	1 ea
4x4 Sterile Sponges	10	Backboard	1
5x9 Sterile Pad	2	Scoop Stretcher	1
Multi-Trauma Dressing	1	Webbing and/or Spider Straps	2
Burn Sheet	2	C-Collar – Pedi and Infant	1 ea
Non-Adhering Dressing	1	C-Collar – Adult	2
Chest Seal	1	Disposable Head Immobilizer	2
Tourniquet	2		
Padded Arm Board	1		

Miscellaneous Equipment

Stretcher	1	CR2032 Battery	1
Stairchair	1	Penlight	1
Pediatric Restraint Device	1	Fitted Sheets	2
C-cell Batteries	2	Disinfectant Solution	1 bottle
AA-cell Batteries	2	Disinfectant Wipes	1 can



Inventory Minimums

Gloves (XS, S, M, L, XL)	1 box ea	TDSHS Provider License	1
Hand Sanitizing Liquid	1	Fire Extinguisher	1
Protective Eye Wear	2	Campus Map Book	1
Isolation Gowns	2	No Smoking Sign	1
N95 Respirators	2	Cell Phone	1
Procedure Masks	3	Two-way Radio	1
Sharps Container – Wall Mounted	2	Broselow Tape	1
Sharps Container – Bag	1	Isolyzer	1
Biohazard Bag	2	Hazardous Materials Quick Reference	1
Trash Can	1	Protocol Manual	1
Safety Vests	2	Laptop or Clipboard with Reports	1
Flashlight	1	Unit Inventory List	1
Triage Tags	5		

I verify that the above Inventory and Medication List consists of all equipment, supplies, and medication items and specify a variety of sizes and types of equipment adequate to meet the needs of patients ranging in size from newborn to large adult and specify quantities appropriate to the provider's call volume. This standard shall be in effect from February 1, 2021 through January 31, 2023.

Garry L. Gore, MD Date: 12/03/20

Garry L. Gore, M.D.

Medical Director-- Texas A&M University EMS



Cardiac Assessment

Signs and Symptoms:

- AMS
- Tachycardia, bradycardia, absent pulse
- Irregular pulse
- Dyspnea or apnea
- Chest pain or palpitations
- Diaphoresis
- Pale, ashen, or mottled skin

History:

- Preceding symptoms
- CPR and/or treatment PTA
- PMHx
- Elderly, female, diabetic
- Cardiac stents
- Cardiac disease, surgery, diagnosis
- Medications affecting the heart or vasculature

Differential:

- Respiratory problems
- Sepsis
- Thoracic trauma
- Overdose
- Pulmonary Embolism
- Thyroid storm

Assessment

- C.A.B.C.
- Secondary assessment
- Vital signs
 - BGL, 3-lead, 12-lead, temperature
- Lung sounds
- GCS
- OPQRST
- ASPN
- SAMPLE
- Pertinent PMHx
 - Include history of Viagra, Levitra, Cialis, and similar medications within previous 48 hours
 - If above is present, do not administer NTG



Asystole and PEA

Signs and Symptoms:

- Unconscious
- Pulseless
- Apnea or agonal respirations
- Asystole
- PEA

History:

- Medical etiology
- Medications
- Events leading to arrest
- End stage renal disease
- Estimated downtime
- DNR

Differential:

- Hs - Hypoglycemia, Hydrogen ions (acidosis), Hyper/Hypokalemia, Hyper/Hypothermia, Hypovolemia, Hypoxia
- Ts - Tamponade, Toxins (overdose), Tension pneumothorax, Thrombosis, Trauma

Standby EMT

- CPR
 - BVM ventilation with 100% O₂
- AED application
- Supraglottic Airway Device
- Refer to Overdose/Poisoning Protocol if suspected Opioid overdose

Determine if resuscitation is medically inappropriate

- Rigor mortis
- Injuries incompatible with life
- Decomposition
- Dependent Lividity
- Pulseless, apneic patients in multiple casualty situations
- Proper out of hospital DNR documentation

Basic EMT

- Mechanical CPR device if available

Advanced EMT

- Intubation
- IV/IO access
- Fluid bolus

Paramedic

- **Epinephrine 1:10,000** 1 mg IV/IO as soon as possible
 - Repeat q 5 minutes
- **Sodium Bicarbonate** 1 mEq/kg IV/IO for known acidosis, TCA overdose
- **Calcium Chloride** 1 gram for dialysis patient or known hyperkalemia
- Orogastric or Nasogastric tube placement

Medical Consult

- After 20 minutes of quality chest compressions, consider field termination if patient meets criteria per medical termination procedure.

Critical Points:

- Always confirm asystole in more than one lead.
- Efforts should be directed at high quality and continuous compression with limited interruptions and early defibrillation when indicated.
- Survival is based on identifying and correcting the cause of the arrest.
- Perform at least 20 minutes of quality chest compressions (verified by CPR feedback device if available) and ACLS prior to moving the patient unless the environment is unsuitable.
- Do not interrupt compressions for ALS procedures.
- ET tube confirmation with 5 methods per procedure.
- Capnometry: in the presence of cardiac arrest, EtCO₂ readings consistently > 0 indicate tube is not in the esophagus
- Administer **Epinephrine 1:1000** 2 mg ET ONLY if unable to establish IV/IO access.
- **Sodium Bicarbonate** for known acidosis, Tricyclic Antidepressant (TCA) overdose or hyperkalemia. It is no longer recommended for routine use during cardiac arrest.



Bradycardia

Signs and Symptoms:

- Weak, dizzy, syncope
- Seizure
- Chest pain
- Pulmonary edema/CHF
- Acute altered mental status (AMS)
- Systolic BP < 90 mmHg
- Heart rate < 50 bpm **with s/s of hypoperfusion**

History:

- Medical etiology
- Medications: beta blockers, calcium channel blockers, digoxin, cholinergic, clonidine
- Pacemaker
- Events prior to onset
- Cardiac disease

Differential:

- AMI
- Hypothyroidism, Adrenal insufficiency, Cushings
- Infection/Sepsis
- CVA, increased ICP, Head injury
- Hs - Hypoglycemia, Hydrogen ions (acidosis), Hyper/Hypokalemia, Hyper/Hypothermia, Hypovolemia, Hypoxia
- Ts - Tamponade, Toxins (overdose), Tension pneumothorax, Thrombosis, Trauma

Standby EMT

- **Oxygen** via most appropriate method

Basic EMT

- Same as above

Advanced EMT

- IV/IO access
- Fluid bolus if SBP < 90 mmHg
 - Repeat PRN to keep SBP > 90 mmHg
 - Max 2 liters

Paramedic

- Consider transcutaneous pacing for unstable patient
- **Atropine** 0.5 mg IV/IO
 - Repeat q 3 – 5 min if beneficial response noted
 - Max dose of 0.04 mg/kg
- Sedation for pacing if patient condition allows
 - **Diazepam** 5 – 10 mg IV/IO/IM
 - Repeat once after 5 minutes
 - OR**
 - **Midazolam** 2 – 5 mg IV/IM/IO/IN
 - Repeat once after 10 minutes
 - OR**
 - **Lorazepam** 1 – 2 mg IV/IO/IM
 - Repeat once after 10 minutes if needed
 - OR**

- **Ketamine** 1 mg/kg IV/IO or 4 mg/kg IM
 - Repeat once after 10 minutes if needed
- **Dopamine** infusion 10 – 20 mcg/kg/min
 - Administer if patient remains hypotensive 5 min after fluid bolus
 - Titrate to SBP > 90 mmHg
- Pain management if pacing

Medical Consult

- Additional pacing sedation or consult for reversible causes
- Pacing or 12-lead findings consistent with needing cardiac specialty care should be transported to a cardiac center and 12-lead transmitted

Critical Points:

- Symptomatic bradycardia is typically < 50 bpm.
- Rhythm should be interpreted in the context of symptoms and pharmacological treatment only administered when the patient is symptomatic.
- Identifying s/s of poor perfusion in the presence of bradycardia is essential.
- Use of atropine to treat bradycardia in the presence of AMI or PVCs may worsen myocardial damage.
- High degree blocks with wide complexes will likely respond to pacing, narrow complexes may respond to atropine.
- Do not delay pacing when poor perfusion is present, utilize early if no response to atropine.
- Consider hyperkalemia in the presence of wide complexes with odd appearance or sine wave.
- Consider treatable causes for bradycardia (beta blocker overdose, Calcium channel blocker overdose, etc.)
- Hypoxemia is a common cause of bradycardia.
- Bradycardia may be seen in the presence of AMI, commonly seen with inferior and right-sided involvement.



Cardiogenic Shock Non-Traumatic

Signs and Symptoms:

- Hypotension: systolic B/P < 90 mmHg **with** evidence of MI
- **Without** signs of sepsis or hypovolemia
- AMS
- Chest pain
- Pulmonary edema

History:

- Medical etiology: No evidence of trauma induced blood loss
- No signs of infection/sepsis
- Previous history of CHF/PE
- Exposure to an allergen

Differential:

- Cardiac: MI, arrhythmia, failure, CHF, drug induced

Sepsis Screening: if positive move to Sepsis protocol.

Standby EMT

- **Oxygen** via most appropriate method
- Trendelenburg position

Basic EMT

- Same as above

Advanced EMT

- IV/IO access
- Fluid bolus if SBP < 90 mmHg
 - Repeat PRN to keep SBP > 90 mmHg
 - Max 2 liters
- Secondary Vascular Access

Paramedic

- **Norepinephrine (Levophed)** 2 – 12 mcg/min IV/IO infusion
 - Administer if patient remains hypotensive **after 2 liter bolus**
 - Titrate to sustain SBP > 90 mmHg
- **Dopamine** 3 – 20 mcg/kg/min IV/IO
 - Administer if patient remains hypotensive **after 1 liter bolus**
 - Titrate to sustain SBP > 90 mmHg

Medical Consult

- **Methylprednisolone** 125 mg IV/IO for acute adrenal insufficiency
- Consult for pressors if unknown hypotension/shock state

Critical Points:

- Hypotension may be defined as a systolic blood pressure < 90 mmHg; however, SBP must be interpreted in context of s/s and the patients typical BP if known. Shock may be present with a normal blood pressure initially, particularly in late pregnancy.
- Consider Sepsis Screening early if type of shock is unknown.
- Consider all possible causes of shock and treat per the most appropriate protocol. If a specific cause cannot be identified treat under this protocol (Hypotension/Shock Non-Traumatic).
- Types of shock:
 - **Hypovolemic:** hemorrhage, trauma, GI bleeding, ruptured aortic aneurysm or pregnancy related bleeding. **Hypovolemic shock should NOT receive vasopressors.**
 - **Cardiogenic:** heart failure due to MI, cardiomyopathy, myocardial contusion, ruptured ventricles/septum/valve, toxins.
 - **Distributive:** sepsis, anaphylactic, neurogenic, toxins
 - **Obstructive:** pericardial tamponade, PE, tension pneumothorax. Signs may include hypotension with distended neck veins, narrowing pulse pressures, tachycardia, unilateral decreased breath sounds or muffled heart tones.
 - **Acute adrenal insufficiency:** The body cannot produce enough steroids (glucocorticoids/mineralocorticoids). May be due to primary adrenal disease (Addison's disease) or more commonly due to having abruptly stopped taking a steroid. This can be treated with methylprednisolone 125 mg IV/IO with Medical Control approval.
- Fluid bolus should be more conservative and observed carefully in patients with history of CHF, Pulmonary Edema, or End Stage Renal Failure. Consult medical control for any concerns.
- **Norepinephrine is an alpha 1 agonist that causes peripheral vasoconstriction. It is preferred over dopamine. Always administer 2 liters of fluid prior infusion.**

Sepsis/SIRS Screening:		
Temperature:	< 96.8°F or > 100.4°F	1 point
Heart Rate:	> 90 beats per minute	1 point
Respiratory Rate:	> 20 breaths per minute	1 point
EtCO2:	< 25 mmHg	1 point
Score > 2 = SEPSIS ALERT		



Chest Pain ACS/AMI

Signs and Symptoms:

- Chest discomfort
- Pain or pressure naval to jaw
- Left arm/jaw/shoulder/upper back/neck pain
- Rate/rhythm disturbances including palpitations
- Epigastric discomfort
- Discomfort suggestive of ACS/AMI with associated symptoms: Dyspnea, Nausea, Diaphoresis, Weakness

History:

- Medical etiology
- Acute Myocardial Infarction (AMI)
- Acute Coronary Syndrome (ACS)
- Recent exertion
- Erectile Dysfunction Medications
- Angina or angina equivalents
- Age > 35 with upper abdominal pain
- Family history

Differential:

- Aortic dissection
- Angina vs. AMI
- Pericarditis
- Acute stress cardiomyopathy
- Pulmonary embolism
- Peptic ulcer disease
- GI Reflux
- Esophageal spasm
- Acute cholecystitis
- Anxiety/Panic attack

Standby EMT

- **Oxygen** via most appropriate method
- **ASA 324 mg PO** regardless of prior ASA use
- **Zofran 4 mg PO**

Basic EMT

- Same as above

Advanced EMT

- IV/IO access
 - Consider secondary access
- **Zofran 4 – 8 mg IV/IO**

Paramedic

- Right sided AMI administer fluid bolus
- **NTG 0.4 mg SL**
 - Repeat x 2 q 5 min prior to IV if BP > 100 mmHg
 - Once IV established, NTG can be administered q 5 min if BP >100 mmHg
- **Promethazine 12.5 mg IV/IO/Drip**
- Pain management

Medical Consult

- STEMI/Cardiac Alert should be given to receiving facility as soon as possible if a STEMI is present
 - 12-lead should be transmitted for consult or notification

Critical Points:

- Rapid 3-lead and 12-lead is indicated in chest pain and suspected cardiac symptoms/etiology; target is < 5 minutes after pt contact.
- The objective in STEMI/AMI care is rapid identification, notification and transport to a percutaneous coronary intervention (PCI) center.
- Common STEMI imposters include: LBBB, Pericarditis, Benign early repolarization, LV Hypertrophy, Brugada Pattern.
- NTG should be used with caution in right-sided AMI.
- If right-sided AMI is suspected, IV should be established prior to NTG administration.
- **Avoid NTG in any form, for patients that have taken Viagra (sildenafil) or Levitra (vardenafil) or Cialis (tadalafil) within the past 24 hours. Fatal hypotension has been reported when nitroglycerine or other nitrates have been given to patients on phosphodiesterase inhibitors. These (Levitra, Viagra, Cialis) may be prescribed to males or females for medical conditions such as pulmonary hypertension.**
- Atropine should be used with caution in the event of an acute coronary syndrome (ACS) and should be avoided unless systolic BP is < 90 mmHg and/or heart rate is < 40 bpm.



Hypothermia Induced Arrest

Signs and Symptoms:

- Core temperature < 96° F
- Pulseless
- Apnea or agonal respirations
- Environmental evidence of hypothermia
- ECG Findings: Any pulseless rhythm

History:

- Medical etiology
- Immersion or exposure to cold temperatures
- Drug abuse: alcohol, barbiturates

Differential:

- Cardiac Arrest
- Hypoglycemia
- CNS dysfunction: stroke, head injury, Alzheimer's, dementia

Standby EMT

- CPR
 - BVM ventilation with 100% O₂
- Warm Patient
 - Remove wet clothing
 - Heat packs to axillary region and groin
- AED application
- Supraglottic Airway Device

Basic EMT

- Attach Mechanical CPR device if available

Advanced EMT

- Intubation
- IV/IO access
- Fluid bolus
 - Use warm fluid

Paramedic

- If V-Fib
 - Defibrillate at 200 J – Do not repeat if temperature is below 85° F
- Refer to appropriate protocol for rhythm treatment and anti-arrhythmic

Critical Points:

- Any changes in patient condition, refer to appropriate protocol.
- Do not repeat defibrillation and do not medicate if temperature is below 85 degrees F.



Narrow Complex Tachycardia-Stable

Signs and Symptoms:

- SBP > 90 mmHg without AMS
- Stable Symptomatic presentation: may include rate related dizziness, chest pain, palpitations, diaphoresis
- ECG Findings: Narrow Complex SVT (rate >150 and QRS < 0.12 seconds)

History:

- History of SVT / use of adenosine
- History of A-Fib or A-Flutter or WPW

Differential:

- Myocardial Infarction
- Hypovolemia
- Pulmonary Embolism
- CHF
- Hyperthyroid
- Overdose
- Excessive stimulants including caffeine and “pre-workout” supplements

Standby EMT

- **Oxygen** via most appropriate method

Basic EMT

- Same as above

Advanced EMT

- IV/IO access
- Fluid bolus

Paramedic

- Valsalva maneuver by patient
- **Adenosine** 6 or 12 mg RAPID IV/IO
 - If no conversion, give 12 mg RAPID IV/IO
 - Max total dose 30 mg
- **Diltiazem** 0.2 mg/kg max dose 20 mg IV
 - If no conversion after 5 minutes, 0.3 mg/kg max dose 30 mg
 - If conversion occurs, administer infusion at 5 mg/hr
- **Amiodarone** 150 mg IV/IO over 10 min
 - Mix 150 mg in 100 ml D5W – administer 10 gtt set @ 100 drops/min



Narrow Complex Tachycardia-Stable

Critical Points:

- Any changes in patient condition, refer to the appropriate protocol.
- It is paramount to identify if the patient is stable or unstable. Any unstable presentation (hypotension, AMS, hypoxia) with signs of shock/poor perfusion should be identified and treated under the Narrow Complex Tachycardia- Unstable protocol.
- Search for underlying causes of tachycardia such as fever, sepsis, dyspnea, etc.
- If history or evidence of Wolf Parkinson White (WPW) is present, DO NOT administer a Calcium Channel Blocker (e.g. Diltiazem). Treat with Amiodarone or synchronized cardioversion.
- **12-lead should be obtained in ALL patients who meet requirements for this protocol prior to chemical cardioversion.**
- Vagal maneuvers and Adenosine are preferred methods of treatment for SVT.
- Adenosine should be pushed rapidly from a proximal IV site (AC) followed by rapid 10 ml NS flush.
- Diltiazem is the preferred medication for irregular stable tachycardia (e.g. a-fib). Lower doses may be indicated for elderly or known sensitivity.
- Discontinue Diltiazem if SBP < 90 mmHg refractory to fluid bolus, consider medical control.



Narrow Complex Tachycardia-Unstable

Signs and Symptoms:

- Signs of shock or poor perfusion: AMS, SBP < 90 mmHg
- Rate related chest pain, dyspnea, lethargy, dizziness, palpitations, SOB, diaphoresis, syncope
- Pulmonary Edema
- ECG Findings: Narrow Complex SVT (rate >150 and QRS <0.12 seconds)

History:

- History of SVT/use of adenosine
- History of A-Fib or A-Flutter or WPW

Differential:

- Myocardial Infarction
- Hypovolemia
- Pulmonary Embolism
- CHF
- Hyperthyroidism
- Overdose
- Excessive stimulants including caffeine and “pre-workout” supplements

Standby EMT

- **Oxygen** via most appropriate method

Basic EMT

- Same as above

Advanced EMT

- IV/IO access
- Fluid bolus if SBP < 90 mmHg
 - Repeat PRN to keep SBP > 90 mmHg
 - Max 2 liters

Paramedic

- Synchronized Cardioversion increasing with each subsequent shock
 - 120 J biphasic
 - 150 J biphasic
 - 200 J biphasic
- Consider sedation if patient condition allows
 - **Midazolam** 2 – 5 mg IV/IM/IO/IN
 - Repeat once after 10 minutes if needed
 - OR**
 - **Ketamine** 1 – 2 mg/kg IV/IO or 4 mg/kg IM
 - Repeat once after 10 minutes if needed
 - OR**
 - **Lorazepam** 1 – 2 mg IV/IO/IM
 - Repeat once after 10 minutes if needed
- Refer to Narrow Complex Tachycardia – Stable if refractory to cardioversion



Narrow Complex Tachycardia-Unstable

Critical Points:

- Any changes in patient condition, refer to the appropriate protocol.
- It is paramount to identify if the patient is stable or unstable. Any unstable presentation (hypotension, AMS, hypoxia) with signs of shock/poor perfusion should be identified and treated early.
- Unstable patients should receive synchronized cardioversion early in treatment to prevent further deterioration.
- Search for underlying causes of tachycardia such as fever, sepsis, dyspnea, stimulants, etc.
- If history or presentation of Wolf Parkinson White (WPW) is present, DO NOT administer a Calcium Channel Blocker (e.g. Diltiazem). Treat with Amiodarone or synchronized cardioversion.
- **If patient condition allows, a 12-lead should be obtained in patients who meet requirements for this protocol prior to cardioversion. This should not delay critical treatments such as cardioversion.**
- Vagal maneuvers and Adenosine are preferred methods of treatment for stable SVT.
- Adenosine should be pushed rapidly from a proximal IV site (AC) followed by rapid 10 ml NS flush.
- Diltiazem is the preferred medication for irregular stable tachycardia (e.g. a-fib). Lower doses may be indicated for elderly or known sensitivity.
- Discontinue Diltiazem if SBP < 90 mmHg refractory to fluid bolus, consider medical control.



Post Resuscitation Management

Signs and Symptoms:

- Patient with ROSC- return of spontaneous circulation (palpable carotid/radial pulse) AFTER being treated for any non-perfusing rhythm
- ECG Findings: Any perfusing rhythm

History:

- Cardiac arrest
- Respiratory arrest

Differentials:

- If cause is unknown, continue with cardiac arrest differentials
- Hs - Hypoglycemia, Hydrogen ions (acidosis), Hyper/Hypokalemia, Hyper/Hypothermia, Hypovolemia, Hypoxia
- Ts - Tamponade, Toxins (overdose), Tension pneumothorax, Thrombosis, Trauma

Standby EMT

- **Oxygen** via most appropriate method

Basic EMT

- Same as above

Advanced EMT

- IV/IO access
- Fluid bolus

Paramedic

- **Amiodarone** infusion 1 mg/min IV/IO
 - Mix 100 mg in 100 ml D5W – administer 60 gtt set @ 60 drops/min
 - Utilize if patient previously received **Amiodarone** for ventricular rhythms
 - **Lidocaine** 1 mg/kg IV/IO
 - If patient did **not** previously receive anti-arrhythmic and converted from a ventricular rhythm WITHOUT bradycardia
 - **Lidocaine** infusion 2 – 4 mg/min IV/IO
 - If patient received **Lidocaine** prior to Return of Spontaneous Circulation (ROSC)
 - **Norepinephrine (Levophed)** 2 – 12 mcg/min IV/IO infusion
 - Administer if patient remains hypotensive **after 2 liter bolus**
 - Titrate to SBP > 90 mmHg if patient remains hypotensive 5 minutes after fluid bolus
 - **Dopamine** infusion 10 – 20 mcg/kg/min IV/IO
 - Administer if patient remains hypotensive **after 1 liter bolus**
 - Titrate to SBP > 90 mmHg if patient remains hypotensive 5 minutes after fluid bolus
 - Continued Sedation for intubated patient
 - **Midazolam** 2 – 5 mg IV/IM/IO/IN
 - Repeat as needed
- OR**



Post Resuscitation Management

- **Ketamine** 1 – 2 mg/kg IV/IO or 4 mg/kg IM
 - Repeat once after 10 minutes if needed
- OR
- **Lorazepam** 1 – 2 mg IV/IO/IM
 - Repeat once after 10 minutes if needed
- Pain management as indicated for a conscious or intubated patient

Medical Consult

- Consult for additional medications, dosages or guidance as needed post ROSC

Critical Points:

- Any changes in patient condition, refer to appropriate protocol.
- Advanced airways must be continuously monitored for correct placement and positioning using capnography and pulse oximetry.
- Reconfirm airway placement and positioning after every move.
- Ensure adequate fluid resuscitation, obtain second IV/IO if possible.
- Dopamine preferred for suspected overdose (QT prolongation with Norepinephrine), neurogenic shock, and refractive bradycardia.
- Give anti-arrhythmic early to prevent re-arrest.



Ventricular Ectopy

Signs and Symptoms:

- Chest pain with weakness, dizziness, dyspnea, irregular rhythms
- Six or more PVC's per minute
- Multiform PVC's
- Couplets, Triplets
- Evidence of AML in absence of bradycardia

History:

- Cardiac stents, diabetes, hypertension, chest pain
- CAD, CHF, Cardiomyopathy
- Arrhythmia
- Pacer or implanted defibrillator
- Recent discharge of implanted defibrillator
- Stimulant use or drug use

Differential:

- Hypoxia
- Hypovolemia
- Electrolyte imbalance (K+, Ca-, Na)
- Overdose or substance abuse
- ESRD
- Pulmonary disease

Standby EMT

- **Oxygen** via most appropriate method
 - Administer O2 regardless of SOB if PVC are present

Basic EMT

- Same as above

Advanced EMT

- IV/IO access
- Fluid bolus

Paramedic

- **Amiodarone** 150 mg IV/IO over 10 min
 - Mix 150 mg in 100 ml D5W – administer 10 gtt set @ 100 drops/min
- **Amiodarone** infusion 1 mg/min IV/IO
 - Mix 100 mg in 100 ml D5W – administer 60 gtt set @ 60 drops/min
 - Start infusion if successful conversion with **amiodarone**
 - Do not administer if **Lidocaine** given
- **Lidocaine** 1 mg/kg IV/IO
 - May repeat x 2 q 5 min
 - Should not be administered if **Amiodarone** given
- **Lidocaine** infusion 2 – 4 mg/min IV/IO
 - Start infusion if successful conversion of the rhythm with **lidocaine** bolus
- **Magnesium Sulfate** 2 grams dilute in 10 ml of NS over 2-5 min IV/IO
 - Torsades de Pointes or if rhythm refractory to Lidocaine or Amiodarone

Medical Consult

- Consider consult for refractory rhythms or necessity of treatment.
- Must be contacted before administering a second antiarrhythmic agent.

Critical Points:

- Rhythms that do not fall into a specific Narrow or Wide Complex Tachycardia (Stable/Unstable) may fall under this protocol.
- Any persistent rhythm that falls under a more specific protocol should be treated under the appropriate protocol.
- If patient's pulse is < 50 BPM, treat bradycardia first.
- Ventricular ectopy should be differentiated as stable or unstable.
- Unstable signs/symptoms include hypotension, acute AMS, shock/poor perfusion, chest pain with evidence of ischemia (STEMI, T wave inversion or depressions), acute CHF.
- Treat unstable patients with Wide Complex Unstable protocol.
- Search for underlying causes of ventricular ectopy.
- **Only one anti-arrhythmic** should be administered (Amiodarone or Lidocaine NOT both).
- QT interval should be assessed. Consider magnesium for prolonged QT, requires medical control.



V-Fib and Pulseless V-Tach

Signs and Symptoms:

- Unconscious
- Pulseless
- Apena or agonal respirations
- Ventricular fibrillation or ventricular tachycardia on ECG

History:

- Medications
- Events leading to arrest
- End stage renal disease
- Estimated downtime
- Suspected overdose
- DNR

Differential:

- Hs - Hypoglycemia, Hydrogen ions (acidosis), Hyper/Hypokalemia, Hyper/Hypothermia, Hypovolemia, Hypoxia
- Ts - Tamponade, Toxins (overdose), Tension pneumothorax, Thrombosis, Trauma

Standby EMT

- CPR
 - BVM ventilation with 100% O₂
- AED application
- **Naloxone** 2 mg IM/IN for suspected overdose (Reference Overdose/Poisoning Protocol)
- Supraglottic Airway Device

Basic EMT

- Mechanical CPR device if available

Advanced EMT

- Intubation
- IV/IO access
- Fluid Bolus

Paramedic

- **Defibrillation** 200 J as appropriate
 - If witnessed by responder, immediate defibrillation
 - If not witnessed by responder, provide CPR (2 minutes) prior to defibrillation
 - Repeat with q 5 cycles of CPR as needed
- **Epinephrine 1:10,000** 1 mg IV/IO as soon as possible
 - Repeat q 3 – 5 minutes as needed
- **Amiodarone** 300 mg IV/IO
 - May administer 150 mg IV/IO once after 5 min if VF/Pulseless VT still present
 - Max total dose 450 mg
 - Should not be administered if **Lidocaine** given
- **Lidocaine** 1 mg/kg IV/IO
 - May repeat x 2 q 5 min
 - Should not be administered if **Amiodarone** given
- **Magnesium Sulfate** 2 grams IV/IO
 - If refractory V-fib or V-tach



V-Fib and Pulseless V-Tach

- Polymorphic V-tach also known as Torsades de Pointes
- **Sodium Bicarbonate** 1 mEq/kg IV/IO for known acidosis, TCA overdose
- **Calcium Chloride** 1 gram IV/IO for dialysis patient or known hyperkalemia
- Orogastric or Nasogastric tube placement

Medical Consult

- After 20 minutes of quality chest compressions, consider field termination if patient meets criteria per medical termination procedure

Critical Points:

- High quality chest compression and prompt defibrillation are the keys to successful resuscitation. Efforts should be directed at high quality and continuous compressions with limited interruptions and early defibrillation when indicated.
- Avoid and limit any interruptions of CPR during intubations, drug pushes and rhythm checks.
- Gain early vascular access IO/IV and administer Epi as soon as possible after first defibrillation.
- Defibrillation at 200 j biphasic every 5 cycles of 30:2 compressions or every 2-3 minutes (advanced airway established) if patient remains in V-fib or Pulseless V-Tach.
- Administer **Epinephrine 1:10000** 2 mg ET ONLY if NO IV/IO ACCESS.
- Administer **Lidocaine** 2 mg/kg ET ONLY if NO IV/IO ACCESS.
- Only administer **Magnesium Sulfate** with: Refractory V-fib/Pulseless V-tach or Torsades de Pointes.
- **Sodium Bicarbonate** for known acidosis, Tricyclic Antidepressant (TCA) overdose or hyperkalemia. It is no longer recommended for routine use during cardiac arrest.



Wide Complex Tachycardia-Stable

Signs and Symptoms:

- SBP > 90 mmHg without AMS
- Stable Symptomatic presentation: may include rate related dizziness, chest pain, palpitations, diaphoresis
- ECG Findings: Sustained V-Tach (rate >150 and QRS > 0.12 seconds)

History:

- Past medical history- medications, diet, drugs
- Syncope/Near syncope
- Palpitations
- Pacemaker or defibrillator
- CAD, CHF, Cardiomyopathy

Differential:

- Artifact/Device failure
- Cardiac AMI
- Endocrine/Electrolyte
- Hyperkalemia
- Drugs/Toxic exposure
- Pulmonary disease

Standby EMT

- **Oxygen** via most appropriate method

Basic EMT

- Same as above

Advanced EMT

- IV/IO access
- Fluid bolus

Paramedic

- **Amiodarone** 150 mg IV/IO over 10 min
 - Mix 150 mg in 100 ml D5W – administer 10 gtt set @ 100 drops/min
- **Amiodarone** infusion 1 mg/min IV/IO
 - Mix 100 mg in 100 ml D5W – administer 60 gtt set @ 60 drops/min
 - Start infusion if successful conversion with amiodarone
 - Should not be administered if **Lidocaine** given
- **Lidocaine** 1 mg/kg IV/IO
 - May repeat x 2 q 5 min
 - Should not be administered if **Amiodarone** given
- **Lidocaine** infusion 2 – 4 mg/min IV/IO
 - Start if successful conversion of the rhythm with **lidocaine** bolus
- **Sodium Bicarbonate** 1 mEq/kg IV/IO for known acidosis, TCA overdose
- **Calcium Chloride** 1 gram IV/IO for dialysis patient or known hyperkalemia

Medical Consult

- Consider consult for refractory V-fib or V-tach
- Must be contacted before administering a second antiarrhythmic agent

Critical Points:

- Unstable signs/symptoms include hypotension, acute AMS, shock/poor perfusion, chest pain with evidence of ischemia (STEMI, T wave inversion or depressions), acute CHF.
- Search for underlying causes of ventricular tachycardia such as fever, sepsis, hypoxia, hypovolemia, overdose or failure to take prescribed medication.
- Cardioversion should be considered for any unstable wide or narrow tachycardia.
- Only one antiarrhythmic should be administered (Amiodarone or Lidocaine NOT both).
- QT interval should be assessed. Consider magnesium for prolonged QT, requires medical control.
- If patient has a history or 12-lead reveals Wolfe Parkinson White (WPW), DO NOT administer a Calcium Channel Blocker (e.g. Diltiazem) or Beta Blocker (e.g. Labetalol).
- Patients with renal failure and/or on dialysis have a high probability of hyperkalemia. If hyperkalemia is known or suspected AND peaked t-waves are present with a wide QRS complex, calcium and sodium bicarbonate should be administered.
- Calcium should be administered slowly through a large bore catheter (20 gauge or greater) preferably no more distal than the AC.
- Calcium should always be administered prior to sodium bicarb and flushed well.



Wide Complex Tachycardia-Unstable

Signs and Symptoms:

- Signs of shock or poor perfusion: AMS, SBP < 90 mmHg
- Dyspnea, Lethargy, Dizziness, Pulmonary edema, acute AMS
- ECG Findings: Sustained V-Tach (rate >150 and QRS > 0.12 seconds)

History:

- Cardiac stents, diabetes, hypertension, chest pain
- CAD, CHF, Cardiomyopathy
- Arrhythmia
- Pacer or implanted defibrillator
- Recent discharge of implanted defibrillator
- Medications

Differential:

- Artifact/Device failure
- Cardiac AMI
- Endocrine/Electrolyte imbalance (K⁺, Ca²⁺, Na⁺)
- Drugs/Toxic exposure
- Pulmonary disease
- Hypoxia
- Hypovolemia

Standby EMT

- **Oxygen** via most appropriate method

Basic EMT

- Same as above

Advanced EMT

- IV/IO access
- Fluid bolus if SBP < 90 mmHg
 - Repeat PRN to keep SBP > 90 mmHg
 - Max 2 liters

Paramedic

- **Synchronized Cardioversion**
 - 120 J biphasic
 - 150 J biphasic
 - 200 J biphasic
- Sedation for cardioversion if patient condition allows
 - **Diazepam** 5 – 10 mg IV/IO/IM
 - Repeat once after 5 minutes
 - OR
 - **Midazolam** 2 – 5 mg IV/IM/IO/IN
 - Repeat once after 10 minutes
 - OR
 - **Lorazepam** 1 – 2 mg IV/IO/IM
 - Repeat once after 10 minutes if needed
 - OR
 - **Ketamine** 1 mg/kg IV/IO or 4 mg/kg IM
 - Repeat once after 10 minutes if needed
- Refer to Wide Complex Tachycardia – Stable protocol if refractory to cardioversion



Wide Complex Tachycardia-Unstable

Medical Consult

- Consider consult for refractory rhythms

Critical Points:

- Unstable signs/symptoms include hypotension, acute AMS, shock/poor perfusion, chest pain with evidence of ischemia (STEMI, T wave inversion or depressions), acute CHF.
- Symptomatic signs/symptoms include palpitations, light headedness, dyspnea, and chest pain without evidence of ischemia.
- Search for underlying causes of ventricular tachycardia such as fever, sepsis, hypoxia, hypovolemia, overdose or failure to take prescribed medication.
- Only one antiarrhythmic should be administered (Amiodarone or Lidocaine NOT both).
- QT interval should be assessed. Consider magnesium for prolonged QT, requires medical control.
- If patient has a history or 12-lead reveals Wolfe Parkinson White (WPW), DO NOT administer a Calcium Channel Blocker (e.g. Diltiazem) or Beta Blocker (e.g. Labetalol).



Environmental Assessment

Signs and Symptoms:

- Hyperthermia/Hypothermia
- Altered mental status
- Shivering, N/V, frostbite, dizziness, weakness, abdominal pain, cramps
- Dyspnea
- Evidence of bite, sting or exposure to chemicals
- Sweating or absence of thermal regulation abilities

History:

- Exposure to extreme temperatures
- Envenomation
- Wilderness exposure
- Exposure to hazardous materials
- Recent illness/injury preceding environmental exposure
- Recent exertion or prolonged exposure to environment

Differential:

- Infection/Sepsis
- Altered mental status differentials
- Hypoxia
- Hypovolemia
- Medication or drug interaction/effect

Assessment

- C.A.B.C
- Secondary Assessment
- Vital signs
 - BGL
 - Temperature- obtain core temperature when possible
 - ECG 3-Lead and 12-Lead
 - Right sided 12-lead if indicated
- Lung Sounds
- GCS
- OPQRST
- ASPN
- SAMPLE
- Length of Exposure
- Type of envenomation/bite/sting



Cold Related Emergency

Signs and Symptoms:

- Core temperature < 96 degrees F
- Shivering
- Altered mental status
- Cyanosis
- Extreme pain or sensory abnormalities
- Bradycardia
- Hypotension or shock

History:

- Exposure to cold temperatures
- Conditions of exposure: wetness, wind chill, duration
- Immersion
- Susceptible ages, very young and old
- Drug use: alcohol, barbiturates
- Infections/Sepsis

Differential:

- Sepsis
- Hypothyroidism
- Hypoglycemia
- CNS dysfunction: stroke, head injury, spinal cord injury
- AMS differentials

Standby EMT

- Remove patient from cold environment
- Obtain core temperature when possible without delaying treatment
- **Oxygen** via most appropriate method
- Prevent further heat loss
- Rewarming

Warming methods:

- Remove patient from the cold environment.
- Remove wet or cold clothing as soon as possible.
- Apply heat packs to axillary and groin regions.
- Apply warm blanket/emergency blankets/mylar blanket.
- Increase ambient temperature in ambulance or current environment if possible.

Basic EMT

- Same as above

Advanced EMT

- IV/IO access
- Fluid bolus
 - Warm IV fluids

Paramedic

- Refer to appropriate protocol for airway management, arrhythmia, AMS, hypotension, trauma
- Refer to seizure protocol for persistent shivering or active seizure



Cold Related Emergency

Critical Points:

- Obtain 12 Lead for proper cardiac assessment
- Do not place warm packs directly against the patient's skin.
- Sepsis and hypoglycemia can both cause thermoregulation issues resulting in a decrease in core body temperature.
- Hypothermia categories: Mild 90-95°F, Moderate 82-90°F, Severe < 82°F.
- Many thermometers do not register below 93.2°F.
- Contributing factors to hypothermia: extremes of age, malnutrition, alcohol or other drug use.
- Core temperature is strongly recommended in any patient with suspicions of hypothermia.
- If core temperature cannot be obtained, treat the patient based on suspected temperature and clinical presentation.
- Hypothermia may produce severe bradycardia, recommend taking at least 60 second to palpate a pulse.
- Rewarm frostbite injuries slowly in lukewarm water or with passive re-warming.



Drowning

Signs and Symptoms:

- Submersion **without** cardiopulmonary arrest or hypothermia
- Mental Status Changes
- Dyspnea
- Pulmonary edema
- Foaming/Vomiting

History:

- Submersion in water regardless of depth
- Possible trauma incurred in or around the water
- Duration of submersion/immersion

Differential:

- Trauma
- Pre-existing medical problem or disability
- Hypoglycemia
- Pressure injury (SCUBA diving or deep-water exercises)

Standby EMT

- Remove patient from water if equipped and safe
- **Oxygen** via most appropriate method as soon as possible
- External warming, if indicated
- Supraglottic airway device

IF pulseless and apneic initiate CPR and refer to appropriate protocol

Basic EMT

- CPAP 3 – 10 cm H₂O
- PEEP 5 – 10 cm H₂O

Advanced EMT

- Intubate
- IV/IO access
- Tracheal suctioning via ETT

Paramedic

- Consider DSI/RSI

Critical Points:

- **Drowning is a leading cause of death among rescuers. DO NOT ATTEMPT to rescue victims without appropriate equipment and training.**
- Drowning is typically a hypoxia injury. Efforts should be directed toward quick oxygenation through adequate ventilation and airway management.
- Foam is usually present in airway and may be copious. DO NOT waste time attempting to suction. Ventilate with BVM through foam (suction water and vomit only when present).
- Encourage transport of all patients regardless of symptoms due to potential worsening over the next 6 hours.
- SMR is usually unnecessary. When indicated it should not interrupt ventilation, oxygenation, and/or CPR.



Envenomation: Animal/Insect/Snake

Signs and Symptoms:

- Rash, skin break, wound
- Pain, swelling, redness, bruising
- Evidence of infection
- Allergic reaction, hives, itching, burning, stinging
- Without hypotension

History:

- Type of bite/sting
- Description or photo with patient for identification of animal/insect involved
- Time, location, size if bite/sting
- Previous reaction if applicable
- Domestic vs. wild
- Tetanus and rabies risk

Differential:

- Animal bite
- Human bite
- Insect sting or spider bite (venomous)
- Snake bite (venomous)
- Rabies and tetanus risk
- Infection

Standby EMT

- Avoid provider exposure to threat/animal/insect/reptile
- Remove patient from potential threat/animal/insect exposure
- Identify animal/insect/spider if possible, without additional exposure.
- Insect or Spider
 - Remove stinger if appropriate
 - Immobilize injury and apply ice pack
 - Remove constricting items/clothing
 - Apply ice pack for swelling and comfort/pain management
- Snake
 - Splint limb, bandage and place at level of heart (neither dependent nor elevated if possible)
 - Minimize movement
 - Mark margin of swelling/redness and note time
 - DO NOT apply ice pack, tourniquet, or attempt to remove venom
- Animal/Mammal
 - Splint limb, bandage and place at level below heart
 - Remove constricting items
- **Oxygen** via most appropriate method

If any signs of dyspnea, airway swelling, wheezing, or stridor refer to allergic reaction protocol

Basic EMT

- Same as above

Advanced EMT

- IV/IO access
- Pain management

Paramedic

- **Midazolam** 2 – 5 mg IV/IO/IM/IN for uncontrollable muscle spasms
 - May repeat q 3 – 5 minutes PRN



Envenomation: Animal/Insect/Snake

- Max total dose of 5 mg

Critical Points:

- Do not delay patient care or transport to identify or capture an animal/insect/spider. Do not bring a live animal to the ER.
- Do not apply ice, cold pack, tourniquet or constricting band for snake bites or animal/mammal bites (included human bites).
- Muscle spasms should be differentiated from seizures. Any seizure should be treated under the seizure protocol.
- Refer to Allergic reaction protocol for severe allergic reactions
- Most animal/mammal bites have a very high risk of infection and potential for Rabies exposure and should be seen urgently by a physician.
- Most cat bites become infected due to specific bacteria (*Pasteurella multocida*).
- Venomous snakebites in this area are typically that of the pit viper family-copperhead, rattlesnakes, water moccasin. *Antivenin* (RX) is available for these bites. Rarely is an exotic snakebite victim encountered.
- Coral snake bites are rare, usually not life threatening. Snake ID: "Red on yellow - kill a fellow; red on black - venom lack". No antidote (*Antivenin Rx*) available for these bites. Medical support only.
- Animal control/police should be notified of mammal bites.
- **Do not transport live animals.** Animal control must collect any animal brought to the hospital.



Heat Related Emergency

Signs and Symptoms:

- Hyperthermia
- Altered mental status
- Syncopal episode, dizziness, weakness, N/V, tachycardia,
- Sweating or absence of thermal regulation abilities
- Cramping
- Fatigue or exhaustion
- Seizures

History:

- Exposure to increased temperatures and/or high humidity
- Recent exertion or prolonged exposure to environment
- Conditions of exposure: duration, hydration status
- Susceptible ages, very young and very old
- Medication or Drug use/interactions: alcohol, thyroid
- Recent illness or injury

Differential:

- Infection/Sepsis
- Altered mental status differentials
- Medication or drug interactions
- Heat Cramps
- Heat Exhaustion
- Heat Stroke
- Hypoglycemia/Hyperglycemia
- Thyroid storm

Standby EMT

- Remove patient from warm/hot environment
- Obtain core temperature when possible without delaying treatment
- **Oxygen** via most appropriate method
- Prevent further heat exposure
- External cooling

Cooling methods:

- Remove patient from warm/hot environment.
- Remove as much clothing as possible.
- Apply cool packs to axillary and groin regions.
- Apply water-soaked towels/sheets removing and re-soaking once warm (5 – 10 minutes).
- Decrease ambient temperature in ambulance

Basic EMT

- Same as above

Advanced EMT

- IV/IO access
- Fluid bolus - room temperature fluid (NOT WARM/CHILLED IV fluids)

Paramedic

- Refer to appropriate protocol for airway management, arrhythmia, AMS, hypotension, trauma
- Refer to seizure protocol for persistent shivering while cooling or active seizure
- If Heat Stroke is suspected, rapid cooling via Cold Water Immersion (CWI) may take precedence over transporting if appropriate resources are available (Ice bath, equipment and adequate personnel) as early cooling decreases morbidity and mortality.
 - Delayed transport for cooling is at the discretion of the In-Charge Paramedic after all other life-threatening conditions have been assessed and addressed.
 - Devices which allow for rapid cooling while transporting the patient are encouraged (Polar Life Pod)



Heat Related Emergency

Medical Consult

- Consult for delayed scene time to cool patient off if unsure of proper treatment

Critical Points:

Heat Cramps: presents as benign muscle cramping secondary to dehydration and low electrolytes, usually not hyperthermic.

- Remove patient from warm/hot environment to cool environment.
- Encourage PO fluids including clear electrolyte drinks (Gatorade, Powerade).
- Monitor and reassess.

Heat Exhaustion: dehydration, salt depletion, dizziness, elevated body temperature/hyperthermia, fatigue, mental status changes, headache, cramping, tachycardia, hypotension and n/v.

- Above therapies if applicable.
- Remove patient's clothing to allow for more effective cooling.
- Apply cold packs to axillary and groin area.
- Apply wet, cool towels to body and extremities. Replace wet, cool towels frequently to prevent heat retention when towels lose coolness. Avoid very cold towels that cause skin vasoconstriction.

Heat Stroke: temperature $>104^{\circ}\text{F}$ due to extreme exertion and/or environmental exposure and/or presence of CNS dysfunction. Presents with altered mental status, seizure activity, lack of sweating.

- Above therapies if applicable. **Do not give PO fluids if unable to protect airway.**
- Rapid and aggressive cooling to include submersion in ice water if available. Stirring ice water aids in rapid cooling. Core temperature should continuously be monitored.
- Decrease core temperature below 104°F as soon as possible with a target temperature of 102.5°F after 30 minutes.
- Airway management is a priority in heat stroke patients.
- Tylenol is not effective for patients with environmental heat stroke and should not be administered.



Medical Assessment

Signs and Symptoms:

- Medical etiology
- Non-traumatic hemorrhage
- Altered mental status
- Fever
- Headache
- Dyspnea
- Itching, redness/rash, hives
- Polyuria, polydipsia, polyphagia
- Sweating/Diaphoresis
- Syncope

History:

- Recent events
- Past pertinent medical history
- Last oral intake
- Last gastrointestinal movement
- Last menstrual cycle (if appropriate)
- Recent change in medications

Differential:

- Trauma vs Medical
- Cardiac
- Altered mental status differentials
- Overdose
- Allergic reaction/Anaphylaxis
- Stroke/Large vessel occlusion

Assessment

- Circulation, Airway, Breathing, C-Spine (C.A.B.C.)
- Secondary assessment
- Vital: SpO2, blood pressure, ECG, pulse, respirations, lung sounds, BGL, temperature, EtCO2
- Glasgow Coma Scale (GCS)
- Responsiveness and orientation
- Onset, Provocation, Quality, Radiation, Severity, Time (O.P.Q.R.S.T.)
- Associated Symptoms and Pertinent Negatives (ASPN)
- S.A.M.P.L.E.
- Electrocardiogram (ECG) 3-Lead
- ECG 12-Lead if appropriate
 - ECG 12-Lead Right sided if appropriate



Abdominal Pain/Vomiting

Signs and Symptoms:

- Abdominal pain: constant, intermittent, sharp, dull, cramping, radiation, etc.
- Rebound tenderness, increased pain on palpitation, increased pain on movement (Peritonitis)
- Distention/bloating
- Constipation, diarrhea
- Nausea, vomiting
- Flank pain radiating anteriorly
- Associated symptoms: fever, headache, weakness, malaise, myalgias, cough, dysuria

History:

- Medical Etiology
- Surgical history
- Time of last meal
- Last bowel movement/emesis
- Improvement or worsening with BM or emesis
- Duration, changing location
- Family/Friends/Cohabitors with similar symptoms
- Menstrual history
- Travel history
- Blood emesis/diarrhea
- GERD/Acid reflux
- Recent trauma

Differential:

- AAA or aortic dissection
- Cardiac, MI
- CNS: increased pressure, headache, stroke, CNS lesions, trauma or hemorrhage)
- DKA or HHS
- Cholecystitis
- OB-Gyn disorder: menstruation, pregnancy, ovarian cyst, PID, ectopic pregnancy
- Infection
- Appendicitis
- Diverticulitis
- Mesenteric Ischemia
- Renal disorder/kidney stone

Standby EMT

- **Oxygen** via most appropriate method
- **Zofran** 4 mg ODT
- **Strict NPO** except for medication administration

Basic EMT

- Same as above

Advanced EMT

- IV/IO access
- Fluid Bolus
- **Zofran** 4 – 8 mg ODT/IM/IV/IO
 - If 4 mg initially administered, an additional 4 mg can be given after 10 minutes
 - Once an IV is established, successive doses should be given IVP
 - Max dose of 8 mg from all routes of administration

Paramedic

- **Promethazine** 12.5 mg Slow IV Push/Drip
- Pain Management

Medical Consult

- Additional Pain Management

Critical Points:

- **Assume women of reproductive age who present with abdominal pain are pregnant until proven otherwise.** The patient may not be aware of pregnancy or could be possible ectopic pregnancy, a life threatening condition. Move to OB Abdominal Pain protocol.
- Bright red blood suggests a lower GI source, while dark red or black (“tarry”) stools suggest upper GI bleeding. Ask about aspirin and NSAID use in patients with GI bleeding.
- Foodborne illness is common. Ask patient about possible food exposures.
- Abdominal pain secondary to trauma is managed with the Multi-System Trauma Protocol. Ask about possible abdominal trauma in previous 48 hours.
- Consider cardiac etiology in patients with upper abdominal complaints, especially if female, age >50, and/or diabetic. Obtain an ECG for upper abdominal complaints.



Aggressive/Violent Behavior

Signs and Symptoms:

- Anxiety, agitation, confusion, anger, fear, aggression
- Affect change, hallucinations
- Delusional thoughts, bizarre behavior
- Combative or violent
- Expression of suicidal/homicidal thoughts
- Hyperthermia
- Insensitivity to pain

History:

- Situational crisis
- Psychiatric illness/medications
- Self-injury or threat to others
- Substance abuse/overdose
- Diabetes/medical
- Known violence
- Rage

Differential:

- Altered mental status differentials
- Alcohol intoxication
- Toxin/Substance abuse
- Excited Delirium
- Medication effect/overdose
- Withdrawal syndromes
- Trauma/head injury or intracranial hemorrhage
- Hypoxia
- Depression/Anxiety disorder
- Bipolar (manic-depressive)
- Schizophrenia/Psychosis

Standby EMT

- Always ensure provider safety, request and stage for law enforcement if indicated
- Remove patient from stimulating or stressful environment if possible
- Utilize verbal de-escalation techniques to reassure/calm the patient
- **Oxygen** via most appropriate method
- SMR if indicated
- Consider restraint procedure

Basic EMT

- Same as above

Advanced EMT

- IV/IO access

Paramedic

- Temperature and glucose assessment required for any sedation under this protocol
- Chemical sedation if all other means to calm patient are ineffective
 - **Diazepam** 4 – 10 mg IV/IM
 - Repeat once after 10 minutes PRN
 - OR
 - **Midazolam** 2 – 5 mg IV/IM/IO/IN
 - Repeat once after 10 minutes if needed
 - OR
 - **Lorazepam** 1 – 2 mg IV/IO/IM
 - Repeat once after 10 minutes if needed
 - OR



Aggressive/Violent Behavior

- **Ketamine** 1 – 2 mg/kg IV/IO **OR** 4 mg/kg IM
 - Repeat once after 10 minutes if needed
- Continuous ECG, BP, SpO₂, and EtCO₂ after sedation

Medical Consult

- Additional medication for sedation/chemical restraint

Critical Points:

- Provider safety is paramount when dealing with aggressive and violent individuals. Stage for law enforcement when possible and request additional resources as needed.
- Providers should leave and request additional resources for any scene or patient that becomes unstable, violent or combative and places a provider at risk.
- Non-traumatic intracranial hemorrhage may present as agitation/AMS.
- **ECG, BP, SpO₂, and EtCO₂ should be monitored q 5 minutes after sedation.**
- **Acquire BGL and Temperature on any aggressive/violent, sedated and/or restrained patients.**
- **Patients in custody and/or handcuffed by law enforcement must have an officer accompany the patient in the ambulance during transport to the ED.**
- Monitor circulation in distal extremities following physical restraint application.
- Benzodiazepine administration in the presence of other respiratory depressants, such as alcohol, may lead to respiratory compromise.
- **ALS personnel must continuously monitor patients who receive physical restraints.**
- Excited Delirium Syndrome is a medical emergency that is potentially life-threatening and associated with use of physical control measures, including physical restraints and tasers.



Allergic Reaction/Anaphylaxis

Signs and Symptoms:

- Rash/redness, urticarial (hives), dermal itching
- Dyspnea, wheezing, stridor
- Difficulty swallowing
- Chest or throat constriction
- Hypotension/shock
- AMS

History:

- Previous history
- Exposure to allergen
- Onset and location
- Recent medication
- Food allergy/exposure/insect sting/envenomation

Differential:

- Isolated rash
- Hypotension/Shock due to other causes
- Angioedema (drug induced)
- Aspiration/Airway obstruction
- CHF, Asthma or COPD
- Anxiety/Emotional distress

Standby EMT

- **Oxygen** via the most appropriate method
- **Diphenhydramine** 25 mg PO
- **DuoNeb** (Albuterol 3 mg / Atrovent 0.5 mg) via Nebulizer
 - Repeat x 2 q 10 minutes
- **Epinephrine 1:1,000** 0.3 mg IM
 - Repeat x 2 q 5 minutes if indicated

Basic EMT

- Same as above

Advanced EMT

- IV/IO access
- Fluid Bolus
- **Diphenhydramine** 25 – 50 mg IV/IO
 - max 50 mg total combined dose via PO or IV/IO route

Paramedic

- **Epinephrine 1:1,000** 0.3 mg IM
 - Repeat PRN q 5 minutes
- **Methylprednisolone** 125 mg IV/IO
- **Epinephrine 1:10,000** 1 mg IV/IO if patient shows signs of vascular collapse
- Consider DSI/RSI

Medical Consult

- Additional **Epinephrine 1:10,000** 0.5 – 1 mg IV/IO



Allergic Reaction/Anaphylaxis

Critical Points:

- **Mild reaction**- flushing, hives, erythema. These reactions typically require only Benadryl.
- **Moderate reaction**- may present with dermal reaction and/or wheezing, chest tightness, dyspnea. These reactions typically require DuoNeb and Benadryl.
- **Severe/Anaphylaxis reaction**- 2 or more affected body systems showing a systemic effect. Hypotension is normally present during anaphylaxis but is not required. Epinephrine 1:1,000 IM should be administered for any patient with 2 or more affected body systems (dermal, respiratory, cardiovascular, GI, etc.).
- Anaphylaxis is an acute and potentially lethal multisystem allergic reaction.
- Intramuscular Epinephrine 1:1,000 is the most effective treatment for Anaphylaxis. Cardiac Epinephrine 1: 10,000 should only be administered to prevent pending arrest refractory to Epi 1:1,000 IM administration.
- Patients who receive epinephrine should receive ALS consult. Transportation is strongly encouraged.



Altered Mental Status/Unconscious

Signs and Symptoms:

- Unresponsive or disoriented WITHOUT a clear mechanism
- Decreased mental status or lethargy
- Bizarre behavior
- Hypoglycemia (cool, diaphoretic skin)
- Hyperglycemia (warm, dry skin; Kussmaul Respirations, signs of dehydration)
- Irritability

History:

- Recent events
- Past medical history
- Drug or paraphernalia
- Report of illicit drug use or toxic ingestion
- Medications
- History of trauma
- Change in condition or medications

Differential:

- Head trauma
- CNS (Stroke/Large vessel occlusion, tumor, seizure, infection)
- Cardiac (MI, CHF)
- Thyroid (hyper/hypo)
- Shock (septic, metabolic, distributive, obstructive)
- Diabetes (hyper/hypo)
- Toxicological or overdose
- Pulmonary (hypoxia, PE, pneumonia)
- Environmental
- Electrolyte abnormality
- Psychiatric disorder

Standby EMT

- Always ensure safety of the providers, request and stage for law enforcement if indicated
- **Oxygen** via most appropriate method
- SMR if indicated
- Consider restraint procedure
- **Naloxone** 2 mg IN/IM for respiratory depression if opiate use is suspected or cannot be excluded
 - Repeat q 10 minutes PRN

Basic EMT

- Same as above

Advanced EMT

- Intubate
- IV/IO access
- **Naloxone** 2 mg IV/IO
 - Repeat q 5 minutes PRN

Paramedic

- Consider DSI/RSI

Medical Consult

- Consider early notification for trauma/medical alert



Altered Mental Status/Unconscious

Critical Points:

- Provider safety is paramount when dealing with altered or unpredictable individuals. Stage for law enforcement when possible and request additional resources as needed.
- Providers should leave and request additional resources for any scene or patient that becomes unstable, violent or combative and places a provider at risk.
- If toxicological or Haz-mat exposure is suspected, fire/Hazmat Team should be notified and providers should avoid exposure and take all personal protection precautions.
- Assess BGL, temperature and EtCO2 in AMS/Unconscious patients.
- Thorough assessment of an altered or unconscious patient includes scene and circumstances surrounding the incident to better assess potential causes, exposure and living conditions.
- Providers should focus on identifying the cause of the AMS, then utilize the appropriate protocol for treatment based on assessment findings.
- **DO NOT assume the primary cause of AMS/Unconsciousness is solely due to ETOH or drug use. Thorough assessments should be performed to account for possible trauma, hypoglycemia and other causes or comorbidities.**
- **Suspected opiate overdoses with respiratory depression are treated with airway management (e.g. BVM with adjunct) as soon as possible followed by Naloxone.**
- Intranasal and intramuscular Naloxone may take up to 10 minutes before an effect is observed (improved mental status or increased respiratory drive).



Anxiety/Emotional Distress

Signs and Symptoms:

- Anxiety, agitation
- Hyperventilation
- Carpopedal spasms
- Tingling around mouth and hands

History:

- Situational crisis
- History of recent traumatic event
- Post-traumatic stress disorder (PTSD)

Differential:

- Altered mental status differentials
- Anxiety disorders
- Alcohol intoxication
- Mental disorder/Psychosis

Standby EMT

- Remove patient from stimulation or stressful environment if possible
 - If hyperventilation is secondary to trauma, pain, hypoxia, etc., move to appropriate protocol
- Utilize verbal de-escalation techniques to reassure/calm the patient
- Provide coached breathing instructions to help decrease ventilations
- Psychological support
- **Oxygen** via most appropriate method

Basic EMT

- Same as above

Advanced EMT

- IV/IO access

Paramedic

- Chemical sedation if all other means to calm patient are ineffective
 - **Diazepam** 4 – 10 mg IV/IM
 - Repeat once after 10 minutes PRN
 - OR
 - **Midazolam** 2 – 5 mg IV/IM/IO/IN
 - Repeat once after 10 minutes if needed
 - OR
 - **Lorazepam** 1 – 2 mg IV/IO/IM
 - Repeat once after 10 minutes if needed
 - OR
 - **Ketamine** 1 – 2 mg/kg IV/IO or 4 mg/kg IM
 - Repeat once after 10 minutes if needed

Medical Consult

- Additional medication for sedation



Anxiety/Emotional Distress

Critical Points:

- Calm the patient and assist with self-coping measures to improve patient outcome and anxiety.
- Hyperventilation can lead to increased anxiety and discomfort due to numbness/tingling/cramping (carpopedal spasms) in extremities and jaw.
- Anxiolytics/Sedation is a last resort if calming the patient and verbal de-escalation techniques are not effective.
- Anxiolytics/Sedation may be indicated for individuals with comorbidities such as asthma or who are not able to effectively participate in an assessment due to anxiety/emotional distress.
- **ECG, BP, SpO2, and EtCO2 should be monitored q 5 minutes after sedation.**
- Benzodiazepine administration in the presence of other respiratory depressants, such as alcohol, may lead to respiratory compromise.
- **ALS personnel must continuously monitor patients who receive physical restraints.**



Bleeding Non-traumatic

Signs and Symptoms:

- Hypovolemia secondary to blood loss due to medical etiology
- Massive epistaxis
- Massive hemoptysis
- Bloody or “coffee grounds” emesis
- Bloody stools or rectal bleeding
- Extensive bruising

History:

- Cancer history
- Anticoagulant use
- Low platelets/platelet disorder
- Hemophilias/clotting disorders
- Abdominal pain, vomiting

Differential:

- Pulmonary hemorrhage
- Esophageal tear
- Peptic Ulcer Disease
- Diverticulitis
- Other GI hemorrhage
- Alcoholism/cirrhosis
- AV fistula hemorrhage
- AAA rupture

Standby EMT

- **Oxygen** via most appropriate method
- Consider Trendelenburg

Basic EMT

- Same as above

Advanced EMT

- IV/IO access
- Fluid bolus if SBP < 90 mmHg
 - Repeat PRN to keep SBP > 90 mmHg
 - Max 2 liters
- Secondary Vascular Access

Paramedic

- Pain Management

Medical Consult

- Consult for TXA for continued uncontrolled hemorrhage
- Consider Air Medical Provider for blood products

Critical Points:

- Non-traumatic hemorrhage may present at any age, even in infancy.
- Ask about recent aspirin and NSAID use.
- Calculate MAP = (SBP + [2 x DBP]) ÷ 3
- Location, timing and duration of abdominal pain can be helpful in diagnosing cause of GI bleeding.
- Peptic ulcers and intestinal AV malformations may not be painful prior to bleeding.
- Consider lung cancer in pulmonary hemorrhage.
- Any changes in patient condition, refer to the appropriate protocol.



Dehydration

Signs and Symptoms:

- Poor skin turgor
- Dry mucous membranes
- Dizziness, weakness
- Tachycardia
- Compensated or uncompensated hypovolemia
- Oliguria- decreased urine output

History:

- Recent illness
- Poor nutrition
- Anorexia
- ETOH Abuse
- Excessive exercise/exertion
- Prolonged nausea, vomiting, and/or diarrhea

Differential:

- Flu
- Infection
- Cardiac etiology
- Pregnancy
- Trauma
- Non-traumatic hypotension: GI bleed, pulmonary embolism

Standby EMT

- **Oxygen** via most appropriate method
- **Zofran** 4 – 8 mg PO

Basic EMT

- Same as above

Advanced EMT

- IV/IO access
- **Zofran** 4 – 8 mg IV
- Fluid Bolus

Paramedic

- Refer to appropriate protocol to address symptoms

Critical Points:

- Dehydration can be a serious medical condition.
- Consider recent events and environmental factors when assessing patients with possible dehydration.
- Recent illness, exertion, or decreased water intake may make a patient susceptible to dehydration.
- Suspect dehydration in normotensive patients with tachycardia. Patients with hypotension and suspected dehydration should be treated under the non-traumatic hypotension protocol. Most likely, dehydration induced hypotension will improve with fluid bolus without an additional pressor.
- Abnormal orthostatic vitals do not diagnose dehydration/volume depletion specifically. There are many causes for orthostatic hypotension. Do not assume simple dehydration as the only cause of orthostatic hypotension, particularly in elderly patients.



Diabetic/Hyperglycemia

Signs and Symptoms:

- BGL > 250 mg/dL with symptomatic presentation
- Altered Mental Status
- Tachypnea- Kussmaul respirations
- Tachycardia
- Abdominal pain, N/V
- Hypotension
- Dehydration (polyuria, polyphagia, polydipsia)
- Diaphoresis

History:

- Known history
- New onset
- Medications
- Last meal/dietary indiscretion

Differential:

- New onset diabetes
- Trauma
- CNS (stroke, tumor, seizure, infection)
- Alcohol/Drug use
- Abdominal pain
- Altered mental status differentials

Standby EMT

- **Oxygen** via most appropriate method

Basic EMT

- Same as above

Advanced EMT

- IV/IO access
- **Zofran** 4 – 8 mg IV/IO
- Fluid Bolus
 - Continue infusion of NS 500 ml/hr
 - Discontinue if pulmonary edema develops or s/s of CHF

Paramedic

- **Calcium Chloride** 1 gram IV/IO for wide complex QRS > 150 ms with signs of ketoacidosis or dialysis
- Refer to appropriate protocol to address symptoms



Diabetic/Hyperglycemia

Critical Points:

- Full assessments are necessary for these patients to rule out any comorbidities or alternate causes.
- Additional causes of AMS should be assessed alongside any suspicion of hyperglycemia.
- Symptomatic hyperglycemia usually does not occur until BGL > 250 mg/dL and may be associated with intense abdominal pain.



Diabetic/Hypoglycemia

Signs and Symptoms:

- BGL < 60 mg/dL with symptomatic presentation
- Altered mental status
- Tremors
- Weakness
- N/V
- Intense hunger
- Diaphoresis
- Malnourishment
- Hypothermia

History:

- Known history
- New onset
- Medications: excessive insulin use/abuse
- Absence of recent meal
- Malnutrition

Differential:

- CNS (stroke, tumor, seizure, infection)
- Alcohol/Drug use
- Trauma
- Renal failure
- Medication side effects
- Exercise
- Altered mental status differentials

Standby EMT

- **Oxygen** via most appropriate method
- **Oral glucose** 15 g PO
 - May repeat x 2 q 10 minutes until BGL > 60 mg/dL

Basic EMT

- Same as above

Advanced EMT

- IV/IO access
- **D10W** 10 grams IV/IO
 - Repeat blood glucose level check after 10 grams (100mL)
 - Repeat as needed to maintain adequate mental status and/or BGL > 60 mg/dL
- **D50%** 12.5 – 25 grams IV/IO
 - Repeat blood glucose level check after 10 minutes
 - May be repeated x 1 after 10 min if symptoms persist
- **Thiamine** 50 mg IV/IO and 50 mg IM
 - Prior to D50% or D10% administration **ONLY** if Thiamine deficiency is known/suspected or the patient presents with chronic malnutrition

Paramedic

- **Glucagon** 1 mg IM if unable to obtain IV/IO access
 - Should be followed by **Oral glucose** once patient can follow commands and swallow

Medical Consult

Critical Points:

- Full assessments are necessary for these patients to rule out any comorbidities or alternate causes.
- Additional causes of AMS should be assessed alongside any suspicion of hypoglycemia.
- Patients with prolonged hypoglycemia, such as with chronic malnutrition, or with liver failure may not respond to glucagon.
- Routine use of Thiamine for dextrose/glucose administration is not necessary unless there is a known Thiamine deficiency, chronic malnutrition or Wernicke's Encephalopathy is suspected. In these patients, Thiamine should be administered prior to dextrose/glucose.
- Patients on longer acting insulin are at higher risk of recurrent hypoglycemia even after a normal glucose is established.
- Patients with active insulin pumps are likely to have recurrent hypoglycemia if not managed.
- Glucagon is only to be administered if a patient cannot take oral glucose and IV access is not readily available.
- Glucagon is dependent on adequate glycogen stores and may not work in chronically malnourished patients. BGL will start to increase approximately 10 minutes after IM administration and will reach max levels at 30 to 45 minutes post administration.
- IO access for hypoglycemia should be limited to critical (unresponsive or unstable) patients where no peripheral IV site can be obtained AND Glucagon is not readily available, or if chronic malnutrition is suspected.
- Cardiac and 12-lead assessment is recommended in all patients who received parenteral glucose or glucagon.



Dystonic Reaction

Signs and Symptoms:

- Protrusion of the tongue
- Twisted neck or facial spasms
- Roving or deviated gaze
- Abdominal rigidity or pain
- Spasm of the entire body
- Twitching

History:

- Recent ingestion of phenothiazine, fluphenazines, other neuroleptics or related drugs such as antipsychotics
- Known dystonic reaction or tardive dyskinesia
- Recent change or increase in neuroleptic medication

Differential:

- Acute Tetanus
- Electrolyte abnormality
- Seizures
- Stroke
- Rabies

Standby EMT

- **Oxygen** via most appropriate method
- **Diphenhydramine** 25 mg PO

Basic EMT

- Same as above

Advanced EMT

- IV/IO access
- **Diphenhydramine** 25 – 50 mg IV/IO

Paramedic

- **Midazolam** 2 – 5 mg IV/IM/IO/IN
OR
- **Lorazepam** 1 – 2 mg IV/IO/IM

Medical Consult

- Additional **Midazolam**

Critical Points:

- Dystonic reactions (extrapyramidal reaction) is a condition causing involuntary muscle movements or spasms typically of the face, neck and upper extremities. May present as contorted neck and trunk with difficult motor movements.
- Dystonic reactions are rarely life threatening. However, these reactions cause immense distress for the patient and family.
- Assess temperature in these patients.
- Example of some neuroleptic drugs: aripiprazole (Abilify), asenapine (Saphris), cariprazine (Vraylar), clozapine (Clozaril), haloperidol (Haldol), lurasidone (Latuda), olanzapine (Zyprexa), quetiapine (Seroquel), risperidone (Risperdal), ziprasidone (Geodon), metoclopramide (Reglan)



Fever/Infection Control

Signs and Symptoms:

- Temperature > 101° F
- Altered mental status
- Weakness
- Warm, flushed, sweaty
- Chills/rigors
- Associated symptoms: “flue like symptoms”, myalgia, cough, chest pain, throat pain, headache, dysuria, abdominal pain, rash,
- Redness around infection sight/wound

History:

- Evidence of determinable source for sepsis
- Duration and severity
- Immunocompromised (transplant, HIV, diabetes, cancer)
- Last intake of acetaminophen or ibuprofen
- Recent history of infection

Differential:

- Meningitis
- Epiglottitis
- Influenza
- Appendicitis
- Tuberculosis
- Urinary Tract Infection
- Heat Stroke
- Dehydration
- Seizure
- Transplant / Transfusion Rejection

Sepsis Screening: if positive move to Sepsis protocol.

Standby EMT

- Appropriate PPE
- **Oxygen** via most appropriate method
- **Acetaminophen** 650 – 975 mg PO if no N/V
- **Ibuprofen** 400 – 800 mg PO
- External cooling

Basic EMT

- Same as above

Advanced EMT

- IV/IO access
- Fluid Bolus if SBP < 90 mmHg
 - Repeat PRN to keep SBP > 90 mmHg
 - Max 2 liters

Paramedic

- Refer to more appropriate protocol to address symptoms

Medical Consult

Critical Points:

- Temperature check is required in these patients
- Acetaminophen should be avoided in any patients with known liver failure/disease.
- **Contact precautions** include standard PPE plus utilization of a gown, change of gloves after every patient contact, and strict hand washing precautions. This level of precaution is utilized when multi-drug resistant organisms (e.g. MRSA, scabies, or zoster (shingles)), or with other illnesses spread by contact.
- **Droplet precautions** include standard PPE plus a standard surgical mask for providers who accompany patients in the back of the ambulance and a surgical mask or NRB O2 mask for the patient. This level of precaution should be utilized with influenza, meningitis, mumps, streptococcal pharyngitis, and other illnesses spread via large particle droplets. A patient with a potentially infectious rash should be treated with droplet precautions
- **All-hazards precautions** (Airborne Precautions) include standard PPE, contact precautions plus N-95 mask for providers. This level of precautions is utilized during the initial phases of an outbreak when the etiology of the infection is unknown or when the causative agent is found to be highly contagious (e.g. SARS,TB).
- Tylenol should not be administered for suspected heat stroke or heat exhaustion.
- Any changes in patient condition, refer to the appropriate protocol

Sepsis/SIRS Screening:		
Temperature:	< 96.8°F or > 100.4°F	1 point
Heart Rate:	> 90 beats per minute	1 point
Respiratory Rate:	> 20 breaths per minute	1 point
EtCO2:	< 25 mmHg	1 point
Score > 2 = SEPSIS ALERT		



Hypertensive Crisis

Signs and Symptoms:

- Systolic blood pressure > 220 mmHg and/or Diastolic blood pressure > 120 mmHg
- Evidence of end-organ dysfunction including: chest pain, dyspnea, severe headache, nausea/vomiting, seizure
- Epistaxis

History:

- Medical etiology
- Associated diseases: diabetes, hypertension, renal failure, stroke, TIA,
- Hypertension medication
- Non-compliant with medications
- ED medications

Differential:

- Stroke
- Preeclampsia/Eclampsia
- Drug use
- Anxiety
- Pain
- CNS injury- Cushing's response
- Heart attack

Standby EMT

- Neurological exam (stroke assessment- Cincinnati and VAN)
 - Move to CVA/Stroke Protocol if stroke assessment is positive
- **Oxygen** via most appropriate method
- Reassess blood pressure if SBP > 220 mmHg and/or DBP > 120 mmHg

Basic EMT

- Same as above

Advanced EMT

- IV/IO access

Paramedic

- **Nitro** 0.4 mg SL
 - May repeat x 3 q 5 minutes PRN to lower MAP 20%
- **Labetalol** 10 mg IV/IO over 2 minutes if SBP > 220 mmHg or DBP > 120 mmHg
 - May repeat once after 15 minutes if SBP > 180 mmHg or DBP > 100 mmHg

Medical Consult

- **Labetalol** if blood pressure criteria is not met but there may be a therapeutic benefit

Critical Points:

- Perform stroke/large vessel occlusion screening on all Hypertensive Crisis patients.
- Move to Cerebrovascular Accident/Stroke protocol if stroke/large vessel occlusion is positive.
- Transient hypertension is common in emergency settings and is usually a response to stress or pain. A true hypertensive emergency includes symptoms of end organ dysfunction or injury such as MI, CVA or renal failure. Asymptomatic hypertension is not an emergency.
- Aggressive treatment of hypertension can result in harm. Most patients with hypertension need only calm, supportive care.
- The goal is a reduction in MAP by 20% : Calculate $MAP = (SBP + [2 \times DBP]) \div 3$
- Serial blood pressures and a 12-lead ECG should be obtained on these patients.
- Labetalol should be avoided in patients with suspected cocaine use/overdose or bradycardia.



Overdose/Poisoning

Signs and Symptoms:

- Lethargy
- AMS
- Hypotension/hypertension
- Decreased respiratory rate
- Tachycardia, bradycardia, dysrhythmias
- Seizures
- Combative
- Unresponsive
- S.L.U.D.G.E / D.U.M.B.E.L.S

History:

- Known or suspected illicit drugs or alcohol use
- Ingestion or injection of medication whether intentional or accidental
- Ingestion, inhalation or absorption of potentially harmful non-pharmaceutical substances
- Availability/access to medication/toxins/chemicals
- Quantity and duration of exposure
- Time of ingestion/exposure
- Route of exposure
- Multiple victims

Differential:

- Toxins
- Metabolic (glucose)
- Seizure of known origin (epilepsy)
- CVA
- Hypoxia
- Traumatic Brain Injury
- Cardiac etiology

Standby EMT

- Always ensure provider safety, request and stage for law enforcement or fire department if indicated (HAZMAT, aggressive/violent individuals)
- **Oxygen** via most appropriate method
 - Carbon monoxide poisoning: utilize NRB or BVM with high flow oxygen
- **Naloxone** 1 mg IN/IM for respiratory depression if opiate use is suspected or cannot be excluded
 - Repeat x 2 q 10 minutes

Basic EMT

- CPAP 3 – 10 cmH₂O
 - Suspected Carbon monoxide poisoning

Advanced EMT

- IV/IO access
- Fluid bolus
- Intubate

Paramedic

- Consider pacing for unstable bradycardic patients: see Bradycardia protocol
- Refer to Aggressive/Violent Behavior protocol if all other means to calm patient are ineffective
- Consider DSI/RSI
- **Carbon monoxide poisoning**
 - SpCO > 15% or with exposure and pertinent S/S
 - **Oxygen** via NRB or **CPAP** despite saturation



Overdose/Poisoning

- **Sympathomimetic overdose:** Cocaine, PCP, Methamphetamine
 - **Midazolam** 2 – 5 mg IV/IO/IM/IN
 - Repeat q 5 minutes for max dose of 10 mg
 - **Lorazepam** 2 – 4 mg IV/IO
 - Repeat once after 5 minutes
- **Organophosphate poisoning or Nerve Agent** with parasympathetic symptoms
 - **Atropine** 2 mg IV/IO/IM (for severe symptoms start with 6 mg)
 - Repeat 2 mg q 3 – 5 minutes until symptom (bradycardia) resolves
- **Beta blocker overdose:**
 - **Glucagon** 1 mg IV/IO/IM
 - **Atropine** 1 mg IV/IO/IM
 - Repeat q 3 minutes until bradycardia resolves
- **Calcium channel blocker overdose:**
 - **Calcium chloride** 1 gram SLOW IV/IO
 - Repeat once after 10 minutes PRN
- **Tricyclic antidepressant (TCA) overdose** with QRS > 0.16 seconds, hypotension, seizures, or AMS:
 - **Sodium bicarbonate** 1 mEq/kg SLOW IV/IO
 - May repeat once after 15 minutes if symptoms persist
- **Ethylene glycol ingestion (antifreeze, automotive fluids, solvents, paints, cosmetics)**
 - Airway management is priority to reduce risk of aspiration.
 - **Sodium bicarbonate** 1 mEq/kg SLOW IV/IO if patient appears very ill
- **Chlorine, Nitrogen Dioxide or Phosgene gas exposure**
 - Wheezing present- nebulized **8.4% Sodium Bicarb (2 ml in 2ml NS)** with **DuoNeb** treatment
 - No wheezing- nebulized **8.4% Sodium Bicarb (2 ml in 2ml NS)**
 - May repeat once after 20 min
- **Hypotension due to overdose/toxins**
 - **Dopamine** 10 – 20 mcg/kg/min IV/IO
 - Administer if patient remains hypotensive **after 1 liter bolus**
 - Titrate to sustain SBP > 90 mmHg

Medical Consult

- If presented with an appropriate reversal and/or treatment agent on scene, TAMU EMS Paramedics may administer non-expired agent at the appropriate dose listed, following all listed precautions and strict adherence to administration guidelines

Critical Points:

- Consider contacting Poison Control: 1-800-222-1222
- 12 Lead monitoring for all patients. Antidotes may or may not resolve cardiac symptoms.
- If possible, try to obtain the bottle or container that held the ingested substance.
- For suicide attempts, do not rely on patient history of ingestion. Ensure patient is not carrying additional medication/substances nor has any weapons. PD should be requested if needed.
- Any patient with a global exposure requires decontamination before being moved to the ambulance. Do not begin transport unless all contaminants have been removed from the patient. Personal items such as clothes, backpack, etc., should be left on scene if contaminated.
- Overdoses and poisonings usually cause multi-system effects. Thoroughly assess all major body systems to determine the constellation of symptoms that will lead to proper treatment.
- Common medications:
 - Tricyclic Antidepressants: amitriptyline (Elavil), imipramine (Tofranil), doxepin, nortriptyline (Pamelor)
 - Calcium Channel Blockers: amlodipine (Norvasc), diltiazem (Cartia, Dilacor, Tiazac), nifedipine (Adalat, Procardia), verapamil (Calan)
 - Beta Blockers: atenolol (Tenormin), labetalol (Trandate), metoprolol (Lopressor, Toprol), nadolol (Corgard), propranolol (Inderal)
 - SSRIs: citalopram (Celexa), escitalopram (Lexapro), fluoxetine (Prozac), fluvoxamine (Luvox), paroxetine (Paxil), sertraline (Zoloft)
 - SNRIs: duloxetine (Cymbalta), venlafaxine (Effexor)
 - Benzodiazepines: alprazolam (Xanax), chlordiazepoxide (Librium), diazepam (Valium), lorazepam (Ativan)
- TCA overdose can rapidly progress from normal mental status, to symptomatic (seizures, hypotension, AMS), to death.
- Organophosphates are typically found in insecticides and nerve agents. Exposure can present with manufacturing, pharmacology, agricultural and insecticide use/application. Atropine doses in excess of 5 – 10 mg may be required for reversal.
- If smoke inhalation occurs, consider carbon monoxide (CO) or cyanide poisoning.
- If multiple victims in one location, consider carbon monoxide poisoning.
- Pulse oximetry reading is unreliable in carbon monoxide and cyanide poisonings. Oxygen via NRB should be applied to all patients with suspected carbon monoxide or cyanide poisoning.
- **The treatment for Hydrofluoric acid is Calcium gluconate. Transport to an appropriate facility for treatment.**
- **The treatment for Cyanide exposure is Hydroxocobalamin.**
 - Hydroxocobalamin 70 mg/kg IV/IO over 15 min with a max of 5 grams
 - Antidote kits should be available on-site where cyanide is used



Seizures

Signs and Symptoms:

- Grand Mal, Petite, Focal seizure
- Tonic/Clonic convulsions
- Visual changes or aura
- Decreased or altered mental status
- Lethargic
- Postictal state
- Incontinence
- Unconsciousness
- Oral trauma from biting tongue

History:

- History of seizures/epilepsy
- Observed seizure activity by bystander
- Head trauma
- New onset
- Onset, duration, number of seizures (back to back)
- Lucid interval

Differential:

- CNS: Head trauma, stroke, epilepsy
- Overdose
- Withdrawals
- Hypoglycemia
- Unknown Etiology
- Electrolyte abnormality
- Eclampsia
- Infection/Fever

Standby EMT

- Protect patient from potential hazards and objects during active seizure
- SMR if indicated
- **Oxygen** via most appropriate method
- External cooling if febrile
- **Acetaminophen** 650 – 975 mg PO if patient is awake and oriented without N/V

Basic EMT

- Same as above

Advanced EMT

- IV/IO access

Paramedic

- **Diazepam** 5 – 10 mg IV/IO/IM/PR
 - Repeat once after 5 minutes
- OR
- **Midazolam** 2 – 5 mg IV/IO/IM/IN
 - Repeat once after 5 minutes
- OR
- **Lorazepam** 1 – 2 mg IV/IO/IM
 - Repeat once after 5 minutes
- DSI/RSI procedure for status epilepticus

Medical Consult

- Additional benzodiazepine administration

Critical Points:

- Most seizures are self-limiting lasting less than 3 minutes and require only supportive therapy.
- IM midazolam 5 mg is effective in termination of seizures. Do not delay IM administration with difficult IV access.
- IM and IN medication routes typically take around 4-9 minutes before an effect is observed. Providers should allow enough time before re-dosing based on the administration route.
- Pregnancy > 20 weeks treat under Pre-eclampsia/Eclampsia protocol.
- ABC's are the priority in any seizing patient prior to chemical therapies.
- Most patients can "breath through" seizures. In extreme cases, the diaphragm may be involved keeping the patient from breathing. This is a hypoxic emergency requiring prompt ventilation and airway management.
- Benzodiazepines may cause respiratory depression and apnea. If indicated, monitor with EtCO₂ and be prepared to assist with ventilations.
- Common seizure medication: levetiracetam (Keppra), carbamazepine (Tegretol, Carbatrol), phenytoin (Dilantin, Phenytek), valproic acid (Depakene), oxcarbazepine (Oxtellar, Trileptal), lamotrigine (Lamictal), gabapentin (Neurontin), topiramate (Topamax), phenobarbital

Signs and Symptoms:

- Decreased perfusion, hypotension SBP < 90 mmHg, tachycardia
- Altered mental status
- Weakness
- Hypo/Hyperthermic
- Warm, flushed, sweaty
- Chills/rigors
- Associated symptoms: “flu like symptoms”, myalgia, cough, chest pain, throat pain, headache, dysuria, abdominal pain, rash,
- Redness around infection sight/wound

History:

- Evidence of determinable source for sepsis
- Duration and severity
- Immunocompromised (transplant, HIV, diabetes, cancer)
- Last intake of acetaminophen or ibuprofen
- Recent history of infection
- Recent hospitalization
- Bedridden or immobile

Differential:

- Isolated infection: UTI, Pneumonia, Skin/wound
- Neurological: Heat Stroke, CVA, Malignant hyperthermia
- Meningitis
- Hyper/Hypoglycemia
- Cardiac issues
- Hyperthyroidism
- Dehydration
- Seizure
- Transplant / Transfusion Rejection
- Anaphylaxis

Sepsis Screening:

Temperature:	< 96.8°F or > 100.4°F	1 point
Heart Rate:	> 90 beats per minute	1 point
Respiratory Rate:	> 20 breaths per minute	1 point
EtCO2:	< 25 mmHg	1 point
Score > 2 = SEPSIS ALERT		

Standby EMT

- Appropriate PPE
- **Oxygen** via most appropriate method
- Sepsis Screening
- **Acetaminophen** 650 – 975 mg PO if no N/V
- **Ibuprofen** 400 – 800 mg
- External cooling

Basic EMT

- Same as above

Advanced EMT

- IV/IO access
- Fluid Bolus
- Secondary Vascular Access

Paramedic

- **Norepinephrine (Levophed)** 2 – 12 mcg/min IV/IO infusion for distributive (septic) shock.
 - Administer if patient remains hypotensive **after 2 liter bolus**
 - Titrate to sustain SBP > 90 mmHg or MAP > 65 mmHg
 - Do not administer vasopressors for hypovolemic shock
- **Dopamine** 10 – 20 mcg/kg/min IV/IO if refractory
 - Administer if patient remains hypotensive **after 1 liter bolus**
 - Titrate to sustain SBP > 90 mmHg

Medical Consult

- Consider consult for any recent travel outside of the country or unusual circumstances/exposures

Critical Points:

- Temperature check is required in these patients
- Acetaminophen should be avoided in any patients with known liver failure/disease.
- Tylenol should not be administered for suspected heat stroke or heat exhaustion.
- Any changes in patient condition, refer to the appropriate protocol
- Hypotension may be defined as a systolic blood pressure < 90 mmHg; however, SBP must be interpreted in context of s/s and the patients typical BP if known. Shock may be present with a normal blood pressure initially, particularly in late pregnancy.
- Consider Sepsis Screening early if type of shock is unknown.
- Fluid bolus should be more conservative and observed carefully in patients with history of CHF, Pulmonary Edema, or End Stage Renal Failure. Consult medical control for any concerns.
- **Norepinephrine is an alpha 1 agonist that causes peripheral vasoconstriction. It is preferred over dopamine. Always administer 2 liters of fluid prior to pressor infusion.**
- **Contact, droplet and all-hazards precautions** as needed. See Fever protocol for details.



Stroke/Cerebrovascular Accident

Signs and Symptoms:

- Altered mental status
- Hypertension: Blood pressure > 220 mmHg or diastolic blood pressure > 120 mmHg
- Unilateral or global paralysis/weakness/facial droop
- Sensory deprivation/loss (e.g. blindness, visual disturbance)
- Vertigo/dizziness
- Vomiting
- Seizures
- Ataxia
- Aphasia / Dysphasia
- Headache

History:

- Previous CVA, TIA's
- Previous vascular/cardiac surgery
- Associated diseases: diabetes, hypertension, CAD
- Atrial fibrillation
- Medications (blood thinners)
- History of trauma
- Time of onset

Differential:

- Altered mental status differentials
- Seizure
- Hypoglycemia
- Hypertensive encephalopathy
- Dialysis/Renal failure
- Primary CNS injury: Cushing's response with bradycardia and hypertension
- Myocardial infarction
- Pre-eclampsia/Eclampsia

Standby EMT

- Neurological exam (stroke assessment- Cincinnati then VAN if positive)
 - Blood glucose level assessment
- **Oxygen** via most appropriate method
- Reassess blood pressure if SBP > 220 mmHg and/or DBP > 120 mmHg

Basic EMT

- Same as above

Advanced EMT

- IV/IO access
- Zofran 4 – 8 mg PO/IV/IO
- Secondary vascular access

Paramedic

- **Labetalol** 10 mg IV/IO over 2 minutes if SBP > 220 mmHg or DBP > 120 mmHg
 - Repeat once after 15 minutes if SBP > 180 or DBP > 100
- Consider DSI/RSI

Medical Consult

- **Labetalol** if blood pressure criteria is not met but there may be a therapeutic benefit



Stroke/Cerebrovascular Accident

Critical Points:

- Neurological assessment- reference Stroke and LVO Screening Procedure.
- If POSITIVE Cincinnati or VAN screen- obtain TIME OF ONSET and select appropriate facility.
- TIME OF ONSET is critical to the treatment and decision-making process for stroke patients. A specific time, such as 14:27 is more useful than “about 30 minutes ago”.
- If a TIME OF ONSET cannot be determined, time of “last seen normal” should be used. This is most applicable for patients who wake up with symptoms or who live by themselves or in assisted living facilities.
- **Glucose and 12-lead should be performed on all possible STROKE ALERTS prior to activation.**
- Aggressive treatment of hypertension can result in harm. Most patients, even with significant elevation in blood pressure, need only supportive care.
- EtCO₂ should be monitored on these patients.
- Labetalol should be avoided in patients with suspected cocaine use/overdose or bradycardia.

Signs and Symptoms:

Any female of child-bearing age with any of the following:

- Abdominal Pain
- Spasmodic/cyclical cramping
- Rupture of membrane
- Abnormal Vaginal Hemorrhage
- Persistent Hypertension with systolic of 140 and/or diastolic of 90 or greater
- Expected or current childbirth

History:

- Pregnancy, spontaneous abortion
- Para, Gravida, Abortions
- Initiation of contractions
- Expected due date
- Time of ruptured membranes

Differential:

- Negative for rebound tenderness
- Abdominal pain differentials

Assessment

- C.A.B.C.
- Secondary assessment
- Vital signs
 - BP (Pre-eclampsia or Eclampsia)
 - ECG 3-Lead and 12-Lead if appropriate
 - Blood Glucose (gestational diabetes)
 - Temperature
 - Lung Sounds
- OPQRST
- ASPN
- SAMPLE
- Physical exam including palpation of all abdominal regions
- Presence or absence of pre-natal care
- Determination of para and gravida and estimated date of delivery (due date)
 - Gravida: number of times a patient has been pregnant
 - Para: number of live births
- High risk pregnancy and/or history or diagnosis of complications
- High suspicion for ectopic pregnancy
- Check for vaginal discharge/hemorrhage/crowning limbs/prolapsed umbilical cord
 - Estimated amount and type (bright or dark red) of blood loss



Pre-Eclampsia/ Toxemia

Signs and Symptoms:

- **NO SEIZURE LIKE ACTIVITY**
- Known or suspected pregnancy ≥ 20 weeks or up to 12 weeks postpartum
- Persistent hypertension with SBP ≥ 140 mmHg and/or diastolic ≥ 90 mmHg
- With one or more symptoms:
Peripheral edema,
Nausea/Vomiting, Headache, AMS

History:

- Gravid female with intra-uterine pregnancy
- Recent childbirth

Differential:

- Chronic preexisting hypertension
- Primary seizure disorder
- Stroke
- Gestational diabetes
- AMS differentials

Standby EMT

- **Oxygen** via most appropriate method
- Place patient in left lateral recumbent position
 - Outside sensory stimulation should be MINIMAL

Basic EMT

- Same as above

Advanced EMT

- IV/IO access
- **Zofran** 4 – 8 mg IV or ODT

Paramedic

- **Magnesium sulfate** 2 grams IV/IO infusion
 - Mix in 100 ml NS and infuse over 10 minutes
- **Labetalol** 10 mg SLOW IV/IO
 - If hypertension persists refractory to **Magnesium sulfate**
 - Repeat q 5 – 10 minutes PRS to lower MAP 20%



Pre-Eclampsia/ Toxemia

Critical Points:

- If patient demonstrated seizure like activity, treat under Eclampsia protocol.
- Magnesium sulfate can cause venous irritation and should be administered in a large vessel (AC) when possible.
- Intravenous administration of Magnesium Sulfate should be 20% maximum concentrations.
- Magnesium sulfate can cause transient drop in blood pressure.
- Inform the patient prior to administration that they may become flushed and feel “hot”. This is a common response to Magnesium sulfate. A cool damp wash cloth or ice pack may provide comfort during administration.
- Pre-eclampsia is an OB emergency and should be considered time sensitive.
- Provide rapid transport to the appropriate ED with OB capabilities.



Eclampsia/ Toxemia

Signs and Symptoms:

- **ACTIVE OR RECENT SEIZURE**
- Known or suspected pregnancy ≥ 20 weeks or up to 12 weeks postpartum
- Persistent hypertension with SBP ≥ 140 mmHg and/or diastolic ≥ 90 mmHg

History:

- Gravid female with intra-uterine pregnancy
- Recent childbirth

Differential:

- Chronic preexisting hypertension
- Primary seizure disorder
- Stroke
- Gestational diabetes
- AMS differentials

Standby EMT

- **Oxygen** via most appropriate method
- Place patient in left lateral recumbent position
 - Outside sensory stimulation should be MINIMAL

Basic EMT

- Same as above

Advanced EMT

- IV/IO access

Paramedic

- **Magnesium sulfate** 2 grams IV/IO over 2 – 3 minutes
 - mix 2 grams in 10 mL syringe with NS
 - May repeat once if seizure and/or hypertension persists
- **Magnesium sulfate** 4 grams IM only if unable to establish IV
 - Administer 2 g IM in two large muscle groups, gluteus preferred.
- **Midazolam** 2 – 5 mg IV/IO/IM/IN
 - May repeat once after 5 minutes
- **Labetalol** 10 mg SLOW IV/IO
 - If hypertension persists refractory to **Magnesium sulfate**
 - Repeat q 5 – 10 minutes PRS to lower MAP 20%

Critical Points:

- Magnesium sulfate can cause venous irritation and should be administered in a large vessel (AC) when possible.
- Intravenous administration of Magnesium Sulfate should be 20% maximum concentrations.
- IM administration of Magnesium Sulfate can be 50% concentration (1 gram in 2 mL)
- Magnesium sulfate can cause transient drop in blood pressure.
- Inform the patient prior to administration that they may become flushed and feel “hot”. This is a common response to Magnesium sulfate. A cool damp wash cloth or ice pack may provide comfort during administration.
- Eclampsia is an OB emergency and should be considered time sensitive.
- OB patients may still present with seizures of other etiology. Thorough assessment should be performed to rule out other possible causes for seizure such as gestational diabetes, drugs/poisons, etc...
- Provide rapid transport to the appropriate ED with OB capabilities.



Labor and Delivery

Signs and Symptoms:

- Back and/or abdominal pain which occurs periodically, at regular intervals (spasmodic)
- “Bag of waters” intact or ruptured
- Vaginal discharge or bleeding
- Crowning or urge to push
- Meconium

History:

- Gravid female with intra-uterine pregnancy > 20 weeks
- Due date, Gravida/para status
- Time contractions started and how often
- Rupture of membrane
- Time/amount of vaginal bleeding
- Sensation of fetal activity
- Past medical and delivery history
- Any complications or high risk status

Differential:

- Abnormal presentation; breech, buttocks, foot, hand
- Prolapsed cord
- Abruptio placenta
- Placenta Previa

Standby EMT

- **Oxygen** via most appropriate method
- If imminent delivery not possible, place patient in left lateral recumbent position
 - Document frequency and duration of contractions
- If imminent delivery
 - Place mother supine with hips elevated knees to chest
 - Prepare for delivery utilizing OB kit(s)
 - Deliver neonate
 - Refer to post-delivery care of neonate protocol
 - Fundus massage post-delivery for hemorrhage
- Prolapsed Cord or Shoulder Dystocia
 - If no cord pulsation, insert fingers into vagina and move neonate’s head to relieve pressure on cord
 - Cover umbilical cord in moist sterile dressing
 - Place patient in left-sided Trendelenburg or prone, in Knee to chest position
- Breech Birth
 - Urgent transport
 - Encourage mother to refrain from pushing
 - Support presenting parts/limbs. **Do Not Pull.**
 - Place 2 fingers along nose and push vaginal wall from face if needed

Basic EMT

- Same as above

Advanced EMT

- IV/IO access



Labor and Delivery

Paramedic

- ALS assessment if indicated.
- Newborn care should be initiated immediately following delivery. See Newborn Care Protocol in Adult OB section.

Medical Consult

- **TXA** 1 gram IV/IO for uncontrolled post-partum bleeding
 - Mix in 100 mL NS infuse over 10 minutes

Critical Points:

- **Expedite Transport in the labor setting if:**
 - < 36 weeks gestation
 - Abnormal presentation (breech, prolapsed cord, etc.)
 - Severe vaginal bleeding
 - Multiple gestation
- Record APGAR at 1 and 5 minutes post-delivery.
- After delivery, massaging the uterus (lower abdomen) will promote uterine contraction and help to control post-partum bleeding.
- Document all times (delivery, contraction frequency and length).
- Umbilical cord clamping and cutting: place first clamp (provided in OB kit) about 10 cm from infant's abdomen and second clamp about 5 cm away from the first clamp and cut between the two clamps.
- Some perineal bleeding is normal with any childbirth. Large quantities of blood or free bleeding are abnormal.
- Upon delivery of the baby, the EMS crew now has 2 patients. If needed, request additional ambulance for resources.



Newborn/Neonate Care

Signs and Symptoms:

- Viable baby

History:

- Newborn less than 12 hours old
- Neonate less than 1 month old

Differential:

- Multiple gestations (Twins)

Standby EMT

- Support the infants head as needed
- Dry, suction, position appropriately and vigorously stimulate the neonate
 - Aggressive suction using bulb suction provided in OB kit. Suction mouth then nose.
- Keep warm, wrap in bunting or blanket
- Oxygen via most appropriate method
- Assess baby
 - C.A.B.C.
 - APGAR – at 1 and 5 minutes
 - Vital Signs
 - Blood Glucose: heel-stick method
- BVM assist with 100% O2 if heart rate < 100
- CPR if apneic or if heart rate < 60 bpm with poor perfusion despite oxygenation and ventilation

Basic EMT

- Same as above

Advanced EMT

- IV/IO access
 - IO if > 3 kg - for unstable Neonates only (ex. Respiratory failure)
- Fluid Bolus utilizing Buretrol
 - 20 ml/kg IV/IO
 - Max 60 ml/kg
- **D10W** 2 ml/kg IV/IO
 - Repeat blood glucose level check after 5 minutes
 - Repeat as needed to maintain BGL > 40 mg/dL
- Core Temperature

Paramedic

- Bradycardia – heart rate < 80 bpm
 - **Epinephrine 1:10,000** 0.01 mg/kg IV/IO
 - Repeat every 3-5 minutes
 - **Epinephrine 1:1000** 0.1 mg/kg ET if unable to obtain IV/IO access
 - Repeat every 3-5 minutes
 - **Atropine** 0.02 mg/kg IV/IO if refractory to EPI



Newborn/Neonate Care

- Min single dose 0.1 mg
- Max single dose 0.5 mg
- May repeat once

Medical Consult

- **If persistently poor response and there is suspicion of maternal narcotic use**
 - **Naloxone** 0.1 mg/kg IV/IO/IN
 - Max dose of 1 mg
 - Do not administer Naloxone if patient is intubated

Critical Points:

- Refer to Broslow Tape for proper dosages and equipment sizes
- Rapid transport to appropriate facility with Neonate care.
- Keep neonate warm and monitor vitals.
- Respiratory support is crucial to prevent cardiac complications.
- Any changes in patient condition, refer to the appropriate protocol



Spontaneous Abortion

Signs and Symptoms:

- Vaginal hemorrhage that is non-menstrual
- Abdominal or back cramping or pain
- Tissue passing with blood

History:

- Known or suspected intrauterine pregnancy

Differential:

- Menstruation
- Traumatic etiology
- Labor
- Placenta Previa
- Abruptio Placentae

Standby EMT

- Provide emotional support
- Control hemorrhage
 - Place abdominal pads at vaginal opening
- Collect passed tissue, if possible

Basic EMT

- Same as above

Advanced EMT

- IV/IO access
- Fluid bolus if SBP < 90 mmHg
 - Repeat PRN to keep SBP > 90 mmHg
 - Max 2 liters

Paramedic

- Pain management
- Refer to Anxiety and Emotional Distress Protocol if indicated

Critical Points:

- Estimated blood loss is extremely useful with vaginal bleeding or suspected abortions.
- Spontaneous abortions occur in 10 – 20% of pregnancies, often within the first couple of weeks.
- Rapid transport for any unstable patient.



Respiratory Assessment

Signs and Symptoms:

- Dyspnea, tachypnea
- Cyanosis
- Clubbing
- Edema (pulmonary, pedal, ascites, presacral)
- Wheezing, rales, rhonchi, absent/decreased breath sounds, stridor
- Chest pain
- Bronchoconstriction
- Jugular Venous distention (JVD)

History:

- Use of inhaled medications, steroids, diuretics, anti-hypertensive medications
- Smoking
- Fever
- Productive cough
- Recent surgery
- Inhalation/Reactive airway disease
- COPD, CHF, Bronchospasms

Differential:

- Pulmonary Embolism
- Anxiety
- COPD
- Asthma
- Airway Obstruction
- Pneumonia
- CHF
- Pneumothorax
- Allergic reaction
- Aspiration

Assessment

- Circulation, Airway, Breathing, C-Spine (C.A.B.C.)
 - In respiratory patients, emphasis is placed on close assessment of airway patency followed by ventilation adequacy (rate, effort/work of breathing, tidal volume, breath sounds).
 - Patients with rapid onset and/or a hx of chronic respiratory illness may desaturate quickly due to minimal oxygen reserve. Correct and timely treatments (high flow oxygen, DuoNeb, CPAP) are key to effectively treating these patients.
- Primary Assessment
- Secondary/Focused assessment
- Vitals: SpO₂, blood pressure, pulse, respirations, lung sounds, BGL, temperature, EtCO₂
- Glasgow Coma Scale (GCS)
- Responsiveness and orientation
- Onset, Provocation, Quality, Radiation, Severity, Time (O.P.Q.R.S.T.)
- Associated Symptoms and Pertinent Negatives (ASPN)
- S.A.M.P.L.E.
- Electrocardiogram (ECG) 3-Lead
- ECG 12-Lead if appropriate
 - ECG 12-Lead Right sided if appropriate
 - If patient meets rapid 12-lead criteria: Obtain 12-lead within 5 minutes of patient contact. STEMI alert should be called and/or faxed on scene immediately to receiving destination.



Respiratory Assessment

	Breath Sounds	Effort	Edema	Cough	Onset	History	Patient's Medications	SpO ₂	EtCO ₂	JVD	Vitals
CHF	Rales, possible wheezing	Labored	Maybe	Clear, white or blood tinged sputum	Sudden	HTN, Cardiac, CHF	K-Dur, Lasix, Lanoxin	↓	↑	Maybe	Irregular HR (a-fib), ↑BP
COPD	Wheezing, could be silent	Barrel chested, tripod	No	Productive, sputum	Chronic	COPD	Bronchodilators, Steroids	↓	↑		
Asthma	Wheezing, could be silent	Grunting, retractions, gasping	No	Productive sputum	Acute	Asthma	Bronchodilators, Steroids	↑ Early ↓ Late		No	
Pneumonia	Rales, possible wheezing, congestion	Pleuritic pain		Productive, Yellow green	Over several days	General sickness, fatigue, fever	Various			No	
Pulmonary Embolis	Crackles, wheezes?	Pleuritic pain	Maybe	Maybe	Sudden	Recent surgery, bed ridden		↓	↓	Maybe	↓BP ↑HR
Allergic Reactions	Wheezing	Stridor, Shallow	Maybe	Maybe	Sudden	New medication, Insect sting/bite		↓			↓BP ↑HR
Hyperventilation	Clear	Carpopedal spasms, Chest pain			Sudden	No significant medical history		↑	↓		
Cardiac Event	Possible wheezes					Cardiac, Bypass surgery, possibly none					
Mass (tumor, FBAO, etc)	Unilateral										



Respiratory Distress

Signs and Symptoms:

- Dyspnea without a clear etiology
- Shortness of breath, cough
- Abnormal breath sounds: stridor, wheezing, rhonchi, rales
- Decreased or absent lung sounds
- Increased respiratory rate/work of breathing
- Pursed lips, tripod position, accessory muscle use
- Hemoptysis

History:

- Significant respiratory history
- New onset
- Possible toxic exposure
- Recent chest trauma

Differential:

- Asthma/Bronchospasm
- CHF/Pulmonary edema
- Pneumonia/Upper respiratory infection
- Pneumothorax, Hemothorax
- Alveolar hemorrhage
- Pulmonary Embolism
- Cardiac MI or tamponade
- Inhaled toxins: CO, Cyanide

Standby EMT

- **Oxygen** via most appropriate method
- **DuoNeb** (Albuterol 3 mg/Atrovent 0.5 mg) via Nebulizer
 - May repeat x 2 q 10 minutes
- Position of comfort

If no beneficial response is seen with DuoNeb, consider other causes and treatment

Move to a more specific protocol ASAP

Basic EMT

- CPAP 3 – 10 cmH2O

Advanced EMT

- IV/IO access
- Fluid Bolus if SBP < 90 mmHg
 - Repeat PRN to keep SBP > 90 mmHg
 - Max 2 liters

Paramedic

- Consider DSI/RSI



Respiratory Distress

Critical Points:

- A thorough assessment is needed for any patient in respiratory distress. **Move to appropriate protocol following assessment.** If a patient does not fall into a more specific protocol, this protocol (Respiratory Distress) should be used.
- Monitor pulse oximetry and capnography continuously in any respiratory distress patient.
- A silent chest in respiratory distress is a pre-respiratory arrest sign.
- Administer therapeutic oxygen (NC, NRB, BVM, CPAP) for SPO2 < 94%, suspected hypoxia, or at Paramedic discretion.
- Routinely check lung sounds to note any changes and/or improvement.
- Monitor for worsening conditions.



Airway Obstruction

Signs and Symptoms:

- Partial or complete airway obstruction
- Secondary to foreign body aspiration
- Decreased LOC
- Cyanosis
- Obvious inadequate air exchange

History:

- Recent events
- Recent ACE inhibitor use

Differential:

- COPD exacerbation
- Asthma exacerbation
- Vocal Cord Dysfunction (VCD)
- Anaphylactic reaction
- Medication induced angioedema (ACE-inhibitor use)
- Glossitis
- Epiglottitis

Standby EMT

- Chest/abdominal thrusts for complete blockage in conscious patient
- Initiate CPR in unconscious patient with known airway obstruction
- **Oxygen** via most appropriate method
- Remove foreign body with suction if it has become dislodged and is easily visible.
 - DO NOT push further into oropharynx

Basic EMT

- Same as above

Advanced EMT

- Direct/Video laryngoscopy and removal of foreign object with Magill forceps or suction
 - If patient is unconscious and there is a complete obstruction
- IV/IO access

Paramedic

- Consider surgical airway (cricothyroidotomy) if obstruction is not relieved by other means

Medical Consult

- Surgical airway consult if all indications are not met



Airway Obstruction

Critical Points:

- Rapid transport is recommended in all partial or complete airway obstructions.
- Partial airway obstructions allow for some air to pass the foreign body. This does NOT mean enough air/oxygen is getting to the lungs. Patients should be encouraged to cough if possible.
- Pulse oximetry and Capnography should be continuously monitored.
- Do not intervene if patient has productive cough.



Bronchospasm

Signs and Symptoms:

- Shortness of breath
- Wheezing, rhonchi, stridor
- Prolonged expiratory phase
- Pursed lip breathing
- Decreased ability to speak
- Increased respiratory rate and effort/work of breathing
- Accessory muscle use

History:

- History of asthma, COPD, chronic bronchitis
- Reactive airway disease- exposure to allergens, smoke, chemicals.
- Home treatment such as at home oxygen or CPAP machine
- Medications

Differential:

- CHF
- Upper respiratory infection
- Anaphylaxis
- Pulmonary embolism, pneumothorax
- Cardiac MI or tamponade
- Hyperventilation/Anxiety
- Inhaled toxins

Standby EMT

- **Oxygen** via most appropriate method
- **DuoNeb** (Albuterol 3 mg/Atrovent 0.5 mg) via Nebulizer
 - May repeat x 2 q 10 minutes

Basic EMT

- CPAP 3 – 10 cmH₂O

Advanced EMT

- IV/IO access
- Fluid Bolus if SBP < 90 mmHg
 - Repeat PRN to keep SBP > 90 mmHg
 - Max 2 liters

Paramedic

- **Epinephrine 1: 1,000** 0.3 mg IM
- **Methylprednisolone** 125 mg IV/IO
- **Magnesium Sulfate** 1 gram IV/IO over 10 minutes
 - May repeat once
- **Epinephrine Nebulizer** for Stridor
 - 1 mg (1:1,000) in 2 mL NS
 - May repeat once
- Consider DSI/RSI

Medical Consult

- Additional **Epinephrine 1:1,000**



Bronchospasm

Critical Points:

- Monitor pulse oximetry and capnography continuously in any respiratory distress patient.
- A silent chest in respiratory distress is a pre-respiratory arrest sign.
- Administer therapeutic oxygen (NC, NRB, BVM, CPAP) for $SPO_2 < 94\%$, suspected hypoxia, or at Paramedic discretion.
- Routinely check lung sounds to note any changes and/or improvement.
- Monitor for worsening conditions



COPD

Signs and Symptoms:

- Shortness of breath
- Wheezing, rhonchi, stridor
- Prolonged expiratory phase
- Pursed lip breathing
- Decreased ability to speak
- Increased respiratory rate and effort/work of breathing
- Accessory muscle use

History:

- History of COPD
- Chronic bronchitis or emphysema
- Home treatment such as at home oxygen or CPAP machine

Differential:

- CHF
- Upper respiratory infection
- Anaphylaxis
- Pulmonary embolism, pneumothorax
- Cardiac MI or tamponade
- Hyperventilation/Anxiety
- Inhaled toxins
- Asthma

Standby EMT

- **Oxygen** via most appropriate method
- **Duoneb** (Albuterol 3 mg/Atrovent 0.5 mg) via Nebulizer
 - May repeat x 2 q 10 minutes

Basic EMT

- CPAP 3 – 10 cmH2O

Advanced EMT

- IV/IO access
- Fluid Bolus if SBP < 90 mmHg
 - Repeat PRN to keep SBP > 90 mmHg
 - Max 2 liters

Paramedic

- **Methylprednisolone** 125 mg IV/IO
- **Magnesium Sulfate** 1 gram IV/IO over 10 minutes
 - May repeat once
- **Epinephrine 1:1,000** 0.3 mg IM
 - Contact medical control for administering in patient > 50, history of cardiac disease, or HR > 150 bpm
- Consider DSI/RSI

Medical Consult

- Epinephrine for patients > 50 years old. See critical points for details.

Critical Points:

- Monitor pulse oximetry and capnography continuously in any respiratory distress patient.
- A silent chest in respiratory distress is a pre-respiratory arrest sign.
- Administer therapeutic oxygen (NC, NRB, BVM, CPAP) for SPO₂ < 94%, suspected hypoxia, or at Paramedic discretion.
- Have continuous ECG monitoring.
- Allow position of comfort.
- Routinely check lung sounds to note any changes and/or improvement.
- Monitor for worsening conditions.
- **Contact medical control prior to administering epinephrine in patients > 50 years old, have a history of cardiac disease, or if the patients heart rate is > 150 bpm. Epinephrine may cause or precipitate cardiac ischemia. 12-lead should be acquired on these patients.**



Pneumonia

Signs and Symptoms:

- Fever may be present (not required for pneumonia)
- Productive cough
- Localized wheezing, rhonchi or rales
- Shortness of breath
- Pain with respirations
- Associated symptoms: “flu like symptoms”, myalgia, cough, chest pain, throat pain, headache, dysuria, abdominal pain, rash

History:

- Recent upper respiratory illness
- History of bronchitis, infection, or respiratory illness/pneumonia
- Recent hospital visit within last 90 days (hospital-acquired pneumonia)
- Gradual onset
- Aspiration risk

Differential:

- Pulmonary edema/CHF
- Sepsis or SIRS (Systemic Inflammatory Response Syndrome)
- Asthma/Isolated bronchospasm
- Bronchitis
- Epiglottitis/Croup
- Aspiration pneumonitis
- Community acquired pneumonia (CAP)
- Hospital-acquired pneumonia (HAP)

Sepsis Screening: if positive move to Sepsis protocol.

Standby EMT

- Appropriate PPE
- **Oxygen** via most appropriate method
- **DuoNeb** (3 mg Albuterol/0.5 mg Atrovent) via Nebulizer
 - May repeat x 2 q 10 minutes
- **Acetaminophen** 650 - 975 mg PO
- **Ibuprofen** 400 – 800 mg PO
- External cooling

Basic EMT

- CPAP 3 – 10 cm H₂O

Advanced EMT

- IV/IO access
- Fluid Bolus if SBP < 90 mmHg
 - Repeat PRN to keep SBP > 90 mmHg
 - Max 2 liters

Paramedic

- Consider DSI/RSI

Critical Points:

- Pneumonia typically presents in a section of the lung and not bilaterally. Localized adventitious breath sounds are indicative of possible pneumonia.
- Prehospital treatment of pneumonia focuses on preventing or correcting hypoxia and decreasing bronchospasms.
- Monitor all vitals including temperature, EtCO₂, and SpO₂ in any suspected pneumonia patient.
- Patient who present with increased work of breathing with hypoxia can most likely benefit from CPAP application.
- Do not administer additional APAP if the patient has taken any within the last 6 hours.

Sepsis/SIRS Screening:		
Temperature:	< 96.8°F or > 100.4°F	1 point
Heart Rate:	> 90 beats per minute	1 point
Respiratory Rate:	> 20 breaths per minute	1 point
EtCO ₂ :	< 25 mmHg	1 point
Score > 2 = SEPSIS ALERT		



Pulmonary Edema

Signs and Symptoms:

- Dyspnea with auscultated findings of pulmonary edema (bilateral rales)
- Systolic BP > 90 mmHg
- Atrial fibrillation may be present
- Jugular vein distention
- Pink, frothy sputum
- Peripheral edema
- Diaphoresis
- Chest pain
- Orthopnea

History:

- Prior history
- Medication (Lasix, digoxin)
- Erectile dysfunction drugs (Viagra, Levitra, Cialis)
- Dyspnea on exertion
- Cardiac history (MI, CHF)
- Paroxysmal nocturnal dyspnea (PND)
- Dietary indiscretion (ESRD)

Differential:

- Pneumonia
- Myocardial infarction
- Pericardial tamponade
- Pulmonary embolism
- Renal failure
- Asthma
- Anaphylaxis
- COPD
- Hypertensive emergency
- Toxic exposure

Standby EMT

- **Oxygen** via most appropriate method

Basic EMT

- CPAP 3 – 10 cmH₂O
 - Consider **DuoNeb** in conjunction with CPAP

Advanced EMT

- IV/IO access

Paramedic

- **NTG** 0.4 mg SL
 - May repeat x 2 q 5 min prior to IV if BP > 100 mmHg
 - Once IV established, NTG can be administered q 5 min if BP >100 mmHg
- Pain management
 - **Morphine** 2 – 5 mg IV/IO
- Consider DSI/RSI

Medical Consult

- **Dopamine** 0.5 – 3 mcg/kg/min IV/IO for cardiogenic shock
 - Administer if patient remains hypotensive **after 1 liter bolus**
 - Titrate to sustain SBP > 90 mmHg
- **Norepinephrine (Levophed)** 2 – 12 mcg/min IV/IO infusion for cardiogenic shock.
 - Administer if patient remains hypotensive **after 2 liter bolus**

- Titrate to sustain SBP > 90 mmHg

Critical Points:

- Obtain temperature to rule out pneumonia.
- Ketamine preferred for anxiolysis if hypotension is present.
- Avoid NTG in any patient who has used Viagra (sildenafil) or Levitra (vardenafil) or Cialis (tadalafil) in the past 24 hours due to potential for severe hypotension.
- CHF/Cardiogenic shock may result from AMI, 12-lead should be obtained in all patients with this presentation.
- Careful monitoring of vitals, level of consciousness, and work of breathing is necessary with above interventions and patient condition.
- Opioids can increase respiratory depression and should be used with caution in respiratory compromised patients.
- Allow patient to be in a position of comfort to maximize breathing effort.



Pulmonary Embolism

Signs and Symptoms:

- Dyspnea, sudden onset
- Unilateral leg pain/swelling
- Chest pain
- Clear lung sounds
- Hemoptysis
- JVD
- Tachycardia
- A-fib
- Syncope

History:

- Recent surgery
- Thrombosis/Embolism
- Recent travel within 30 days
- Recent immobilization of an extremity
- OCP
- Recent TXA administration may increase PE risk

Differential:

- Pneumonia, Bronchitis
- Asthma/COPD
- Congestive heart failure (CHF)
- Cardiac ischemia/infarction
- Pericarditis
- Cardiac Tamponade
- Pneumothorax
- Costochondritis
- Panic disorder

Standby EMT

- **Oxygen** via most appropriate method
- Place patient in position of comfort
- Rapid transport

Basic EMT

- CPAP 3 – 10 cm H₂O

Advanced EMT

- IV/IO access
- Fluid Bolus if SBP < 90 mmHg
 - Repeat PRN to keep SBP > 90 mmHg
 - Max 2 liters
- Intubation

Paramedic

- Consider DSI/RSI
- **Dopamine** Infusion 5 – 20 mcg/kg/min
 - Administer if patient remains hypotensive **after 1 liter bolus**
 - Titrate to sustain SBP > 90 mmHg
- **Norepinephrine (Levophed)** 2 – 12 mcg/min IV/IO infusion for cardiogenic shock.
 - Administer if patient remains hypotensive **after 2 liter bolus**
 - Titrate to sustain SBP > 90 mmHg

Critical Points:

- Large PE mortality is due to hemodynamic collapse rather than hypoxemia. Pre-hospital efforts should focus on treating hypoxia along with cardiac support and rapid transport to definitive care.
- RSI procedure/intubation will not likely improve oxygenation in the setting of a large PE.
- If known or suspected large PE, intubation risk (time, paralysis) should be weighed against airway protection. Rapid transport to a facility with PE therapies (thrombolysis) is the goal.



Trauma Assessment

Signs and Symptoms:

- DCAP-BTLS
- Bleeding/Deformity
- Loss of Consciousness
- Altered Mental Status
- Blast injury
- Radiation injury
- Abdominal distention with associated MOI

History:

- History of recent trauma or high energy exposure
- MOI indicative of trauma: crush, penetrating, amputation, blunt

Differential:

- AMS differentials if applicable
- Chemical/Exposure burn

Assessment

- C.A.B.C.
 - M.A.R.C.H. is acceptable algorithm for primary traumatic assessment
- Secondary assessment
 - Focused assessment for single isolated injury
- OR
- Rapid Trauma Assessment
 - Multiple injuries or multiple systems/locations involved
 - AMS or Unconscious
 - Communication barrier
- GCS
- Vital signs
 - Blood Pressure, palpated pulse (required)
 - Pulse ox, glucose, EKG/12-lead if applicable and time allows, temperature, pain scale, capnography/EtCO₂, CO
- Lung Sounds
- Rapid transport/extrication if indicated
- Select appropriate facility
 - Burns
 - Hand/foot specialties
 - Trauma designation
 - Eye injuries
- Trauma Alert as soon as possible
 - On scene alert preferred as well as updated facility notification during transport
- ASPN
- OPQRST
- SAMPLE
- On-going assessment, repeat vitals, evaluate interventions/procedures
- Active warming



Amputation

Signs and Symptoms:

- Partially severed body part
- Completely severed body part

History:

- Mechanism of Injury: crush/penetrating/laceration
- Time of injury
- Wound contamination
- Medical comorbidities: anemia, COPD, etc.
- Medications: beta blockers, insulin, amphetamines, etc.

Differential:

- Hypovolemic shock
- Deep laceration
- Crush injury without amputation

Standby EMT

- Hemorrhage control
 - Early application of tourniquet for arterial or uncontrolled hemorrhage
- SMR if indicated
- **Oxygen** via the most appropriate method
- Splint any associated fracture or dislocation
- Active warming for shock/traumatic hypovolemia

To care for amputated part:

- Rinse with sterile water, wrap in a damp sterile gauze
- Place in a bag (biohazard or other non-permeable plastic bag)
- Keep cool but do not place directly on ice

Basic EMT

- Hemorrhage control
 - Hemostatic bandaging for active hemorrhage

Advanced EMT

- IV/IO access
- Fluid bolus if SBP < 90 mmHg
 - Repeat PRN to keep SBP > 90 mmHg
 - Max 2 liters

Paramedic

- Pain management
 - **Ketamine** preferred analgesia in traumatic injuries
- Consider Air Medical Provider for transport to appropriate destination
- **TXA** 1 gram IV/IO
 - Mix in 100 mL NS infuse over 10 minutes

Medical Consult

- Notify receiving facility with Trauma Alert and that patient may meet massive transfusion protocol

Critical Points:

- Promptly apply tourniquet to arterial or life-threatening bleeding. When in doubt apply a tourniquet.
- ONLY department supplied CoTCCC approved tourniquets may be used for patient care.
- Amputations may be high or low kinetic, assess for additional injuries and treat appropriately.
- Partial amputations may retain neurovascular status.
- TIME is critical in amputations for the patient and the severed extremity. Consider AMP.
- Lower limb amputations, especially above the knee, are associated with pelvic and hip fractures/dislocations. Pelvis stability should be assessed, and instability treated quickly.
- Previous blood loss may be difficult to assess in patients wearing baggy/extra clothing, who are mobile, and in dark or wet environments.

TXA Administration Criteria

MUST MEET **ALL** CRITERIA BELOW:

- Adult (age ≥ 15) with **hemorrhagic shock from trauma**.
- Obvious bleeding from non-compressible wounds **neck to mid-thigh** or **suspected severe internal injuries** from blunt or penetrating trauma.
- Trauma occurred **within the last 3 hours**.
- Sustained tachycardia > 110 bpm **and/or** sustained hypotension with SBP < 90 mmHg **after 1 liter NS**.
- No presence or suspicion of head injury

Signs and Symptoms:

- Burns, pain, swelling, blistering
- Tissue injury from direct contact with: heat source, chemical reaction, electricity/lightning
- Unconsciousness
- Hypotension/Shock
- Inhalation burns: hoarseness, wheezing, respiratory distress

History:

- Direct contact with: heat source, chemical reaction, electricity/lightning
- Time of injury
- Additional trauma potential

Differential:

- Superficial (1st degree)
- Partial thickness (2nd degree)
- Full thickness (3rd degree)
- Hypovolemic shock
- Type of burn/exposure: thermal, electrical, chemical
- Hypothermia
- Cardiac arrhythmia

Standby EMT

- Remove the burn source
- **Oxygen** via the most appropriate method
- Treat underlying injuries
- Assess burns and associated injuries
 - Record TBSA of each type of burn for 2° and 3°
- Dress burns as follows:
 - TBSA of 2° and 3° < 15% use wet sterile dressing
 - TBSA of 2° and 3° > 15% use dry sterile dressing or burn sheet

General Care:

- Remove jewelry and restricting clothing
- Brush off any powdered chemical
- Irrigate chemical burn site with water, if appropriate to chemical
- Keep the patient warm after removing burn

Basic EMT

- Same as above

Advanced EMT

- Intubation
- IV/IO access
 - Consider secondary access
- Fluid bolus
 - % TBSA x weight in kg x 4
 - Administer ½ of total volume over first 8 hours
 - Alternate formula: 0.25 mL/kg (x TBSA)/hour

Paramedic

- Pain management
 - **Morphine** preferred analgesia for burn injuries
- DSI/RSI for respiratory/inhalation burns
- Surgical airway (cricothyroidotomy) procedure
- Consider Air Medical Provider for transport to appropriate burn center

Critical Points:

- Critical Burns (Consider Burn Center):
 - Inhalation/hands/feet/face/neck/genitals/joints/circumferential burns
 - Electrical burns
 - 2° and 3° > 15 % TBSA
 - Patient < 12 or > 65 years of age
 - Inhalation Injuries/Burns with any one of the following:
 - Singed nasal hairs or oral mucosa
 - Erythema of the palate, soot in the mouth, larynx or sputum
 - Rapid, shallow ventilation with tachypnea > 40 AND decreased mental status
 - Respiratory rate < 8
 - Mechanical airway obstruction from trauma, edema, or laryngospasm
 - Signs of respiratory distress such as nasal flaring, respiratory crowing or stridor, anxiety, agitation, or combativeness
 - Unconsciousness
 - GCS ≤ 13
- Transport critical burns to a burn center using an Air Medical Provider when patient condition and circumstances allow.
- Unstable patients without definitive airway or risk of airway compromise should be stabilized at closest appropriate facility.
- Burn patients can present with multisystem trauma, hypothermia, cardiac arrhythmias and respiratory abnormalities.
- Assess TBSA using the Rule of Nines provided in the Appendix
- Extensive burn patients lack the ability to thermoregulate and are prone to hypothermia. Do not place ice on extensive burns.



Evisceration

Signs and Symptoms:

- Pain
- Bleeding
- Protrusion of internal organs through a wound

History:

- Trauma causing an evisceration

Differential:

- Penetrating injuries
- Soft tissue injuries
- Blast injuries
- Abdominal lacerations
- Multi-system trauma

Standby EMT

- SMR if indicated
- **Oxygen** via most appropriate method
- Cover wound/organs with sterile, moist dressing and bandage
- If localized uncontrolled bleeding can be visually identified without gross manipulation apply dressing and pressure to area/vessel.
 - Do NOT wound pack abdominal cavity

NEVER attempt to replace protruding organs back into the body cavity

Basic EMT

- Same as above

Advanced EMT

- IV/IO access
- Fluid bolus if SBP < 90 mmHg
 - Repeat PRN to keep SBP > 90 mmHg
 - Max 2 liters

Paramedic

- Pain management
 - **Ketamine** preferred analgesia in traumatic injuries
- Consider Air Medical Provider for transport to appropriate destination

Critical Points:

- Patients with traumatic hypotension or suspected exsanguination should be treated under the Multi-system Trauma Protocol.
- Strict NPO as patient will likely go to surgery.



Eye Injury

Signs and Symptoms:

- Injury to the globe, open or closed, including: Corneal abrasion, foreign body in the eye, chemical burn, lacerated or avulsed globe, “arc” burns of globe
- Excessive tearing and burning of the eyes, nasal drainage, salivation
- Decreased or loss of vision
- Pain

History:

- Sprayed with CS/OC spray
- Trauma resulting in an eye injury
- Eye pain with unknown etiology

Differential:

- Allergies
- Anxiety

Standby EMT

- **Do not remove foreign body if globe penetrated**
 - Stabilize in place and cover **both eyes**
- Chemical burn/CS or OC spray
 - Flush continuously with copious amounts of water or NS
 - 20 minutes preferred if wash station available
 - Do not let the run off from the affected eye contaminate the non-infected eye
- Open injury to globe
 - Shield both eyes
- Corneal abrasion, ultraviolet (arc) burn, or foreign body
 - **Tetracaine** 1 – 2 gtt in affected eye(s) PRN
 - Remove foreign body if **not** embedded and globe **not** penetrated
 - Shield affected eye
- Flush/irrigate with sterile water and/or normal saline 2 – 3 liters per affected eye

Basic EMT

- Same as above

Advanced EMT

- IV/IO access

Paramedic

- Pain management
- Morgan lens

Medical Consult

- Contact Medical Control or Poison Control prior to administering Tetracaine for chemical burns

Critical Points:

- Pain management may be utilized in conjunction with Tetracaine to provide additional analgesia.
- Eye injuries can cause extensive stress and emotional anxiety, provide comfort and verbal reassurance to keep the patient from exacerbating the injury. If necessary, move to Anxiety and Emotional Distress Protocol.
- Try to keep patients from blinking or rubbing the affect eye(s).
- If irritation is due to an exposure, try to identify the substance and obtain information or MSDS for the ED/poison control.
- Transport may be delayed for best irrigation practices (wash eye station in a lab) if patient condition and cooperation allow. Providing analgesia and/or tetracaine may be beneficial to assist with irrigation.



Head Trauma

Signs and Symptoms:

- Altered Mental Status
- Loss of consciousness
- Decreased GCS
- Respiratory distress/failure
- Vomiting
- Convulsions
- Posturing
- Pain, swelling, bleeding

History:

- Trauma etiology resulting in a head injury
- Time of injury
- Mechanism (blunt vs penetrating)
- History of TBI, concussions, surgical plates/stents

Differential:

- Non-traumatic intracranial hemorrhage/CVA
- Neurological disease/disorder
- Concomitant spinal injury
- Hypo/Hyperglycemia
- Overdose/intoxication
- Behavioral/psychiatric
- AMS differentials
- Multi-system trauma/exsanguination

Standby EMT

- Hemorrhage control
- Helmet removal
 - For airway management if clinically indicated
- SMR if indicated
- **Oxygen** via most appropriate method
- Obtain GCS
- Consider restraint procedure

General Helmet Removal

Maintain neutral alignment with padding as needed after removal

Football Helmet Removal

Leave helmet in place and remove face mask only. If helmet must be removed, remove helmet and shoulder pads together as one unit to maintain neutral alignment

Basic EMT

- Same as above

Advanced EMT

- IV/IO access
- Fluid bolus if SBP < 90 mmHg
 - May repeat PRN to maintain SBP > 90 mmHg
 - Max 2 liters

Paramedic

- Therapeutic hyperventilation if s/s of herniation are present
 - EtCO₂ 30 – 35 mmHg
- Pain management
- DSI/RSI procedure
- Refer to appropriate protocol to address symptoms

Critical Points:

- Rapid transport to appropriate facility is crucial in the presence of severe head trauma.
- Record accurate GCS during primary assessment and monitor for any changes in responsiveness and GCS.
- Do NOT estimate or guess a GCS. See GCS Appendix for reference.
- Severe head injuries are likely to show rapid changes in mental status and presentation. Continuously re-assess and monitor for changes.
- A single episode of hypoxia and/or hypotension can significantly increase morbidity and mortality with head injury.
- TXA is contraindicated in the presence of a known or suspected head injury.
- **Hyperventilation** in head injury:
 - Short term option used for **severe head injury, GCS \leq 8 or unresponsive.**
 - Evidence of severe head injury with possible herniation are **blown pupil, decorticate/decerebrate posturing, bradycardia, decreasing GCS and irregular respirations.**
 - **Ventilate at a rate to maintain EtCO₂ between 30 – 35 mmHg.**
- **Hypotension** in the trauma patient:
 - Limit IV fluids unless the patient is hypotensive (SBP < 90 mmHg)
 - Assess for tension pneumothorax
 - Assess for internal bleeding
 - **Hypotension in the presence of a TBI is most likely due to other causes not attributed to the TBI.**
- **Concussions**
 - Traumatic brain injury (TBI) involves any number of symptoms including slow/delayed reasoning or speech patterns, confusion, LOC, vomiting, persistent headache and/or vertigo following a head injury.
 - Consider ALS or Physician assessment for any non-resolving symptoms after 15 minutes.
 - EMS providers should not make any return-to-play decisions.
- Position of comfort or head elevated 15 – 30° is preferred. Do not place in Trendelenburg position or have legs elevated.



Multi-System Trauma

Signs and Symptoms:

- Injury to the chest, abdomen, or pelvis
- Multiple soft-tissue or musculoskeletal injuries
- AMS
- Unconscious
- Hypotension or shock

History:

- Mechanism of injury
- Associated damage to scene/vehicle/building
- Position or location relative to mechanism
- Speed of vehicle

Differential:

- Underlying medical etiology: hyper/hypoglycemia
- Non-traumatic hypotension
- Hypothermia
- Internal bleeding
- Spinal injury

Standby EMT

- Hemorrhage control
 - Early application of tourniquet for arterial or life-threatening hemorrhage
 - Compression dressing (gauze) and bandaging for compressible hemorrhage
- Occlusive dressing
 - Sucking chest wounds
 - Penetrating trauma from the neck to the naval
- Active warming for shock/traumatic hypovolemia
- SMR if indicated
- **Oxygen** via the most appropriate method
- Obtain GCS
- Splint any associated fracture or dislocation
- Supraglottic airway device

Basic EMT

- Application of pelvic binder if indicated
- Hemorrhage control
 - Hemostatic bandaging for active hemorrhage

Advanced EMT

- IV/IO access
 - Consider secondary access
- Fluid bolus if SBP < 90 mmHg
 - Repeat PRN to keep SBP > 90 mmHg
 - Max 2 liters
- Intubation



Multi-System Trauma

Paramedic

- Chest decompression procedure if indicated
- Surgical airway (cricothyroidotomy) if indicated
- DSI/RSI procedure
- **TXA** 1 gram IV/IO
 - Mix in 100 mL NS infuse over 10 minutes
- Pain management
 - Consider **Ketamine** as primary analgesia for traumatic injury
- Consider Air Medical Provider

TXA Administration Criteria

MUST MEET **ALL** CRITERIA BELOW:

- Adult (age ≥ 15) with **hemorrhagic shock from trauma**.
- Obvious bleeding from non-compressible wounds **neck to mid-thigh** or **suspected severe internal injuries** from blunt or penetrating trauma.
- Trauma occurred **within the last 3 hours**.
- Sustained tachycardia > 110 bpm **and/or** sustained hypotension with SBP < 90 mmHg **after 1 liter NS**.
- No presence or suspicion of head injury

Medical Consult

- Notify receiving facility with Trauma Alert and that patient may meet massive transfusion protocol

Critical Points:

- Promptly apply tourniquet to arterial or life-threatening bleeding. When in doubt apply a tourniquet.
- ONLY department supplied CoTCCC approved tourniquets may be used for patient care.
- Rapid transport to appropriate facility is crucial in the presence of Multi-System Trauma.
- Record accurate GCS during primary assessment and monitor for any changes in responsiveness and GCS.
- Do NOT estimate or guess a GCS. See GCS Appendix for reference.
- Severe traumatic injuries are likely to show rapid changes in mental status and presentation. Continuously re-assess and monitor for changes.
- A single episode of hypoxia and/or hypotension can significantly increase morbidity and mortality with head injury and Multi-System Trauma patients.
- **DO NOT administer pressors for traumatic induced shock/hypovolemia.**



Musculoskeletal Trauma

Signs and Symptoms:

- Pain on palpation or movement
- DCAP-BTLS
- Dislocation
- Open/closed fracture
- Decreased or absent distal circulation, motor, and/or sensation

History:

- Mechanism of injury
- Recent trauma
- Previous injury of the affected site
- Time from injury to arrival on scene

Differential:

- Compartment syndrome/Crush injury
- Chronic long-term injury/condition
- Osteoporosis/Arthritis
- Penetrating trauma
- Multi-System Trauma
- Neurological compromise
- Infection

Standby EMT

- Hemorrhage control
 - Early application of tourniquet for arterial or life-threatening hemorrhage
 - Compression dressing (gauze) and bandaging for compressible hemorrhage
- Occlusive dressing
 - Sucking chest wounds
 - Penetrating trauma from the neck to the naval
- Active warming for shock/traumatic hypovolemia
- SMR if indicated
- **Oxygen** via the most appropriate method
- Obtain GCS
- Splint any associate fracture or dislocation
 - If circulation, motor function, and/or sensation is compromised, gently reposition extremity by applying inline traction
 - Only attempt once and stop if resistance is met
- External cooling if injury site is isolated

Basic EMT

- Early application of pelvic binder if indicated

Advanced EMT

- IV/IO access
- Fluid bolus if SBP < 90 mmHg
 - Repeat PRN to keep SBP > 90 mmHg
 - Max 2 liters

Paramedic

- Pain Management



Musculoskeletal Trauma

Critical Points:

- Promptly apply tourniquet to arterial or life-threatening bleeding. When in doubt apply a tourniquet.
- ONLY department supplied CoTCCC approved tourniquets may be used for patient care.
- Assess distal circulation, motor function and sensation (CMS) before and after splinting extremity injuries.
- Move to Amputation protocol if partial or complete amputation.
- Rapid transport for any suspected vascular compromise.



Penetrating Injury

Signs and Symptoms:

- A penetrating injury to any body part
- Entrance and/or exit wounds
- Embedded foreign body

History:

- Mechanism of injury
- Note ballistics
- Consider contaminants/toxins on penetrating foreign body
- Consider trajectory of penetrating object

Differential:

- Musculoskeletal trauma
- Blunt trauma
- Behavioral/Mental health self-harm

Standby EMT

- Always ensure provider safety, request and stage for law enforcement if indicated
- Hemorrhage control
 - Early application of tourniquet for arterial or life-threatening hemorrhage
 - Compression dressing (gauze) and bandaging for compressible hemorrhage
- Occlusive dressing
 - Sucking chest wounds
 - Penetrating trauma from the neck to the naval
- SMR if indicated
- **Oxygen** via most appropriate method
- Stabilize impaled objects and splint any associated fracture or dislocation
- Active warming for shock/traumatic hypovolemia

Basic EMT

- Same as above

Advanced EMT

- IV/IO access
 - Consider secondary access
- Fluid bolus if SBP < 90 mmHg
 - Repeat PRN to keep SBP > 90 mmHg
 - Max 2 liters

Paramedic

- Chest decompression procedure if indicated
- DSI/RSI procedure
- **TXA** 1 gram IV/IO
 - Mix in 100 mL NS infuse over 10 minutes
- Pain management
 - Consider **Ketamine** as primary analgesia for traumatic injury
- Consider Air Medical Provider

Critical Points:

- May remove impaled object if it interferes with airway or CPR
- Promptly apply tourniquet to arterial or life-threatening bleeding. When in doubt apply a tourniquet.
- ONLY department supplied CoTCCC approved tourniquets may be used for patient care.
- Partial amputations may retain neurovascular status.
- Previous blood loss may be difficult to assess in patients wearing baggy/extra clothing, who are mobile, and in dark or wet environments.
- Rapid transport to appropriate facility is crucial in the presence of penetrating thoracic or upper extremity trauma.
- Record accurate GCS during primary assessment and monitor for any changes in responsiveness and GCS.
- Do NOT estimate or guess a GCS. See GCS Appendix for reference.
- A single episode of hypoxia and/or hypotension can significantly increase morbidity and mortality with penetrating and/or Multi-System Trauma patients.
- Utilize Multi-System Trauma Protocol for additional injuries or traumatic induced hypovolemia.
- **DO NOT administer pressors for traumatic induced shock/hypovolemia.**
- **All potential evidence (clothes) should be preserved as best possible and placed in a permeable bag and handed over to ED staff or LE. Note individual/RN who receives the items in patient care report.**

TXA Administration Criteria

MUST MEET **ALL** CRITERIA BELOW:

- Adult (age ≥ 15) with **hemorrhagic shock from trauma.**
- Obvious bleeding from non-compressible wounds **neck to mid-thigh or suspected severe internal injuries** from blunt or penetrating trauma.
- Trauma occurred **within the last 3 hours.**
- Sustained tachycardia > 110 bpm **and/or** sustained hypotension with SBP < 90 mmHg **after 1 liter NS.**
- No presence or suspicion of head injury



Sexual Assault

Signs and Symptoms:

- Signs of assault or injury
- Rectal or genital bleeding
- Pain, swelling, contusions, scars, chafing, bite marks to genital area
- Pain with urination or bowel movement
- Mood disturbance

History:

- Report of recent sexual assault
- Unexplained memory loss
- Possible exposure to “date rape” drugs: alcohol, flunitrazepam (Rohypnol), gamma-hydroxybutyric acid (GHB), gamma-butyrolactone (GBL), ketamine

Differential:

- Domestic violence
- Strangulation
- Blunt trauma
- Anxiety disorders

Standby EMT

- Always ensure provider safety, request and stage for law enforcement if indicated
- Provide emotional support
- Treat underlying injuries

Basic EMT

- Same as above

Advanced EMT

- Same as above

Paramedic

- Pain management

Critical Points:

- Try to advise the patient not to eat, drink, chew gum, smoke or put anything into their mouth.
- Advise the patient to not change clothes, use the bathroom, bath or shower.
- Avoid sedating medications when possible for sexual assault victims.
- Reassure the patient that they are in control and have options for evaluation and care.
- Reassure the patient they can receive medical care even if they choose not to report the assault.
- Keep assessment and SAMPLE history brief. Details about the assault will be taken in the ED.
- **Unless patient specifically requests otherwise, transport known or suspected sexual assaults to Baylor Scott and White Emergency Room, the local facility with Sexual Assault Nurse Examiner.**
- **All potential evidence (clothes) should be preserved as best possible and placed in a permeable bag and handed over to ED staff or LE. Note individual/RN who receives the items in patient care report.**



Spinal Trauma

Signs and Symptoms:

- Presence of decreased neurological function below site of injury
- Loss of sensation
- Inability to move
- Hypotension

History:

- Mechanism of injury
- Elapsed time since injury and neurological compromise (delayed paralysis)
- Previous injury/paralysis

Differential:

- Spinal cord infarction
- Spinal cord Hemorrhage
- Multi-System Trauma
- Isolated head injury
- Hypovolemia

Standby EMT

- **Oxygen** via most appropriate method
 - Respiratory compromise may be present due to absence of respiratory drive
- SMR Procedure
 - Request additional resources (manpower) for patient packaging and movement

Basic EMT

- Same as above

Advanced EMT

- IV/IO access
- Fluid bolus if SBP < 90 mmHg
 - Repeat PRN to keep SBP > 90 mmHg
 - Max 2 liters

Paramedic

- **Norepinephrine (Levophed)** 2 – 12 mcg/min IV/IO infusion
 - Administer if patient remains hypotensive **after 2 liter bolus**
 - Titrate to sustain SBP > 90 mmHg
- **Dopamine** 10 – 20 mcg/kg/min IV/IO for neurogenic shock
 - Administer if patient remains hypotensive **after 1 liter bolus**
 - Titrate to sustain SBP > 90 mmHg
- Pain Management
- DSI/RSI
- Consider Air Medical Provider

Critical Points:

- Any movement, such as a log roll, should be weighed against the risk and only performed with adequate personnel. Additional resources for packaging and movement will likely be needed.
- Transport to appropriate facility and/or consider Air Medical Provider (AMP).
- Perform full Rapid Trauma Assessment (RTA) in these patients. Assume pain feedback mechanisms are not present or compromised and visually inspect/palpate during RTA.
- The acute neurologically compromised patient is still a trauma patient. Assess and treat C.A.B.C. or M.A.R.C.H. algorithm as normal with an emphasis on not moving the patient and maintaining spinal integrity.
- Consider early, on scene, notification to trauma facility.



Taser

Signs and Symptoms:

- Taser probe embedded in a patient

History:

- Taser use/discharge
- Be cognizant for excited delirium
- Cardiac disease, abnormalities, arrhythmias

Differential:

- Consider excited delirium
- Overdose/Intoxication
- Trauma
- Behavioral/Mental health
- AMS differentials

Standby EMT

- Always ensure provider safety, request and stage for law enforcement if indicated and not already on scene (Taser's can be purchased by the general public)
- Assure electrical output is no longer surging through the probe/wires
 - cartridge housing/taser wires should be disconnected from the taser or battery source
- Remove probe from patient unless embedded in breast, groin/genitals, neck or facial areas
 - Grab as low on the probe as possibly with a firm grip.
 - Holding the skin taught around the probe, quickly pull back on probe removing it from the skin
- Wound care
- ALS consult/assessment is required

Basic EMT

- Same as above

Advanced EMT

- Same as above

Paramedic

- Cardiac assessment

Critical Points:

- Do not remove taser probes from breast tissue, groin, neck, face, or eyes. These locations pose a high risk for complications and should be removed at an ER.
- Remove taser probes at a 90 degree angle pulling quickly.
- Probes typically have a small barb at the end which keeps them embedded.
- Initial set of vitals should be assessed on all taser removals including temperature and glucose.
- ALS providers should perform full cardiac assessment including 3-lead and 12-lead if possible.
- Consider overdose, excited delirium and other comorbidities which may cause a patient to be altered or behave unusually.



Traumatic Arrest

Signs and Symptoms:

- Trauma: evidence of blunt or penetrating injuries
- Pulseless
- Apnea or agonal respirations
- Any non-perfusing rhythm in the presence of acute trauma

History:

- Traumatic etiology
- Surgical problem

Differential:

- Medical etiology preceding traumatic event as cause of arrest
- Tension Pneumothorax
- Hemothorax
- Uncontrolled hemorrhage: internal or external
- Hypovolemic shock
- Unstable pelvic fracture
- Signs incompatible with life

Standby EMT

- CPR
 - BVM ventilation with 100% O₂
- AED application
- Hemorrhage control
 - Early application of tourniquet for arterial or life-threatening hemorrhage
 - Must stop/reverse hypovolemia to obtain ROSC
- Occlusive dressing
 - Sucking chest wounds
 - Penetrating trauma from the neck to the naval
- SMR procedure
- Supraglottic airway device

Basic EMT

- Application of pelvic binder if indicated

Advanced EMT

- Intubation
- IO/IV Access
 - Consider secondary access
- Fluid bolus if SBP < 90 mmHg
 - Repeat PRN to keep SBP > 90 mmHg
 - Max 2 liters

Paramedic

- Chest Decompression if indicated
 - Bilateral decompression (if indicated) is recommended in the presence of blunt force traumatic arrest
- Surgical airway (cricothyroidotomy) if indicated



Traumatic Arrest

- Rhythm appropriate treatment per specific protocol
- NG/OG tube placement

Medical Consult

- Pre-Hospital Termination if patient does not meet Field Termination Procedure requirements

Critical Points:

- Refer to Trauma Resuscitation Termination Procedure if indicated.
- Agonal respirations are treated as apneic breathing.
- Patients with suspected **blunt force trauma** found pulseless and apneic after basic airway maneuvers should receive bilateral chest decompression (if indicated), and ECG assessed.
- Mechanical CPR device is contraindicated in traumatic arrest.
- Early rapid transport with interventions performed during transport is the key to survival in traumatic arrests.
- If arrest is witnessed by responder, transport immediately with full resuscitation efforts.
- All vitals and H's and T's should be assessed in traumatic arrests where resuscitation efforts are being provided.
- The key to successful ROSC in traumatic arrest is identifying and correcting the cause of arrest.
- Multi-System Traumatic interventions (e.g. tourniquets, occlusive dressings, needle decompression, fluid bolus, external warming) should be initiated during resuscitation attempts.
- Any changes in patient condition, refer to the appropriate protocol



PEDI - Cardiac Assessment

Signs and Symptoms:

- AMS
- Tachycardia, bradycardia, absent pulse
- Irregular pulse
- Dyspnea or apnea
- Chest pain or palpitations
- Diaphoresis
- Pale, ashen, or mottled skin

History:

- Preceding symptoms
- CPR and/or treatment PTA
- PMHx including congenital disorders
- Cardiac disease, surgery, diagnosis
- Medications affecting the heart or vasculature

Differential:

- Pericarditis, myocarditis
- Heart failure/Fluid overload
- Pneumothorax/Hemothorax/Trauma
- Pulmonary Embolism
- Thoracic aortic dissection/aneurysm
- Overdose/Toxidrome
- Thyroid storm
- Sepsis/Infection

Age	Weight (kg)	Heart Rate	Systolic BP	Respirations
Neonate	3	100 – 160	50 – 70	30 – 60
1 – 6 weeks	4	100 – 160	70 – 95	30 – 60
6 months	7	90 – 120	80 – 100	25 – 40
1 year	10	90 – 120	80 – 100	20 – 30
3 years	15	80 – 120	80 – 100	20 – 30
6 years	20	70 – 100	80 – 100	18 – 25
10 years	30	60 - 90	90 - 120	15 - 20

Assessment

- C.A.B.C.
- Secondary assessment
- Vital signs
 - BGL, 3-lead, 12-lead, temperature
- Lung sounds
- Heart sounds
- GCS
- OPQRST
- ASPN
- SAMPLE
- Pertinent PMHx

Critical Points:

- Refer to appropriate protocol for treatment based on assessment.
- If patient condition changes, change to the appropriate treatment protocol.



PEDI - Asystole and PEA

Signs and Symptoms:

- Unconscious
- Pulseless
- Apnea or agonal respirations
- Asystole (No electrical activity confirmed in two or more leads)
- PEA (organized rhythm without a pulse)

History:

- PMHx
- Medications
- Events leading to arrest
- Estimated downtime

Differential:

- Hs - Hypoglycemia, Hydrogen ions (acidosis), Hyper/Hypokalemia, Hyper/Hypothermia, Hypovolemia, Hypoxia
- Ts - Tamponade, Toxins (overdose), Tension pneumothorax, Thrombosis, Trauma

Standby EMT

- CPR
 - BVM ventilation with 100% O₂
- Maintain initial airway with OPA
- AED application
- Supraglottic Airway Device
- Refer to Overdose/Poisoning Protocol if suspected Opioid overdose

Determine if resuscitation is medically inappropriate

- Rigor mortis
- Injuries incompatible with life
- Decomposition
- Dependent Lividity
- Pulseless, apneic patients in multiple casualty situations
- Proper out of hospital DNR documentation

Basic EMT

- Same as above

Advanced EMT

- Intubation
- IV/IO access
 - IO access > 3 kg
- Fluid Bolus
 - 20 ml/kg
 - May repeat once

Paramedic

- **Epinephrine 1:10,000** 0.01 mg/kg IV/IO
 - Max single dose 0.4 mg / Max total dose 1.2 mg
 - Repeat q 3 – 5 minutes as needed
 - If no IV/IO access **EPI 1:1,000** 0.1 mg/kg ET q 3 – 5 minutes
- **Sodium Bicarbonate** 1 mEq/kg IV/IO for known acidosis, TCA overdose or hyperkalemia
- Orogastic or Nasogastric tube placement



PEDI - Asystole and PEA

Medical Consult

- After 20 minutes of quality chest compressions, consider field termination if patient meets criteria per medical termination procedure.

Critical Points:

- Use pediatric Broselow Tape to determine proper equipment sizes.
- Always confirm asystole in more than one lead.
- Efforts should be directed at high quality and continuous compression with limited interruptions and early defibrillation when indicated.
- Survival is based on identifying and correcting the cause of the arrest.
- Perform at least 20 minutes of quality chest compressions (verified by CPR feedback device if available) and ACLS prior to moving the patient unless the environment is unsuitable.
- Do not interrupt compressions for ALS procedures.
- ET tube confirmation with 5 methods per procedure.
- Capnometry: in the presence of cardiac arrest EtCO₂ readings consistently > 0 indicate tube is not in the esophagus; values < 15 are correlated with a decreased likelihood of survival.
- In cardiac arrest, using CPR and controlled ventilation, maintain EtCO₂ levels as close to 35-45 mmHg as possible.
- **Sodium Bicarbonate** only for known acidosis, Tricyclic Antidepressant (TCA) overdose or hyperkalemia. It is no longer recommended for routine use during cardiac arrest.
- Any changes in patient condition, refer to appropriate protocol.



PEDI - Bradycardia

Signs and Symptoms:

- Neonate HR < 80 bpm **with s/s of hypoperfusion**
- Child HR < 60 bpm **with s/s of hypoperfusion**
- Systolic BP < (70 + 2x age) mmHg
- Altered mental status (AMS)
- Syncope/ Seizure
- Chest pain
- Respiratory distress/Apnea
- Mottled skin
- Poor capillary refill/Cyanosis

History:

- PMHx
- Events prior to onset
- Known cardiac disease
- Medications: beta blockers, calcium channel blockers, digoxin, cholinergic, clonidine
- Maternal medications if breastfeeding infant
- Trauma

Differential:

- Hypoxia/Respiratory failure
- Congenital cardiac disorder
- Infection/Sepsis
- Head injury, CVA, increased ICP
- Hs - Hypoglycemia, Hydrogen ions (acidosis), Hyper/Hypokalemia, Hyper/Hypothermia, Hypovolemia, Hypoxia, Hypothermia
- Ts - Tamponade, Toxins (overdose), Tension pneumothorax, Thrombosis, Trauma
- Malnutrition/Anorexia nervosa

Standby EMT

- **Oxygen** via most appropriate method
- BVM assist with 100% O₂ for infant/neonate if HR < 80 bpm
- CPR for infant/neonate if HR < 60 bpm with poor perfusion despite oxygenation and ventilation
- Narcan 0.1 mg/kg if suspicion of narcotic ingestion
 - Max single dose 2 mg

Basic EMT

- Same as above

Advanced EMT

- IV/IO access
 - IO access > 3 kg
- Fluid Bolus
 - 20 ml/kg
 - May repeat once

Paramedic

- Consider transcutaneous pacing for unstable patient
- Sedation for pacing if patient condition allows
 - **Diazepam** 0.2 mg/kg IV/IO/IM
 - May repeat once after 5 minutes
 - OR**
 - **Midazolam** 0.2 mg/kg IV/IM/IO/IN
 - May repeat once after 10 minutes
 - OR**

- **Lorazepam** 0.1 mg/kg IV/IO/IM
 - May repeat once after 10 minutes
- OR
- **Ketamine** 1 mg/kg IV/IO or 2 mg/kg IM
 - May repeat once after 10 minutes
- If bradycardia persists
 - **Epinephrine 1:10,000** 0.01 mg/kg IV/IO
 - Max single dose 0.4 mg / Max total dose 1.2 mg
 - May repeat q 3 – 5 minutes
 - If no IV/IO access **EPI 1:1,000** 0.1 mg/kg ET q 3 – 5 minutes
 - **Atropine** 0.02 mg/kg IV/IO if refractory to EPI
 - Min single dose 0.5 mg / Max total dose 0.04 mg/kg
 - May repeat once
- **Epinephrine Infusion** 0.1 – 1 mcg/kg/min
 - If refractory to Epi IV/IO
- **Dopamine** 2 – 12 mcg/kg/min
 - Administer if patient remains hypotensive 5 min after fluid bolus
 - Titrate to SBP > (70 + 2x age) mmHg
- Pain management for pacing if age > 1 month
 - **Fentanyl** 1 mcg/kg IV/IO over 1 minute or 2 mcg/kg IM/IN
 - May repeat q 3 – 5 minutes

Medical Consult

- Additional sedation for pacing or consult for reversible causes
- Air medical provider for transcutaneous pacing and 12-lead findings consistent with need for cardiac specialty care

Critical Points:

- Symptomatic bradycardia is typically < 80 bpm for neonates and < 60 bpm for infants/children.
- Hypoxemia is a common cause of bradycardia in infants and children.
- Interpret cardiac rhythm in the context symptoms. Pharmacological treatment is only administered when the patient is symptomatic.
- Awareness of s/s of poor perfusion in the presence of bradycardia is key to beginning treatment.
- Narrow complex bradycardia may respond to atropine; however, high degree, wide complex AV blocks will likely require pacing.
- Do not delay pacing if patient has poor perfusion and dose not responded to atropine.
- Consider hyperkalemia in the presence of wide complexes with odd appearance or sine wave
- Consider treatable causes for bradycardia (beta blocker overdose, Calcium channel blocker overdose, etc.)
- Although no common in children, bradycardia may be due to inferior AMI with right-side involvement. Using atropine to treat bradycardia due to AMI may worsen myocardial damage and increase PVCs.
- Any changes in patient condition, refer to appropriate protocol.



PEDI - Cardiogenic Shock Non-Traumatic

Signs and Symptoms:

- Hypotension: systolic B/P < (70 + 2 x age) mmHg
- AMS
- Weak, rapid pulse
- Pale, cool, clammy skin
- Delayed capillary refill
- Tachycardia/Bradycardia
- Fever
- Petechia or rash
- Bloody or "coffee ground" emesis/Black or tarry stool

History:

- Medical etiology: No evidence of trauma induced blood loss
- Signs of infection/sepsis
- Previous history of CHF/PE
- Recent wound or surgery
- Recent URI/UTI symptoms
- Fever
- Exposure to an allergen

Differential:

- Sepsis
- Pulmonary Embolism
- GI Hemorrhage
- Toxins
- Volume Loss
- Anaphylaxis
- Cardiac: MI, arrhythmia, failure, CHF, drug induced

Sepsis Screening: if positive move to Sepsis protocol.

Standby EMT

- **Oxygen** via most appropriate method
- Trendelenburg position

Basic EMT

- Same as above

Advanced EMT

- IV/IO access
- Fluid Bolus
 - 20 ml/kg
 - May repeat once
- Secondary Vascular Access

Paramedic

- **Norepinephrine (Levophed)** 2 – 12 mcg/min IV/IO infusion
 - Administer if patient remains hypotensive **after 80 ml/kg bolus**
 - Titrate to sustain SBP > 90 mmHg
- **Dopamine** 10 – 20 mcg/kg/min IV/IO
 - Administer if patient remains hypotensive **after 80 ml/kg bolus**
 - Titrate to sustain SBP > 90 mmHg

Medical Consult



PEDI - Cardiogenic Shock Non-Traumatic

- **Methylprednisolone** 2 mg/kg IV/IO for acute adrenal insufficiency
- Consult for pressors if unknown hypotension/shock state

Critical Points:

- Hypotension may be defined as a systolic blood pressure $< (70 + 2 \times \text{age})$ mmHg; however, SBP must be interpreted in context of s/s and the patients typical BP if known. Shock may be present with a normal blood pressure initially, particularly in late pregnancy.
- Consider Sepsis Screening early if type of shock is unknown.
- Consider all possible causes of shock and treat per the most appropriate protocol. If a specific cause cannot be identified treat under this protocol (Hypotension/Shock Non-Traumatic).
- Types of shock:
 - **Hypovolemic**: hemorrhage, trauma, GI bleeding, ruptured aortic aneurysm or pregnancy related bleeding. **Hypovolemic shock should NOT receive vasopressors.**
 - **Cardiogenic**: heart failure due to MI, cardiomyopathy, myocardial contusion, ruptured ventricles/septum/valve, toxins.
 - **Distributive**: sepsis, anaphylactic, neurogenic, toxins
 - **Obstructive**: pericardial tamponade, PE, tension pneumothorax. Signs may include hypotension with distended neck veins, narrowing pulse pressures, tachycardia, unilateral decreased breath sounds or muffled heart tones.
 - **Acute adrenal insufficiency**: The body cannot produce enough steroids (glucocorticoids/mineralocorticoids). May be due to primary adrenal disease (Addison's disease) or more commonly due to having abruptly stopped taking a steroid. This can be treated with methylprednisolone 2 mg/kg IV/IO with Medical Control approval.
- Fluid bolus should be more conservative and observed carefully in patients with history of CHF, Pulmonary Edema, or End Stage Renal Failure. Consult medical control for any concerns.
- **Norepinephrine is an alpha 1 agonist that causes peripheral vasoconstriction. It is preferred over dopamine. Always administer 80 ml/kg of fluid prior infusion.**

Sepsis/SIRS Screening:

Temperature:	$< 96.8^{\circ}\text{F}$ or $> 100.4^{\circ}\text{F}$	1 point
Heart Rate:	> 90 beats per minute	1 point
Respiratory Rate:	> 20 breaths per minute	1 point
EtCO ₂ :	< 25 mmHg	1 point
Score > 2 = SEPSIS ALERT		



PEDI - Chest Pain, Non-Traumatic

Signs and Symptoms:

- Abnormal vital signs
- Chest discomfort
- Pain or pressure naval to jaw
- Pain radiation to either arm/shoulder/upper back/neck
- Rate/rhythm disturbances including palpitations
- Epigastric discomfort
- Focal numbness/Weakness
- Anxiety

History:

- PMHx
- Recent activities/events
- Marfans syndrome
- Ehlers-Danlos syndrome

Differential:

- Aortic dissection
- Gastroesophageal reflux
- Esophageal spasm
- Peptic ulcer disease
- Pericarditis/Myocarditis
- Acute stress cardiomyopathy
- Pulmonary embolism
- Acute cholecystitis
- Anxiety/Panic attack

Standby EMT

- **Oxygen** via most appropriate method
- **Zofran PO**
 - 4 mg if > 8 kg

Basic EMT

- Same as above

Advanced EMT

- IV/IO access
 - IO access > 3 kg
- **Zofran PO/IV/IO**
 - Max 2 mg IV if < 8 kg
 - Max 4 mg IV/IO/PO if > 8 kg

Paramedic

- Pain Management
 - **Fentanyl** is preferred analgesia

Medical Consult

- **Morphine Sulfate** 0.05 mg/kg – Max single dose 2 mg
- Any concern for acute coronary syndrome or AMI



PEDI - Chest Pain, Non-Traumatic

Critical Points:

- Rapid 3-lead and 12-lead is indicated in chest pain and suspected cardiac symptoms. ECG target is < 5 minutes after pt contact.
- Acute coronary events in children are uncommon; however, ECG is appropriate in most patients.
- Costochondritis/chest wall pain is the most common cause of non-traumatic chest pain in children and adolescents. Gastroesophageal reflux is the next most common cause.
- Do not overlook the possibility of aortic dissection, especially if chest pain with upper back pain.
- Fentanyl is preferred analgesia for pain management.



PEDI - Hypothermia Induced Arrest

Signs and Symptoms:

- Core temperature < 96° F
- Pulseless
- Apnea or agonal respirations
- Environmental evidence of hypothermia
- ECG Findings: Any pulseless rhythm

History:

- Medical etiology
- Immersion or exposure to cold temperatures
- Drug ingestion: alcohol, barbiturates

Differential:

- Cardiac Arrest
- Hypoglycemia
- CNS dysfunction: stroke, head injury

Standby EMT

- CPR
 - BVM ventilation with 100% O₂
- Warm Patient
 - Remove wet clothing
 - Heat packs to axillary region and groin
- Application of AED
- Supraglottic Airway Device

Basic EMT

- Same as above

Advanced EMT

- Intubation
- IV/IO access
 - IO access > 3 kg
- Fluid Bolus – warm fluids
 - 20 ml/kg
 - May repeat once

Paramedic

- If V-Fib
 - Defibrillate once at 2 J/kg - Do not repeat if temperature is below 85° F
- Refer to appropriate protocol for rhythm treatment and anti-arrhythmic

Critical Points:

- Any changes in patient condition, refer to appropriate protocol.
- Do not repeat defibrillation and do not medicate if temperature is below 85 degrees F.



PEDI - Narrow Complex Tach-Stable

Signs and Symptoms:

- SBP > (70 + 2x age) mmHg
- **Without** Altered mental status
- ECG Findings: QRS < 0.09 seconds
- Older children may include rate related dizziness, diaphoresis, chest pain, palpitations, SOB, syncope
- Infants may have poor feeding, irritability, SOB, vomiting
- Pulmonary edema/Shock (late sign)

History:

- History of SVT /prior adenosine use
- History of A-Fib, A-Flutter or WPW
- Congenital heart disease or cardiomyopathy
- Possible medication ingestion: decongestants, diet pills, thyroid meds, Digoxin
- Caffeinated energy drinks

Differential:

- Hypovolemia
- Pulmonary Embolism
- Pulmonary edema/CHF
- Hyperthyroidism
- Overdose/cocaine, K2
- Stimulants including caffeine, nicotine, "pre-workout" supplements, Adderall
- Myocardial infarction

Pediatric Tachycardia rates:

- Less than 1 year : 220
- 1 – 5 years of age : 200
- 6 – 10 years of age : 180
- Greater than 10 years : 160

Standby EMT

- **Oxygen** via most appropriate method

Basic EMT

- Same as above

Advanced EMT

- IV/IO access
 - IO access > 3 g
- Fluid Bolus
 - 20 ml/kg
 - May repeat once

Paramedic

- Valsalva maneuver by patient
- **Adenosine** 0.1 mg/kg RAPID IV/IO followed by 10 ml flush
 - Max first dose 6 mg
 - If no conversion, give 0.2 mg/kg RAPID IV/IO followed by 10 ml flush



PEDI - Narrow Complex Tach-Stable

- Max second dose 12mg
- **Amiodarone infusion** 5 mg/kg IV/IO over 20 minutes
 - Max single dose 150 mg
 - Mix 150 mg in 100 ml NS

Critical Points:

- It is paramount to identify if the patient is stable or unstable. Any unstable presentation (hypotension, AMS, hypoxia) with signs of shock/poor perfusion should be identified and treated under the Narrow Complex Tachycardia- Unstable protocol.
- Obtain a 12-lead ECG in ALL patients who meet requirements for this protocol BEFORE chemical cardioversion. Document rhythm changes with monitor strips and obtain monitor strips after each therapeutic intervention.
- Sinus tachycardia usually has some rate variability. SVT rate is sustained with minimal variability. A general guideline for maximum sinus tachycardia rate is **(220 minus patient age in years)**.
- SVT is the most common tachyarrhythmia causing cardiovascular compromise in infants.
- Atrial flutter is rare in infants, exceedingly rare in older children and adolescents.
- Atrial fibrillation is exceedingly rare in children and adolescents without Hx of heart surgery.
- Search for underlying causes of tachycardia such as fever, sepsis, dyspnea, etc.
- Vagal maneuvers and Adenosine are preferred methods of treatment for SVT.
- Adenosine should be pushed rapidly from a proximal IV site (AC) followed by rapid flush and saline bolus.
- If Wolf Parkinson White (WPW) is suspected in stable patient, treat with Amiodarone first, then synchronized cardioversion if needed.
- Any changes in patient condition, refer to the appropriate protocol.



PEDI - Narrow Complex Tach-Unstable

Signs and Symptoms:

- Signs of shock/poor perfusion:
AMS, SBP < (70 + 2x age) mmHg
- Rate related chest pain, dyspnea, lethargy, dizziness, palpitations, SOB, diaphoresis, syncope
- Pulmonary Edema
- ECG Findings: QRS < 0.09 seconds

History:

- History of SVT/adenosine use
- History of A-Fib, A-Flutter or WPW
- Congenital heart disease or cardiomyopathy
- Possible medication ingestion: decongestants, diet pills, thyroid meds, Digoxin
- Caffeinated energy drinks

Differential:

- Hypovolemia
- Pulmonary Embolism
- Pulmonary edema/CHF
- Hyperthyroidism
- Overdose/cocaine, K2
- Stimulants including caffeine, nicotine, "pre-workout" supplements, Adderall
- Myocardial Infarction

Pediatric Tachycardia rates:

- Less than 1 year : 220
- 1 – 5 years of age : 200
- 6 – 10 years of age : 180
- Greater than 10 years : 160

Standby EMT

- **Oxygen** via most appropriate method

Basic EMT

- Same as above

Advanced EMT

- IV/IO access
 - IO access > 3 kg
- Fluid Bolus
 - 20 ml/kg
 - May repeat once

Paramedic

- Synchronized Cardioversion increasing with each subsequent shock
 - 0.5 J/kg
 - 1 J/kg
 - 2 J/kg
 - 4 J/kg
- Consider sedation if patient condition allows
 - **Ketamine** 1 mg/kg IV/IO or 2 mg/kg IM



PEDI - Narrow Complex Tach-Unstable

OR

- **Midazolam** 0.1 mg/kg IV/IO/IM/IN
- **Adenosine** 0.1 mg/kg RAPID IV/IO followed by 10 ml flush
 - Max first dose 6 mg
 - If no conversion, give 0.2 mg/kg RAPID IV/IO followed by 10 ml flush
 - Max second dose 12 mg
- **Amiodarone** 5 mg/kg IV/IO over 20 minutes
 - Max single dose 150 mg
 - Mix 150 mg in 100 ml NS

Critical Points:

- It is paramount to identify if the patient is stable or unstable. Any unstable presentation (hypotension, AMS, hypoxia) with signs of shock/poor perfusion should be identified and treated early.
- Use synchronized cardioversion first to treat unstable narrow complex tachycardia.
- If patient condition allows, a 12-lead ECG should be obtained before cardioversion; however, this should not delay cardioversion in critically ill patients. Document rhythm changes with monitor strips and obtain monitor strips after each therapeutic intervention.
- Sinus tachycardia usually has some rate variability. SVT rate is sustained with minimal variability. A general guideline for maximum sinus tachycardia rate is **(220 minus patient age in years)**.
- Search for underlying causes of tachycardia such as fever, sepsis, dyspnea, stimulants, etc...
- If Wolf Parkinson White (WPW) is suspected in an unstable patient, attempt synchronized cardioversion first, then consider amiodarone.
- Any changes in patient condition, refer to the appropriate protocol.

ATM PEDI - Post Resuscitation Management

Signs and Symptoms:

- Patient with ROSC- return of spontaneous circulation (palpable carotid/radial pulse) AFTER being treated for any non-perfusing rhythm
- ECG Findings: Any perfusing rhythm

History:

- Post cardiac arrest
- Respiratory arrest

Differentials:

- If cause is unknown, continue with cardiac arrest differentials
- Hs - Hypoglycemia, Hydrogen ions (acidosis), Hyper/Hypokalemia, Hyper/Hypothermia, Hypovolemia, Hypoxia
- Ts - Tamponade, Toxins (overdose), Tension pneumothorax, Thrombosis, Trauma

Standby EMT

- **Oxygen** via most appropriate method

Basic EMT

- Same as above

Advanced EMT

- IV/IO access
 - IO access > 3 kg
- Fluid bolus
 - 20 ml/kg
 - May repeat once

Paramedic

- **Amiodarone** infusion 5 mg/kg IV/IO over 20 minutes
 - Utilize if patient previously received **Amiodarone** for ventricular rhythms
- **Lidocaine** 1 mg/kg IV/IO
 - If patient did **not** previously receive antiarrhythmic and converted from a ventricular rhythm WITHOUT bradycardia
- **Lidocaine** infusion 0.2 – 0.5 mg/min IV/IO
 - If patient received **Lidocaine** prior to Return of Spontaneous Circulation (ROSC)
- **Norepinephrine (Levophed)** 0.1 mcg/kg/min IV infusion for hypotension
 - Titrate to SBP > 70 mmHg if patient remains hypotensive 5 minutes after fluid bolus
- **Dopamine** infusion 2 – 12 mcg/kg/min IV/IO
 - Titrate to SBP > 70 mmHg if patient remains hypotensive 5 minutes after fluid bolus
- Continued Sedation for intubated patient
 - **Ketamine** 1 mg/kg IV/IO if patient is hypotensive
 - OR
 - **Midazolam** 0.1 mg/kg IV/IO

ATM PEDI - Post Resuscitation Management

- Pain management for a conscious and intubated patient

Medical Consult

- Consult for additional medications, dosages or guidance as needed post ROSC

Critical Points:

- Use capnography and pulse oximetry to continuously monitor an advanced airway for correct placement and positioning.
- Reconfirm airway placement and positioning every time after the patient has been moved.
- Arrhythmias are common after ROSC and are usually self-limited. For sustained arrhythmias, follow the rhythm specific protocol.
- Ensure adequate fluid resuscitation, obtain second IV/IO if possible.
- Dopamine preferred for suspected overdose (QT prolongation with Norepinephrine), neurogenic shock, and refractive bradycardia.
- Any changes in patient condition, refer to appropriate protocol.



PEDI - Ventricular Ectopy

Signs and Symptoms:

- Dizziness/Syncope
- Weakness
- Diaphoresis
- SOB/Chest pain
- Six or more PVC's per minute
- Multiform PVC's
- Couplets and Triplets

History:

- PMHx including congenital cardiac disease/Cardiomyopathy
- Known arrhythmia
- Pacer or implanted defibrillator
- Recent infection/Illness
- Overdose/Toxins
- Stimulants ingestion

Differential:

- Hypoxia
- Hypovolemia
- Electrolyte imbalance (K+, Ca-, Na)
- Overdose or substance abuse
- ESRD
- Pulmonary disease

Standby EMT

- **Oxygen** via most appropriate method
 - Administer O2 regardless of SOB if PVC are present

Basic EMT

- Same as above

Advanced EMT

- IV/IO access
 - IO access > 3 kg
- Fluid bolus
 - 20 ml/kg
 - May repeat once

Paramedic

- **Amiodarone** 5 mg/kg IV/IO over 20 min
 - Max dose 150 mg
 - Mix 150 mg in 100 ml NS
- **Amiodarone** infusion 5 mg/kg IV/IO over 20 minutes
 - Start infusion if successful conversion with **Amiodarone**
 - Do not administer if **Lidocaine** given
- OR
- **Lidocaine** 1 mg/kg IV/IO
 - May repeat x 4 q 5 minutes
 - Should not be administered if **Amiodarone** given
- **Lidocaine** infusion 0.2 – 0.5 mg/min
 - Start infusion if successful conversion of the rhythm with **Lidocaine** bolus
- **Magnesium Sulfate** 25 – 50 mg/kg IV/IO
 - Torsade's de Pointes or if rhythm refractory to Lidocaine or Amiodarone
 - Max dose 2 grams



PEDI - Ventricular Ectopy

Medical Consult

- Consider consult for refractory rhythms.
- Must be contacted before administering a second antiarrhythmic agent.

Critical Points:

- First determine if the ventricular ectopy patient is stable or unstable.
- Unstable signs/symptoms include hypotension, acute AMS, shock/poor perfusion, chest pain with evidence of ischemia (STEMI, T wave inversion or depression), acute CHF.
- Treat unstable patients using the Wide Complex Unstable protocol.
- Rhythms that do not fall into a specific Narrow or Wide Complex Tachycardia may fall under this protocol.
- Treat and persistent rhythm under the appropriate protocol.
- Magnesium Sulfate is not indicated for widening QTc preceding Torsades de Pointe. Look for reversible causes.
- **Only one antiarrhythmic** should be administered (Amiodarone or Lidocaine NOT both).



PEDI - V-Fib and Pulseless V-Tach

Signs and Symptoms:

- Unconscious
- Pulseless
- Apnea or agonal respirations
- Ventricular fibrillation or ventricular tachycardia
- Hypothermia

History:

- Events leading to arrest
- Time of arrest/down time
- PMHx
- Medications
- Suspected overdose
- Possible airway obstruction
- Trauma/Abuse

Differential:

- Congenital cardiac disease
- Long Qt syndrome
- Hs - Hypoglycemia, Hydrogen ions (acidosis), Hyper/Hypokalemia, Hyper/Hypothermia, Hypovolemia, Hypoxia
- Ts - Tamponade, Toxins (overdose), Tension pneumothorax, Thrombosis, Trauma

Standby EMT

- CPR
 - BVM ventilation with 100% O₂
- AED application
- Refer to Overdose/Poisoning Protocol if suspected Opioid overdose
- Supraglottic Airway Device

Basic EMT

- Same as above

Advanced EMT

- Intubation
- IV/IO access
 - IO access > 3 kg
- Fluid Bolus
 - 20 ml/kg
 - May repeat once

Paramedic

- If arrest witnessed by responder, immediate defibrillation
- If arrest not witnessed by responder, provide CPR for 2 minutes before initial defibrillation
- Defibrillation 2 J/kg
 - Immediately resume CPR
- **Epinephrine 1:10,000** 0.01 mg/kg IV/IO
 - Max single dose 0.4 mg / Max total dose 1.2 mg
 - Repeat q 3 – 5 minutes as indicated
 - **EPI 1:1,000** 0.1 mg/kg ET ONLY if IV/IO is not established
- Defibrillation 4 J/kg (and all subsequent defibrillations)
 - Immediately resume CPR



PEDI - V-Fib and Pulseless V-Tach

- **Amiodarone** 5 mg/kg IV/IO
 - Max single dose 150 mg / Max total dose 300 mg
 - May repeat after 5 minutes
 - Should not be administered if **Lidocaine** given
- OR
- **Lidocaine** 1 mg/kg IV/IO
 - Max single dose 40 mg
 - May repeat 0.5 mg/kg – Max single dose 20 mg
 - Should not be administered if **Amiodarone** given
- **Magnesium Sulfate** 25 – 50 mg/kg IV/IO
 - Max single dose 2 grams
 - If Torsades de Pointes or if refractory to Lidocaine or Amiodarone
- **Sodium Bicarbonate 8.4 %** 1 mEq/kg IV/IO for known acidosis, TCA overdose or hyperkalemia
- Orogastric or Nasogastric tube placement

Medical Consult

- After 20 minutes of quality chest compressions, consider field termination if patient meets criteria per medical termination procedure

Critical Points:

- High quality chest compression and early defibrillation are the keys to successful resuscitation. Efforts should be directed at limited interruptions of CPR.
- Defibrillation at 2 J/kg first then 4 J/kg biphasic thereafter every 5 cycles of 30:2 compressions or every 2 – 3 minutes if advanced airway established.
- Magnesium Sulfate is not indicated for widening QTc preceding Torsades de Pointe. Look for reversible causes.
- Sodium Bicarbonate as indicated. It is no longer recommended for routine use during cardiac arrest.



PEDI - Wide Complex Tach-Stable

Signs and Symptoms:

- Systolic BP > (70 + 2x age) mmHg
- Sustained ventricular tachycardia (QRS > 0.09 seconds)
- Conscious/Alert, no AMS
- Rapid pulse/Palpitations
- SOB/Chest pain
- Dizzy/Weakness

History:

- PMHx
- Medications
- Congenital heart disease
- Hx palpitations/arrhythmias
- Pacemaker or defibrillator
- Renal failure

Differential:

- Hs - Hypoglycemia, Hydrogen ions (acidosis), Hyper/Hypokalemia, Hyper/Hypothermia, Hypovolemia, Hypoxia
- Ts - Tamponade, Toxins (overdose), Tension pneumothorax, Thrombosis, Trauma

Pediatric Tachycardia rates:

- Less than 1 year : 220
- 1 – 5 years of age : 200
- 6 – 10 years of age : 180
- Greater than 10 years : 160

Standby EMT

- **Oxygen** via most appropriate method

Basic EMT

- Same as above

Advanced EMT

- IV/IO access
 - IO access > 3kg
- Fluid bolus
 - 20 ml/kg
 - May repeat once

Paramedic

- **Amiodarone** infusion 5 mg/kg IV/IO over 20 minutes
 - Max single dose 150 mg
 - Should not be administered if **Lidocaine** given
- OR
- **Lidocaine** 1 mg/kg IV/IO
 - May repeat x 4 at 0.5 mg/kg q 5 minutes
 - Should not be administered if **Amiodarone** given
- **Lidocaine infusion** 0.2 – 0.5 mg/min IV/IO
 - Start if successful conversion of the rhythm with **lidocaine** bolus



PEDI - Wide Complex Tach-Stable

- Should not be given if **Amiodarone** given

Medical Consult

- Consider consult for refractory V-tach
- Must be contacted before administering a second antiarrhythmic agent

Critical Points:

- Unstable signs/symptoms include hypotension, acute AMS, shock/poor perfusion, chest pain with evidence of ischemia (STEMI, T wave inversion or depressions), acute CHF.
- Refer to Wide Complex Tachycardia Unstable if patient becomes unstable.
- **Only one antiarrhythmic** should be administered (Amiodarone or Lidocaine NOT both).
- Magnesium Sulfate is not indicated for widening QTc preceding Torsades de Pointe. Look for reversible causes.
- Patients with renal failure and/or on dialysis have a high probability of hyperkalemia. If hyperkalemia is known or suspected AND peaked T-waves are present with a wide QRS complex, consider sodium bicarbonate.



PEDI - Wide Complex Tach-Unstable

Signs and Symptoms:

- Systolic BP < (70 + 2x age) mmHg
- Sustained ventricular tachycardia (QRS > 0.09 seconds)
- Unconscious/AMS/Lethargy
- Rapid pulse/Palpitations
- SOB/Chest pain
- Dizzy/Weakness

History:

- PMHx
- Medications
- Congenital heart disease
- Hx palpitations/arrhythmias
- Pacemaker or defibrillator
- Renal failure

Differential:

- Hs - Hypoglycemia, Hydrogen ions (acidosis), Hyper/Hypokalemia, Hyper/Hypothermia, Hypovolemia, Hypoxia
- Ts - Tamponade, Toxins (overdose), Tension pneumothorax, Thrombosis, Trauma

Pediatric Tachycardia rates:

- Less than 1 year : 220
- 1 – 5 years of age : 200
- 6 – 10 years of age : 180
- Greater than 10 years : 160

Standby EMT

- **Oxygen** via most appropriate method

Basic EMT

- Same as above

Advanced EMT

- IV/IO access
 - IO access > 3 kg
- Fluid Bolus
 - 20 ml/kg
 - May repeat once

Paramedic

- Synchronized Cardioversion increasing with each subsequent shock
 - 0.5 J/kg
 - 1 J/kg
 - 2 J/kg
 - 4 J/kg
 - Consider sedation if patient condition allows
 - **Ketamine** 1 mg/kg IV/IO or 2 mg/kg IM
- OR**
- **Midazolam** 0.1 mg/kg IV/IO/IM/IN



PEDI - Wide Complex Tach-Unstable

- **Amiodarone** 5 mg/kg IV/IO over 20 minutes
 - Max single dose 150 mg
 - Mix 150mg in 100 ml NS
- OR
- **Lidocaine** 1 mg/kg IV/IO
 - May repeat x 4 q 5 minutes
 - Should not be administered if **Amiodarone** given
- **Lidocaine** infusion 0.2 – 0.5 mg/min IV/IO
 - Start infusion if successful conversion of the rhythm with **lidocaine** bolus
- **Magnesium Sulfate** 25 – 50 mg/kg IV/IO
 - Torsade's de Pointes or if rhythm refractory to Lidocaine or Amiodarone
 - Max dose 2 grams
- **Sodium Bicarbonate 8.4 %** 1 mEq/kg IV/IO for known acidosis, TCA overdose or hyperkalemia

Medical Consult

- Consider consult for refractory rhythms
- Must be contacted before administering a second antiarrhythmic agent

Critical Points:

- Unstable signs/symptoms include hypotension, acute AMS, shock/poor perfusion, chest pain with evidence of ischemia (STEMI, T wave inversion or depressions), acute CHF.
- **Only one antiarrhythmic** should be administered (Amiodarone or Lidocaine NOT both).
- Magnesium Sulfate is not indicated for widening QTc preceding Torsades de Pointe. Look for reversible causes.
- Patients with renal failure and/or on dialysis have a high probability of hyperkalemia. If hyperkalemia is known or suspected AND peaked T-waves are present with a wide QRS complex, consider sodium bicarbonate.



PEDI - Environmental Assessment

Signs and Symptoms:

- Hyperthermia/Hypothermia
- Altered mental status
- Shivering, N/V, frostbite, dizziness, weakness, abdominal pain, cramps
- Dyspnea
- Evidence of bite, sting or exposure to chemicals
- Sweating or absence of thermal regulation abilities

History:

- Exposure to extreme temperatures
- Envenomation
- Wilderness exposure
- Exposure to hazardous materials
- Recent illness/injury preceding environmental exposure
- Recent exertion or prolonged exposure to environment

Differential:

- Infection/Sepsis
- Altered mental status differentials
- Hypoxia
- Hypovolemia
- Medication or drug interaction/effect

Assessment

- C.A.B.C
- Secondary Assessment
- Vital signs
 - BGL
 - Temperature- obtain core temperature
 - ECG 3-Lead and 12-Lead
 - Right sided 12-lead if indicated
- Lung Sounds
- GCS
- OPQRST
- ASPN
- SAMPLE
- Length of Exposure
- Type of envenomation/bite/sting



PEDI - Cold Related Emergency

Signs and Symptoms:

- **Core temperature < 96 degrees F**
- Shivering
- Altered mental status
- Cyanosis
- Extreme pain or sensory abnormalities
- Bradycardia
- Hypotension or shock

History:

- Exposure to cold temperatures
- Conditions of exposure: wetness, wind chill, duration
- Immersion
- Susceptible ages, very young and old
- Overdose/Toxins
- Infections/Sepsis

Differential:

- Sepsis
- Hypothyroidism
- Hypoglycemia
- CNS dysfunction: stroke, head injury, spinal cord injury
- AMS differentials

Standby EMT

- Remove patient from cold environment
- Obtain core temperature when possible without delaying treatment
- **Oxygen** via most appropriate method
- Prevent further heat loss
- Rewarming

Warming methods:

- Remove patient from the cold environment.
- Remove wet or cold clothing as soon as possible.
- Apply heat packs to axillary and groin regions.
- Apply warm blanket/emergency blankets/mylar blanket.
- Increase ambient temperature in ambulance or current environment if possible.

Basic EMT

- Same as above

Advanced EMT

- IV/IO access
 - IO access > 3 kg
- **Fluid Bolus – warm fluids**
 - 20 ml/kg
 - May repeat once

Paramedic

- Refer to appropriate protocol for airway management, arrhythmia, AMS, hypotension, trauma
- Refer to seizure protocol for persistent shivering or active seizure



PEDI - Cold Related Emergency

Critical Points:

- For persistent shivering, refer to Seizure protocol.
- Do not place warm packs directly against the patient's skin.
- Sepsis and hypoglycemia can both cause thermoregulation issues resulting in a decrease in core body temperature.
- Hypothermia categories: Mild 90-95°F, Moderate 82-90°F, Severe < 82°F.
- Many thermometers do not register below 93.2°F.
- Contributing factors to hypothermia: extremes of age, malnutrition, alcohol or other drug use.
- Core temperature is strongly recommended in any patient with suspicions of hypothermia.
- If core temperature cannot be obtained, treat the patient based on suspected temperature and clinical presentation.
- Hypothermia may produce severe bradycardia, recommend taking at least 60 second to palpate a pulse.
- Rewarm frostbite injuries slowly in lukewarm water or with passive re-warming.



PEDI - Drowning

Signs and Symptoms:

- Dyspnea
- Mental Status Changes
- Decreased or absent vital signs
- Foaming/Vomiting
- Coughing, wheezing, rales, rhonchi, stridor, apnea

History:

- Submersion in water regardless of depth
- Possible trauma incurred in or around the water
- Duration of submersion/immersion

Differential:

- Trauma
- Pre-existing medical problem or disability
- Hypoglycemia
- Pressure injury (SCUBA diving or deep-water exercises)

Standby EMT

- Remove patient from water if equipped and safe
- **Oxygen** via most appropriate method as soon as possible
- External warming, if indicated
- Supraglottic airway device

Basic EMT

- CPAP 3 – 10 cm H₂O

Advanced EMT

- Intubate
- IV/IO access
 - IO access > 3 kg
- Tracheal suctioning via ETT

Paramedic

- Consider DSI/RSI

Critical Points:

- **Drowning is one of the leading causes of death among rescuers. DO NOT ATTEMPT to rescue victims without appropriate equipment and training.**
- Drowning is typically a hypoxia injury. Efforts should be directed toward quick oxygenation through adequate ventilation and airway management.
- Foam is usually present in airway and may be copious. DO NOT waste time attempting to suction. Ventilate with BVM through foam (suction water and vomit only when present).
- Encourage transport of all symptomatic patients (cough, foam, dyspnea, abnormal lung sounds, hypoxia) due to potential worsening over the next 6 hours.
- SMR is usually unnecessary. When indicated it should not interrupt ventilation, oxygenation and/or CPR.



PEDI - Animal, Insect, Snake Bite

Signs and Symptoms:

- Rash, skin break, wound
- Pain, swelling, redness, bruising
- Evidence of infection
- Dyspnea, wheezing
- Allergic reaction, hives, itching, burning, stinging
- Hypotension or shock

History:

- Type of bite/sting
- Description or photo with patient for identification of animal/insect involved
- Time, location, size if bite/sting
- Previous reaction if applicable
- Domestic vs. wild
- Tetanus and rabies risk
- Immunocompromised patient

Differential:

- Animal bite
- Human bite
- Insect sting or spider bite (venomous)
- Snake bite (venomous)
- Rabies and tetanus risk
- Infection

Standby EMT

- Avoid provider exposure to threat/animal/insect/reptile
- Remove patient from potential threat/animal/insect exposure
- Identify animal/insect/spider if possible, without additional exposure.
- **Insect or Spider**
 - Remove stinger if appropriate
 - Immobilize injury and apply ice pack
 - Remove constricting items/clothing
 - Apply ice pack for swelling and comfort/pain management
- **Snake**
 - Splint limb, bandage and place at level of heart (neither dependent nor elevated if possible)
 - Minimize movement
 - Mark margin of swelling/redness and note time
 - DO NOT apply ice pack, tourniquet, or attempt to remove venom
- **Animal/Mammal**
 - Splint limb, bandage, and control hemorrhage
 - Remove constricting items
- **Oxygen** via most appropriate method
- **Diphenhydramine PO**
 - 25 mg PO if patient > 25 kg
- **Zofran PO**
 - 4 mg PO if patient > 8 kg

Basic EMT

- Same as above

Advanced EMT

- IV/IO access
 - IO access > 3 kg
- **Diphenhydramine** 1 mg/kg IV/IO



PEDI - Animal, Insect, Snake Bite

- Max dose 25 mg
- **Zofran IV/IO**
 - Max 2 mg IV if < 8 kg
 - Max 4 mg IV/IO/PO if > 8 kg

Paramedic

- **Midazolam** 0.1 mg/kg IV/IO/IM/IN for local muscle spasms
 - Max total dose of 2 mg
- Refer to appropriate protocol for active seizures or allergic reactions
- Pain management

Critical Points:

- **Do not delay patient care or transport to identify or capture an animal/insect/spider. Do not bring a live animal to the ER.**
- Do not apply ice, cold pack, tourniquet or constricting band for snake bites or animal/mammal bites (included human bites).
- Muscle spasms should be differentiated from seizures. Any seizure should be treated under the seizure protocol.
- Most animal/mammal bites have a very high risk of infection and potential for Rabies exposure and should be seen urgently by a physician.
- Most cat bites become infected due to specific bacteria (*Pasteurella multocida*).
- Venomous snakebites in this area are typically that of the pit viper family-copperhead, rattlesnakes, water moccasin. *Antivenin* (RX) is available for these bites. Rarely is an exotic snakebite victim



PEDI - Heat Related Emergency

Signs and Symptoms:

- Hyperthermia
- Altered mental status
- Syncopal episode, dizziness, weakness, N/V, tachycardia,
- Sweating or absence of thermal regulation abilities
- Cramping
- Fatigue or exhaustion
- Seizures

History:

- Exposure to increased temperatures and/or high humidity
- Recent exertion or prolonged exposure to environment
- Conditions of exposure: duration, hydration status
- Susceptible ages, very young and very old
- Medication or Drug use/interactions: alcohol, thyroid
- Recent illness or injury

Differential:

- Infection/Sepsis
- Altered mental status differentials
- Medication or drug interactions
- Heat Cramps
- Heat Exhaustion
- Heat Stroke
- Hypoglycemia/Hyperglycemia
- Thyroid storm

Standby EMT

- Remove patient from warm/hot environment
- Obtain core temperature when possible without delaying treatment
- **Oxygen** via most appropriate method
- Prevent further heat exposure
- External cooling
- Avoid excessive cooling
 - Do not induce shivering
- **Zofran PO**
 - 4 mg PO if patient > 8 kg

Cooling methods:

- Remove patient from warm/hot environment.
- Remove as much clothing as possible.
- Apply cool packs to axillary and groin regions.
- Apply water-soaked towels/sheets removing and re-soaking once warm (5-10 minutes).
- Decrease ambient temperature in ambulance or current environment if possible.

Basic EMT

- Same as above

Advanced EMT

- IV/IO access
 - IO access > 3kg
- Fluid bolus - using room temperature fluid (NO CHILLED or WARM IV fluids)
 - 20 ml/kg
 - May repeat once
- **Zofran**
 - Max 2 mg IV if < 8 kg
 - Max 4 mg IV/IO/PO if > 8 kg

Paramedic

- Refer to appropriate protocol for airway management, arrhythmia, AMS, hypotension, trauma



PEDI - Heat Related Emergency

- Refer to seizure protocol for persistent shivering while cooling or active seizure
- **If Heat Stroke is suspected, rapid cooling via Cold Water Immersion (CWI) may take precedence over transporting if appropriate resources are available (Ice bath, equipment and adequate personnel) as early cooling decreases morbidity and mortality.**
 - Delayed transport for cooling is at the discretion of the In-Charge Paramedic **after all other life-threatening conditions have been assessed and addressed.**
 - Devices which allow for rapid cooling while transporting the patient are encouraged (Polar Life Pod)

Medical Consult

- Consult for delayed scene time to cool patient off if unsure of proper treatment.

Critical Points:

Heat Cramps: presents as benign muscle cramping secondary to dehydration and low electrolytes, usually not hyperthermic.

- Remove patient from warm/hot environment to cool environment.
- Encourage PO fluids including clear electrolyte drinks (Gatorade, Powerade).
- Monitor and reassess.

Heat Exhaustion: dehydration, salt depletion, dizziness, elevated body temperature/hyperthermia, fatigue, mental status changes, headache, cramping, tachycardia, hypotension and n/v.

- Above therapies if applicable.
- Remove patient's clothing to allow for more effective cooling.
- Apply cold packs to axillary and groin area.
- Apply wet, cool towels to body and extremities. Replace wet, cool towels frequently to prevent heat retention when towels lose coolness. Avoid very cold towels that cause skin vasoconstriction.

Heat Stroke: temperature >104°F due to extreme exertion and/or environmental exposure and/or presence of CNS dysfunction. Presents with altered mental status, seizure activity, lack of sweating.

- Above therapies if applicable. **Do not give PO fluids if unable to protect airway.**
- Rapid and aggressive cooling to include submersion in ice water if available. Stirring ice water aids in rapid cooling. Core temperature should continuously be monitored.
- Decrease core temperature below 104°F as soon as possible with a target temperature of 102.5°F after 30 minutes.
- Airway management is a priority in heat stroke patients.
- Tylenol is not effective for patients with environmental heat stroke and should not be administered.



PEDI - Medical Assessment

Signs and Symptoms:

- Medical etiology
- Non-traumatic hemorrhage
- Altered mental status
- Fever
- Headache
- Dyspnea
- Itching, redness/rash, hives
- Polyuria, polydipsia, polyphagia
- Sweating/Diaphoresis
- Syncope

History:

- Recent events
- Past pertinent medical history
- Last oral intake
- Last gastrointestinal movement
- Last menstrual cycle (if appropriate)
- Recent change in medications

Differential:

- Trauma vs Medical
- Cardiac
- Altered mental status differentials
- Overdose
- Allergic reaction/Anaphylaxis
- Stroke/Large vessel occlusion

Assessment

- Circulation, Airway, Breathing, C-Spine (C.A.B.C.)
- Secondary assessment
- Vital: SpO2, blood pressure, ECG, pulse, respirations, lung sounds, BGL, temperature, EtCO2
- Glasgow Coma Scale (GCS)
- Responsiveness and orientation
- Onset, Provocation, Quality, Radiation, Severity, Time (O.P.Q.R.S.T.)
- Associated Symptoms and Pertinent Negatives (ASPN)
- S.A.M.P.L.E.
- Electrocardiogram (ECG) 3-Lead
- ECG 12-Lead if appropriate
 - ECG 12-Lead Right sided if appropriate



PEDI - Abdominal Pain/Vomiting

Signs and Symptoms:

- Abdominal pain: constant, intermittent, sharp, dull, cramping, radiation, etc.
- Rebound tenderness, increased pain on palpitation, increased pain on movement (Peritonitis)
- Distention/bloating
- Constipation, diarrhea
- Nausea, vomiting
- Flank pain radiating anteriorly
- Associated symptoms: fever, headache, weakness, malaise, myalgias, cough, dysuria

History:

- Medical Etiology
- Surgical history
- Time of last meal
- Last bowel movement/emesis
- Improvement or worsening with BM or emesis
- Duration, changing location
- Family/Friends/Cohabitators with similar symptoms
- Menstrual history
- Travel history
- Blood emesis/diarrhea
- GERD/Acid reflux
- Recent trauma

Differential:

- AAA or aortic dissection
- CNS: increased pressure, headache, stroke, CNS lesions, trauma or hemorrhage)
- DKA or HHS
- Cholecystitis
- OB-Gyn disorder: menstruation, pregnancy, ovarian cyst, PID, ectopic pregnancy
- Infection
- Appendicitis
- Mesenteric adenitis
- Renal disorder/kidney stone

Standby EMT

- **Oxygen** via most appropriate method
- **Zofran** 4 mg ODT if patient > 8 kg
- **Strict NPO** except for medication administration

Basic EMT

- Same as above

Advanced EMT

- IV/IO access
 - IO access > 3 kg
- Fluid Bolus - 20 ml/kg
 - May repeat once
- **Zofran** 2-4 mg ODT/IM/IV/IO
 - If < 8 kg, maximum dose = 2 mg from all routes of administration
 - If > 8 kg, maximum dose = 4 mg from all routes of administration

Paramedic

- **Promethazine** 12.5 mg Slow push/IV Drip
- Pain Management

Medical Consult

- Additional Pain Management



PEDI - Abdominal Pain/Vomiting

Critical Points:

- **Assume girls of reproductive age who present with abdominal pain are pregnant until proven otherwise.** The patient may not be aware of pregnancy or could be possible ectopic pregnancy, a life threatening condition. Move to OB Abdominal Pain protocol.
- Bright red blood suggests a lower GI source, while dark red or black (“tarry”) stools suggest upper GI bleeding. Ask about aspirin and NSAID use in patients with GI bleeding.
- Foodborne illness is common. Ask patient about possible food exposures.
- Abdominal pain secondary to trauma is managed with the Multi-System Trauma Protocol. Ask about possible abdominal trauma in previous 48 hours.



PEDI - Aggressive/Violent Behavior

Signs and Symptoms:

- Anxiety, agitation, confusion, anger, fear, aggression
- Affect change, hallucinations
- Delusional thoughts, bizarre behavior
- Combative or violent
- Expression of suicidal/homicidal thoughts
- Hyperthermia
- Insensitivity to pain

History:

- Situational crisis
- Psychiatric illness/medications
- Self-injury or threat to others
- Substance abuse/overdose
- Diabetes/medical
- Known violence
- Rage

Differential:

- Altered mental status differentials
- Alcohol intoxication
- Toxin/Substance abuse
- Excited Delirium
- Medication effect/overdose
- Withdrawal syndromes
- Trauma/head injury or intracranial hemorrhage
- Hypoxia
- Depression/Anxiety disorder
- Bipolar (manic-depressive)
- Schizophrenia/Psychosis

Standby EMT

- Always ensure provider safety, request and stage for law enforcement if indicated
- Remove patient from stimulating or stressful environment if possible
- Utilize verbal de-escalation techniques to reassure/calm the patient
- **Oxygen** via most appropriate method
- SMR if indicated
- Consider restraint procedure

Basic EMT

- Same as above

Advanced EMT

- IV/IO access
 - IO access > 3 kg

Paramedic

- Temperature and glucose assessment required for any sedation under this protocol
- Chemical sedation if all other means to calm patient are ineffective
 - **Midazolam** 0.1 mg/kg IV/IO/IM/IN
 - Max dose 5 mg if < 2 years
 - Max dose 10 mg if > 2 years
 - May repeat once in 10 minutes
 - OR —
 - **Diazepam** 0.2 mg/kg IV/IO/IM **OR** 0.4 mg/kg PR
 - Max single dose 2.5 mg
 - May repeat once in 10 minutes
 - OR —



PEDI - Aggressive/Violent Behavior

- **Lorazepam** 0.05 mg/kg IV/IO/IM
 - Max single dose 1 mg
 - May repeat once in 10 minutes
- **OR** -
- **Ketamine** 0.5 mg/kg IV/IO **OR** 1 mg/kg IM
 - May repeat once in 10 minutes
- Continuous ECG, BP, SpO2, and EtCO2 after sedation

Medical Consult

- Additional medication for sedation/chemical restraint

Critical Points:

- Provider safety is paramount when dealing with aggressive and violent individuals. Stage for law enforcement when possible and request additional resources as needed.
- Providers should leave and request additional resources for any scene or patient that becomes unstable, violent or combative and places a provider at risk.
- Non-traumatic intracranial hemorrhage may present as agitation/AMS.
- **ECG, BP, SpO2, and EtCO2 should be monitored q 5 minutes after sedation.**
- **Acquire BGL and Temperature on any aggressive/violent, sedated and/or restrained patients.**
- **Patients in custody and/or handcuffed by law enforcement must have an officer accompany the patient in the ambulance during transport to the ED.**
- Monitor circulation in distal extremities following physical restraint application.
- Benzodiazepine administration in the presence of other respiratory depressants, such as alcohol, may lead to respiratory compromise.
- **ALS personnel must continuously monitor patients who receive physical or chemical restraints on scene and during transport.**
- Excited Delirium Syndrome is a medical emergency that is potentially life-threatening and associated with use of physical control measures, including physical restraints and tasers.

ATM PEDI - Allergic Reaction/Anaphylaxis

Signs and Symptoms:

- Rash/redness, urticarial (hives), dermal itching
- Dyspnea, wheezing, stridor
- Difficulty swallowing
- Chest or throat constriction
- Hypotension/shock
- AMS

History:

- Previous history
- Exposure to allergen
- Onset and location
- Recent medication
- Food allergy/exposure/insect sting/envenomation

Differential:

- Isolated rash
- Hypotension/Shock due to other causes
- Angioedema (drug induced)
- Aspiration/Airway obstruction
- CHF, Asthma or COPD
- Anxiety/Emotional distress

Standby EMT

- **Oxygen** via the most appropriate method
- **Diphenhydramine PO**
 - 25 mg if patient > 25 kg
- **DuoNeb** (Albuterol 3 mg/Atrovent 0.5 mg) via Nebulizer
 - Repeat x 2 q 10 minutes
- **Epinephrine 1:1,000** 0.01 mg/kg IM
 - Single Max dose 0.3 mg
 - May repeat x 2 q 5 minutes if indicated

Basic EMT

- Same as above

Advanced EMT

- IV/IO access
 - IO access > 3 kg
- Fluid Bolus
 - 20 ml/kg
 - May repeat once
- **Diphenhydramine** 1 mg/kg IV/IO/IM
 - Max 25 mg IM/IV/IO

Paramedic

- **Epinephrine 1:1,000** 0.01 mg/kg IM
 - Repeat PRN q 5 minutes
- **Methylprednisolone** 1 mg/kg IV/IO
- **Epinephrine 1:10,000** 0.01 mg/kg IV/IO if vascular collapse or imminent arrest
 - Max dose 0.3 mg

ATM PEDI - Allergic Reaction/Anaphylaxis

- DSI/RIS

Medical Consult

- Additional **Epinephrine 1:10,000** 0.01 mg/kg IV/IO

Critical Points:

- **Mild reaction**- flushing, hives, erythema. These reactions typically require only Benadryl.
- **Moderate reaction**- may present with dermal reaction and/or wheezing, chest tightness, dyspnea. These reactions typically require DuoNeb and Benadryl.
- **Severe/Anaphylaxis reaction**- 2 or more affected body systems showing a systemic effect. Hypotension is normally present during anaphylaxis but is not required. Epinephrine 1:1,000 IM should be administered for any patient with 2 or more affected body systems (dermal, respiratory, cardiovascular, GI, etc.).
- Anaphylaxis is an acute and potentially lethal multisystem allergic reaction.
- Intramuscular Epinephrine 1:1,000 is the most effective treatment for Anaphylaxis. Cardiac Epinephrine 1: 10,000 should only be administered to prevent pending arrest refractory to Epi 1:1,000 IM administration.
- Patients who receive epinephrine should receive ALS consult. Transportation is strongly encouraged.



PEDI - AMS/Unconscious

Signs and Symptoms:

- Unresponsive or disoriented **WITHOUT** a clear mechanism
- Decreased mental status or lethargy
- Change in baseline mental status
- Bizarre behavior
- Hypoglycemia (cool, diaphoretic skin)
- Hyperglycemia (warm, dry skin; Kussmaul Respirations, signs of dehydration)
- Irritability

History:

- Recent events
- Past medical history
- Drug or paraphernalia
- Report of drug or toxic ingestion
- Medications
- History of trauma
- Change in condition or medications

Differential:

- Head trauma
- CNS (Stroke/Large vessel occlusion, tumor, seizure, infection)
- Cardiac (MI, CHF)
- Thyroid (hyper/hypo)
- Shock (septic, metabolic, distributive, obstructive)
- Diabetes (hyper/hypo)
- Toxicological or ingestion
- Pulmonary (hypoxia, PE, pneumonia)
- Environmental
- Electrolyte abnormality
- Psychiatric disorder

Standby EMT

- Always ensure safety of the providers, request and stage for law enforcement if indicated
- **Oxygen** via most appropriate method
- SMR if indicated
- Consider restraint procedure
- **Naloxone** 0.1 mg/kg IN/IM for respiratory depression if opiate use is suspected
 - Repeat q 10 minutes PRN
 - Max single dose 1 mg

Basic EMT

- Same as above

Advanced EMT

- IV/IO access
 - IO access > 3 kg
- Intubate

Paramedic

- Consider DSI/RSI

Medical Consult

- Consider early notification for trauma/medical alert

Critical Points:

- Provider safety is paramount when dealing with altered or unpredictable individuals. Stage for law enforcement when possible and request additional resources as needed.
- Providers should leave and request additional resources for any scene or patient that becomes unstable, violent or combative and places a provider at risk.
- If toxicological or Haz-mat exposure is suspected, fire/Hazmat Team should be notified and providers should avoid exposure and take all personal protection precautions.
- Assess BGL, temperature and EtCO2 in AMS/Unconscious patients.
- Thorough assessment of an altered or unconscious patient includes scene and circumstances surrounding the incident to better assess potential causes, exposure and living conditions.
- Providers should focus on identifying the cause of the AMS, then utilize the appropriate protocol for treatment based on assessment findings.
- **DO NOT assume the primary cause of AMS/Unconsciousness is solely due to ETOH or drug use. Thorough assessments should be performed to account for possible trauma, hypoglycemia and other causes or comorbidities.**
- **Suspected opiate overdoses with respiratory depression are treated with airway management (e.g. BVM with adjunct) as soon as possible followed by Naloxone.**
- Intranasal and intramuscular Naloxone may take up to 10 minutes before an effect is observed (improved mental status or increased respiratory drive).



PEDI - Anxiety/Emotional Distress

Signs and Symptoms:

- Anxiety, agitation
- Hyperventilation
- Carpopedal spasms
- Tingling around mouth and hands

History:

- Situational crisis
- History of recent traumatic event
- Post-traumatic stress disorder (PTSD)

Differential:

- Altered mental status differentials
- Anxiety disorders
- Alcohol intoxication
- Mental disorder/Psychosis

Standby EMT

- Remove patient from stimulation or stressful environment if possible
 - If hyperventilation is secondary to trauma, pain, hypoxia, etc., move to appropriate protocol
- Utilize verbal de-escalation techniques to reassure/calm the patient
- Provide coached breathing instructions to help decrease ventilations
- Psychological support
- **Oxygen** via most appropriate method

Basic EMT

- Same as above

Advanced EMT

- IV/IO access
 - IO access > 3 kg

Paramedic

- Chemical sedation if all other means to calm patient are ineffective
 - **Midazolam** 0.1 mg/kg IV/IO/IM/IN
 - Max dose 5 mg if < 2 years
 - Max dose 10 mg if > 2 years
 - May repeat once in 10 minutes
 - **OR** —
 - **Diazepam** 0.2 mg/kg IV/IO/IM **OR** 0.4 mg/kg PR
 - Max single dose 2.5 mg
 - May repeat once in 10 minutes
 - **OR** —
 - **Lorazepam** 0.05 mg/kg IV/IO/IM
 - Max single dose 1 mg
 - May repeat once in 10 minutes
 - **OR** —
 - **Ketamine** 0.5 mg/kg IV **OR** 1 mg/kg IM
 - May repeat once in 10 minutes



PEDI - Anxiety/Emotional Distress

Medical Consult

- Additional medication for sedation

Critical Points:

- Calm the patient and assist with self-coping measures to improve patient outcome and anxiety.
- Hyperventilation can lead to increased anxiety and discomfort due to numbness/tingling/cramping (carpopedal spasms) in extremities and jaw.
- Anxiolytics/Sedation is a last resort if calming the patient and verbal de-escalation techniques are not effective.
- Anxiolytics/Sedation may be indicated for individuals with comorbidities such as asthma or who are not able to effectively participate in an assessment due to anxiety/emotional distress.
- **Monitor ECG, BP, SpO2, and EtCO2 q 5 minutes if anxiolytics are administered.**
- Benzodiazepine administration in the presence of other respiratory depressants, such as alcohol, may lead to respiratory compromise.
- **ALS personnel must continuously monitor patients who receive physical or chemical restraints on scene and during transport.**



PEDI - Bleeding Non-traumatic

Signs and Symptoms:

- Hypovolemia secondary to blood loss due to medical etiology
- Massive epistaxis
- Massive hemoptysis
- Bloody or “coffee grounds” emesis
- Bloody stools or rectal bleeding
- Extensive bruising

History:

- Cancer history
- Anticoagulant use
- Low platelets/platelet disorder
- Hemophilias/clotting disorders
- Abdominal pain, vomiting

Differential:

- Pulmonary hemorrhage
- Esophageal tear
- Peptic Ulcer Disease
- Diverticulitis
- Other GI hemorrhage
- Alcoholism/cirrhosis
- AV fistula hemorrhage
- AAA rupture

Standby EMT

- **Oxygen** via most appropriate method
- Consider Trendelenburg

Basic EMT

- Same as above

Advanced EMT

- IV/IO access
 - IO access > 3 kg
- Fluid bolus
 - 20 ml/kg
 - May repeat once
- Secondary Vascular Access

Paramedic

- Pain Management

Medical Consult

- Consult for TXA for continued uncontrolled hemorrhage



PEDI - Bleeding Non-traumatic

Critical Points:

- Non-traumatic hemorrhage may present at any age, even in infancy.
- Calculate MAP = (SBP + [2 x DBP]) ÷ 3
- Ask about recent aspirin and NSAID use.
- Location, timing and duration of abdominal pain can be helpful in diagnosing cause of GI bleeding.
- Peptic ulcers and intestinal AV malformations may not be painful prior to bleeding.
- Consider lung cancer in pulmonary hemorrhage.



PEDI - Dehydration

Signs and Symptoms:

- Poor skin turgor
- Dry mucous membranes
- Dizziness, weakness
- Tachycardia
- Compensated or uncompensated hypovolemia
- Oliguria- decreased urine output

History:

- Recent illness, fever
- Poor nutrition
- Anorexia
- ETOH Abuse
- Excessive exercise/exertion
- Prolonged nausea, vomiting, and/or diarrhea

Differential:

- Flu
- Infection
- Cardiac etiology
- Pregnancy
- Trauma
- Non-traumatic hypotension: GI bleed, pulmonary embolism

Standby EMT

- **Oxygen** via most appropriate method
- **Zofran PO**
 - 4 mg if patient > 8 kg

Basic EMT

- Same as above

Advanced EMT

- IV/IO access
 - IO access > 3 kg
- **Zofran** 2 – 4 mg IV/IO
 - 2 mg if < 8 kg
 - 4 mg if > 8 kg
- Fluid Bolus
 - 20 ml/kg
 - May repeat once

Paramedic

- Refer to appropriate protocol to address symptoms

Critical Points:

- Dehydration can be a serious medical condition.
- Consider recent events and environmental factors when assessing patients with possible dehydration.
- Recent illness, exertion, or decreased water intake may make a patient susceptible to dehydration.
- Suspect dehydration in normotensive patients with tachycardia. Patients with hypotension and suspected dehydration should be treated under the non-traumatic hypotension protocol. Most likely, dehydration induced hypotension will improve with fluid bolus without an additional pressor.
- Abnormal orthostatic vitals do not diagnose dehydration/volume depletion specifically. There are many causes for orthostatic hypotension. Do not assume simple dehydration as the only cause of orthostatic hypotension, particularly in elderly patients.



PEDI - Diabetic/Hyperglycemia

Signs and Symptoms:

- BGL > 250 mg/dL with symptomatic presentation
- Altered Mental Status
- Tachypnea- Kussmaul respirations
- Tachycardia
- Abdominal pain, N/V
- Hypotension
- Dehydration (polyuria, polyphagia, polydipsia)
- Diaphoresis

History:

- Known history
- New onset
- Medications
- Last meal/dietary indiscretion

Differential:

- New onset diabetes
- Trauma
- CNS (stroke, tumor, seizure, infection)
- Alcohol/Drug use
- Abdominal pain
- Altered mental status differentials

Standby EMT

- **Oxygen** via most appropriate method
- **Zofran PO**
 - 4 mg if patient > 8 kg

Basic EMT

- Same as above

Advanced EMT

- IV/IO access
 - IO access > 3 kg
- Fluid Bolus
 - 20 ml/kg
 - May repeat once
- **Zofran 2 – 4 mg**
 - 2 mg if < 8 kg
 - 4 mg if > 8 kg

Paramedic

- Refer to appropriate protocol to address symptoms



PEDI - Diabetic/Hyperglycemia

Critical Points:

- Full assessments are necessary for these patients to rule out any comorbidities or alternate causes.
- Additional causes of AMS should be assessed alongside any suspicion of hyperglycemia.
- Symptomatic hyperglycemia usually does not occur until BGL > 200 mg/dL and may be associated with intense abdominal pain.



PEDI - Diabetic/Hypoglycemia

Signs and Symptoms:

- BGL < 60 mg/dL with symptomatic presentation
- BGL < 40 mg/dL in Neonates
- Altered mental status
- Tremors
- Weakness
- N/V
- Intense hunger
- Diaphoresis
- Malnourishment
- Hypothermia

History:

- Known history
- New onset
- Medications: excessive insulin use/abuse
- Absence of recent meal
- Malnutrition

Differential:

- CNS (stroke, tumor, seizure, infection)
- Alcohol/Drug use
- Trauma
- Renal failure
- Medication side effects
- Exercise
- Altered mental status differentials

Standby EMT

- **Oxygen** via most appropriate method
- **Oral glucose** 7.5 - 15 g PO
 - May repeat x 2 q 10 minutes until BGL > 60 mg/dL
 - Only for patients with intact gag reflex who can swallow and are able to follow commands

Basic EMT

- Same as above

Advanced EMT

- IV/IO access
 - IO access > 3 kg
- **D10W** 2.5 ml/kg IV/IO
 - Repeat as needed to maintain adequate mental status and/or BGL > 60 mg/dL
 - Preferred for Neonates, repeat to maintain BLG > 40 mg/dL
- **D50%** 0.5 g/kg IV/IO if > 10 kg
 - May be repeated once after 10 minutes if symptoms persist
- **D25%** 0.5 g/kg IV/IO for infants < 10 kg
 - May be repeated once after 5 minutes if symptoms persist
- **Thiamine** 25 mg IV/IO/IM
 - Prior to Dextros administration ONLY if Thiamine deficiency is known/suspected or the patient presents with chronic malnutrition

Paramedic

- **Glucagon** IM if unable to obtain IV/IO access
 - 0.5 mg IM if < 20 kg
 - 1 mg IM > 20 kg



PEDI - Diabetic/Hypoglycemia

Medical Consult

- Consult for long acting insulin agents that may have potential for recurrent hypoglycemia following treatment without transportation.

Critical Points:

- Full assessments are necessary for these patients to rule out any comorbidities or alternate causes.
- Additional causes of AMS should be assessed alongside any suspicion of hypoglycemia.
- Patients with prolonged hypoglycemia, such as with chronic malnutrition, or with liver failure may not respond to glucagon.
- Routine use of Thiamine for dextrose/glucose administration is not necessary unless there is a known Thiamine deficiency, chronic malnutrition or Wernicke's Encephalopathy is suspected. In these patients, Thiamine should be administered prior to dextrose/glucose.
- Patients on longer acting insulin are at higher risk of recurrent hypoglycemia even after a normal glucose is established.
- Glucagon is only to be administered if a patient can not take oral glucose and IV access is not readily available.
- Glucagon is dependent on adequate glycogen stores and may not work in chronically malnourished patients. BGL will start to increase approximately 10 minutes after IM administration and will reach max levels at 30 to 45 minutes post administration.
- IO access for hypoglycemia should be limited to critical (unresponsive or unstable) patients where no peripheral IV site can be obtained AND Glucagon is not readily available, or if chronic malnutrition is suspected.
- Cardiac and 12-lead assessment is recommended in all patients who received parenteral glucose or glucagon.



PEDI - Dystonic Reaction

Signs and Symptoms:

- Protrusion of the tongue
- Twisted neck or facial spasms
- Roving or deviated gaze
- Abdominal rigidity or pain
- Spasm of the entire body
- Twitching

History:

- Recent ingestion of phenothiazine, fluphenazines, other neuroleptics or related drugs such as antipsychotics
- Known dystonic reaction or tardive dyskinesia
- Recent change or increase in neuroleptic medication

Differential:

- Acute Tetanus
- Electrolyte abnormality
- Seizures
- Stroke
- Rabies

Standby EMT

- **Oxygen** via most appropriate method
- **Diphenhydramine PO**
 - 25 mg if patient > 25 kg

Basic EMT

- Same as above

Advanced EMT

- IV/IO access
 - IO access > 3 kg
- **Diphenhydramine** 1 mg/kg IV/IO
 - Max dose 25 mg

Paramedic

- **Midazolam** 0.1 mg/kg IV/IO/IM/IN
 - Max dose 5 mg if < 2 years
 - Max dose 10 mg if > 2 years
 - May repeat once in 10 minutes
 - OR —
- **Lorazepam** 0.05 mg/kg IV/IO/IM
 - Max single dose 1 mg
 - May repeat once in 10 minutes

Medical Consult

- Additional **Midazolam**

Critical Points:

- Dystonic reactions (extrapyramidal reaction) is a condition causing involuntary muscle movements or spasms typically of the face, neck and upper extremities. May present as contorted neck and trunk with difficult motor movements.
- Dystonic reactions are rarely life threatening. However, these reactions cause immense distress for the patient and family.
- Assess temperature in these patients.
- Example of some neuroleptic drugs: aripiprazole (Abilify), asenapine (Saphris), cariprazine (Vraylar), clozapine (Clozaril), haloperidol (Haldol), lurasidone (Latuda), olanzapine (Zyprexa), quetiapine (Seroquel), risperidone (Risperdal), ziprasidone (Geodon), metoclopramide (Reglan)



PEDI - Fever

Signs and Symptoms:

- Altered mental status
- Weakness
- Temperature > 101° F
- Warm, flushed, sweaty
- Chills/rigors
- Associated symptoms: “flue like symptoms”, myalgia, cough, chest pain, throat pain, headache, dysuria, abdominal pain, rash,
- Redness around infection sight/wound

History:

- Evidence of determinable source for sepsis
- Duration and severity
- Immunocompromised (transplant, HIV, diabetes, cancer)
- Last intake of acetaminophen or ibuprofen
- Recent history of infection

Differential:

- Sepsis or SIRS (Systemic Inflammatory Response Syndrome)
- Meningitis
- Epiglottitis
- Influenza
- Appendicitis
- Tuberculosis
- Urinary Tract Infection
- Heat Stroke
- Dehydration
- Seizure
- Transplant / Transfusion Rejection

Sepsis Screening: if positive move to Sepsis protocol.

Standby EMT

- Appropriate PPE
- **Oxygen** via most appropriate method
- **Acetaminophen** 15 mg/kg PO if patient is awake and oriented without N/V
- **Ibuprofen** 200 mg if > 20 kg
- External cooling

Basic EMT

- Same as above

Advanced EMT

- IV/IO access
 - IO access > 3 kg
- **Acetaminophen** 15 mg/kg PR
- Fluid Bolus
 - 20 ml/kg
 - May repeat once

Paramedic

- Pain management



PEDI - Fever

- Hypotension should be treated under Shock/Hypotension Non-Traumatic or Sepsis Protocol if screening criteria is met

Medical Consult

- Consider consult for any recent travel outside of the country or unusual circumstances/exposures

Critical Points:

- Temperature check is required in these patients
- Acetaminophen should be avoided in any patients with known liver failure/disease.
- **Contact precautions** include standard PPE plus utilization of a gown, change of gloves after every patient contact, and strict hand washing precautions. This level of precaution is utilized when multi-drug resistant organisms (e.g. MRSA, scabies, or zoster (shingles)), or with other illnesses spread by contact.
- **Droplet precautions** include standard PPE plus a standard surgical mask for providers who accompany patients in the back of the ambulance and a surgical mask or NRB O2 mask for the patient. This level of precaution should be utilized with influenza, meningitis, mumps, streptococcal pharyngitis, and other illnesses spread via large particle droplets. A patient with a potentially infectious rash should be treated with droplet precautions
- **All-hazards precautions** (Airborne Precautions) include standard PPE, contact precautions plus N-95 mask for providers. This level of precautions is utilized during the initial phases of an outbreak when the etiology of the infection is unknown or when the causative agent is found to be highly contagious (e.g. SARS,TB).
- Tylenol should not be administered for suspected heat stroke or heat exhaustion.

PALS Sepsis Screening:		
Temperature:	< 96.8°F or > 100.4°F	1 point
Heart Rate:	< 1 year HR > 190 1 – 10 years HR > 140 > 10 years HR > 120	1 point
Respiratory Rate:	< 12 months RR > 50 1 – 10 years RR > 40 > 10 years RR > 30	1 point
Blood Pressure	< 12 months SBP < 70 1 – 10 years SBP < (70 + 2x age) > 10 years SBP < 90	1 point
EtCO2:	< 25 mmHg	1 point
Score > 2 = SEPSIS ALERT		



PEDI - Overdose/Poisoning

Signs and Symptoms:

- Lethargy
- AMS
- Hypotension/hypertension
- Decreased respiratory rate
- Tachycardia, bradycardia, dysrhythmias
- Seizures
- Combative
- Unresponsive
- S.L.U.D.G.E / D.U.M.B.B.E.L.S

History:

- Known or suspected illicit drugs or alcohol use
- Ingestion or injection of medication whether intentional or accidental
- Ingestion, inhalation or absorption of potentially harmful non-pharmaceutical substances
- Availability/access to medication/toxins/chemicals
- Quantity and duration of exposure
- Time of ingestion/exposure
- Route of exposure
- Multiple victims

Differential:

- Toxins
- Metabolic (glucose)
- Seizure of known origin (epilepsy)
- CVA
- Hypoxia
- Traumatic Brain Injury
- Cardiac etiology

Standby EMT

- Always ensure provider safety, request and stage for law enforcement or fire department if indicated (HAZMAT, aggressive/violent individuals)
- **Oxygen** via most appropriate method
 - Carbon monoxide poisoning: utilize NRB or BVM with high flow oxygen
- **Naloxone** 0.1 mg/kg IN/IM for respiratory depression if opiate use is suspected
 - Max single dose 1 mg

Basic EMT

- CPAP 3-10 cmH₂O
 - Suspected Carbon monoxide poisoning

Advanced EMT

- IV/IO access
 - IO access > 3 kg
- Fluid bolus
 - 20 ml/kg
 - May repeat once
- Intubate

Paramedic

- Consider pacing for unstable bradycardic patients: see Bradycardia protocol.
- Refer to Aggressive/Violent Behavior protocol if all other means to calm patient are ineffective
- Consider DSI/RSI



PEDI - Overdose/Poisoning

- **Carbon monoxide poisoning**
 - SpCO > 15% or with exposure and pertinent S/S
 - **Oxygen** via NRB or **CPAP** despite saturation
- **Sympathomimetic overdose:** Cocaine, PCP, Methamphetamine
 - **Midazolam** 0.1 mg/kg IV/IO/IM/IN
 - Max dose of 5 mg if < 2 years
 - Max dose of 10 mg if > 2 years
 - May repeat once in 10 minutes
 - **Diazepam** 0.2 mg/kg IV/IO **OR** 0.4 mg/kg PR
 - Max single dose 2.5 mg
 - May repeat once after 10 minutes
 - **Lorazepam** 0.05 mg IV/IO
 - Max single dose 1 mg
 - Repeat once after 5 minutes
- **Organophosphate poisoning or Nerve Agent** with parasympathetic symptoms
 - **Atropine** 0.02 mg/kg IV/IO
 - Repeat q 5 minutes until symptom (bradycardia) resolves
- **Beta blocker overdose:**
 - **Glucagon**
 - 0.5 mg IM if < 20 kg
 - 1 mg IM if > 20 kg
- **Calcium channel blocker overdose:**
 - **Calcium chloride** 20 mg/kg SLOW IV/IO
 - Repeat once after 10 minutes PRN
- **Tricyclic antidepressant (TCA) overdose** with QRS > 0.12 seconds, hypotension, seizures, or AMS:
 - **Sodium bicarbonate 8.4%** 0.5 mEq/kg SLOW IV/IO
 - Infant < 1 year receive 4.2% Sodium Bicarb
- **Ethylene glycol ingestion** (antifreeze, automotive fluids, solvents, paints, cosmetics)
 - Airway management is priority to reduce risk of aspiration.
 - **Sodium bicarbonate** 0.5 mEq/kg SLOW IV/IO if patient appears very ill
 - Infant < 1 year receive 4.2% Sodium Bicarb
- **Chlorine, Nitrogen Dioxide or Phosgene gas exposure**
 - Wheezing present- nebulized **8.4% Sodium Bicarb** (2cc in 2ml NS) with DuoNeb treatment
 - No wheezing- nebulized **8.4% Sodium Bicarb** (2cc in 2ml NS)
 - May repeat once after 20 min
- **Hypotension due to overdose/toxins**
 - **Dopamine** 2-20 mcg/kg/min IV/IO
 - Administer if patient remains hypotensive **after 20 ml/kg NS bolus**
 - Titrate to sustain SBP > (70 + 2x age) mmHg

Medical Consult

- If presented with an appropriate reversal and/or treatment agent on scene, TAMU EMS Paramedics may administer non-expired agent at the appropriate dose listed, following all listed precautions and strict adherence to administration guidelines

Critical Points:

- Consider contacting Poison Control: 1-800-222-1222
- If possible, try to obtain the bottle or container that held the ingested substance.
- **For suicide attempts, do not rely on patient history of ingestion. Ensure patient is not carrying additional medication/substances nor has any weapons. PD should be requested if needed.**
- Any patient with a global exposure requires decontamination before being moved to the ambulance. Do not begin transport unless all contaminants have been removed from the patient. Personal items such as clothes, backpack, etc., should be left on scene if contaminated.
- Overdoses and poisonings usually cause multi-system effects. Thoroughly assess all major body systems to determine the constellation of symptoms that will lead to proper treatment.
- Common medications:
 - Tricyclic Antidepressants: amitriptyline (Elavil), imipramine (Tofranil), doxepin, nortriptyline (Pamelor)
 - Calcium Channel Blockers: amlodipine (Norvasc), diltiazem (Cartia, Dilacor, Tiazac), nifedipine (Adalat, Procardia), verapamil (Calan)
 - Beta Blockers: atenolol (Tenormin), labetalol (Trandate), metoprolol (Lopressor, Toprol), nadolol (Corgard), propranolol (Inderal)
 - SSRIs: citalopram (Celexa), escitalopram (Lexapro), fluoxetine (Prozac), fluvoxamine (Luvox), paroxetine (Paxil), sertraline (Zoloft)
 - SNRIs: duloxetine (Cymbalta), venlafaxine (Effexor)
 - Benzodiazepines: alprazolam (Xanax), chlordiazepoxide (Librium), diazepam (Valium), lorazepam (Ativan)
- TCA overdose can rapidly progress from normal mental status, to symptomatic (seizures, hypotension, AMS), to death.
- Organophosphates are typically found in insecticides and nerve agents. Exposure can present with manufacturing, pharmacology, agricultural and insecticide use/application. Large doses of atropine are required for reversal.
- If smoke inhalation occurs, consider carbon monoxide (CO) or cyanide poisoning.
- If multiple victims in one location, consider carbon monoxide poisoning.
- Pulse oximetry reading is unreliable in carbon monoxide and cyanide poisonings. Oxygen via NRB should be applied to all patients with suspected carbon monoxide or cyanide poisoning.
- **The treatment for Hydrofluoric acid is Calcium gluconate. Transport to appropriate facility for treatment.**
- **The treatment for Cyanide exposure is Hydroxocobalamin.**
 - Hydroxocobalamin 70 mg/kg IV/IO over 15 min with a max of 5 grams
 - Antidote kits should be available on-site where cyanide is used.



PEDI - Seizures

Signs and Symptoms:

- Grand Mal, Petite, Focal seizure
- Tonic/Clonic convulsions
- Visual changes or aura
- Decreased or altered mental status
- Lethargic
- Postictal state
- Incontinence
- Unconsciousness
- Oral trauma from biting tongue

History:

- History of seizures/epilepsy
- Observed seizure activity by bystander
- Head trauma
- New onset
- Onset, duration, number of seizures (back to back)
- Lucid interval

Differential:

- CNS: Head trauma, stroke, epilepsy
- Overdose
- Withdrawals
- Hypoglycemia
- Unknown Etiology
- Electrolyte abnormality
- Eclampsia
- Infection/Fever

Standby EMT

- Protect patient from potential hazards and objects during active seizure
- SMR if indicated
- **Oxygen** via most appropriate method
- External cooling if febrile
- **Acetaminophen** 15 mg/kg PO if patient is awake and oriented without N/V
- **Ibuprofen PO**
 - 200 mg if > 20 kg

Basic EMT

- Same as above

Advanced EMT

- IV/IO access
 - IO access > 3 kg
- **Acetaminophen** 15 mg/kg PR

Paramedic

- **Diazepam** 0.2 mg/kg IV/IO/IM/PR
 - Max single dose 2.5 mg
 - May repeat once
- OR —
- **Midazolam** 0.1 mg/kg IV/IO/IM/IN
 - Max dose 5 mg if < 2 years
 - Max dose 10 mg if > 2 years
 - May repeat once

— OR —

- **Lorazepam** 0.05 mg/kg IV/IO/IM
 - Max single dose 1 mg
 - May repeat once
- DSI/RSI procedure for status epilepticus

Medical Consult

- Additional benzodiazepine administration

Critical Points:

- Most seizures are self-limiting lasting less than 3 minutes and require only supportive therapy.
- IM midazolam 5 mg is effective in termination of seizures. Do not delay IM administration with difficult IV access.
- IM and IN medication routes typically take around 4-9 minutes before an effect is observed. Providers should allow enough time before re-dosing based on the administration route.
- Pregnancy > 20 weeks treat under Pre-eclampsia/Eclampsia protocol.
- ABC's are the priority in any seizing patient prior to chemical therapies.
- Most patients can "breath through" seizures. In extreme cases, the diaphragm may be involved keeping the patient from breathing. This is a hypoxic emergency requiring prompt ventilation and airway management.
- Benzodiazepines may cause respiratory depression and apnea. If indicated, monitor with EtCO₂ and be prepared to assist with ventilations.
- Common seizure medication: levetiracetam (Keppra), carbamazepine (Tegretol, Carbatrol), phenytoin (Dilantin, Phenytek), valproic acid (Depakene), oxcarbazepine (Oxtellar, Trileptal), lamotrigine (Lamictal), gabapentin (Neurontin), topiramate (Topamax), phenobarbital

Signs and Symptoms:

- Decreased perfusion, hypotension
SBP < (70 + 2x age) mmHg
- Tachycardia
- Altered mental status
- Weakness
- Hypo/Hyperthermic
- Warm, flushed, sweaty
- Chills/rigors
- Associated symptoms: "flu like symptoms", myalgia, cough, chest pain, throat pain, headache, dysuria, abdominal pain, rash,
- Redness around infection sight/wound

History:

- Evidence of determinable source for sepsis
- Duration and severity
- Immunocompromised (transplant, HIV, diabetes, cancer)
- Last intake of acetaminophen or ibuprofen
- Recent history of infection
- Recent hospitalization
- Bedridden or immobile

Differential:

- Isolated infection: UTI, Pneumonia, Skin/wound
- Neurological: Heat Stroke, CVA, Malignant hyperthermia
- Meningitis
- Hyper/Hypoglycemia
- Cardiac issues
- Hyperthyroidism
- Dehydration
- Seizure
- Transplant / Transfusion Rejection
- Anaphylaxis

PALS Sepsis Screening:

Temperature:	< 96.8°F or > 100.4°F	1 point
Heart Rate:	< 1 year HR > 190 1 – 10 years HR > 140 > 10 years HR > 120	1 point
Respiratory Rate:	< 12 months RR > 50 1 – 10 years RR > 40 > 10 years RR > 30	1 point
Blood Pressure	< 12 months SBP < 70 1 – 10 years SBP < (70 + 2x age) > 10 years SBP < 90	1 point
EtCO2:	< 25 mmHg	1 point
Score > 2 = SEPSIS ALERT		

Standby EMT

- Appropriate PPE
- **Oxygen** via most appropriate method
- **Sepsis Screening**
- **Acetaminophen** 15 mg/kg PO if no N/V
- **Ibuprofen** 200 mg if > 20 kg
- External cooling

Basic EMT

- Same as above

Advanced EMT

- IV/IO access
 - IO access > 3 kg
- **Acetaminophen** 15 mg/kg PR
- Fluid Bolus
 - 20 ml/kg
 - May repeat once
- Secondary Vascular Access

Paramedic

- **Norepinephrine (Levophed)** 0.1 mcg/kg/min IV/IO infusion for distributive (septic) shock.
 - Administer if patient remains hypotensive **after 80 ml/kg NS**
 - Titrate to 2.0 mcg/kg/min to maintain SBP > (70 + 2x age) mmHg
 - Do not administer vasopressors for hypovolemic shock
- **Dopamine** 2-12 mcg/kg/min IV/IO if refractory
 - Administer if patient remains hypotensive following Norepinephrine
 - Titrate to sustain SBP > (70 + 2x age) mmHg

Medical Consult

- Consider consult for any recent travel outside of the country or unusual circumstances/exposures

Critical Points:

- Temperature check is required in these patients
- Acetaminophen should be avoided in any patients with known liver failure/disease.
- Tylenol should not be administered for suspected heat stroke or heat exhaustion.
- Any changes in patient condition, refer to the appropriate protocol
- Hypotension may be defined as a systolic blood pressure (<6 months <60 mmHg)(<10 years <70+2x age)(>10years <90 mmHg); however, SBP must be interpreted in context of age and s/s and the patients typical BP if known. Shock may be present with a normal blood pressure initially, particularly in late pregnancy.
- Consider Sepsis Screening early if type of shock is unknown.
- Fluid bolus should be more conservative and observed carefully in patients with history of CHF, Pulmonary Edema, or End Stage Renal Failure. Consult medical control for any concerns.
- **Norepinephrine is an alpha 1 agonist that causes peripheral vasoconstriction. It is preferred over dopamine. Always administer 80 ml/kg of fluid prior to pressor infusion.**

Signs and Symptoms:

- Dyspnea, tachypnea
- Cyanosis
- Clubbing
- Edema (pulmonary, pedal, ascites, presacral)
- Wheezing, rales, rhonchi, absent/decreased breath sounds, stridor
- Chest pain
- Bronchoconstriction
- Jugular Venous distention (JVD)

History:

- Use of inhaled medications, steroids, diuretics, anti-hypertensive medications
- Smoking
- Fever
- Productive cough
- Recent surgery
- Inhalation/Reactive airway disease
- Bronchospasms
- Chest pain

Differential:

- Pulmonary Embolism
- Croup/Epiglottitis
- Anxiety
- Asthma
- Airway Obstruction
- Pneumonia
- Pneumothorax
- Allergic reaction
- Aspiration

Age	Weight (kg)	Heart Rate	Systolic BP	Respirations
Newborn	3	100 – 160	50 – 70	30 – 60
1 – 6 weeks	4	100 – 160	70 – 95	30 – 60
6 months	7	90 – 120	80 – 100	25 – 40
1 year	10	90 – 120	80 – 100	20 – 30
3 years	15	80 – 120	80 – 100	20 – 30
6 years	20	70 – 100	80 – 100	18 – 25
10 years	30	60 - 90	90 - 120	15 - 20

Assessment

- Circulation, Airway, Breathing, C-Spine (C.A.B.C.)
 - In respiratory patients, emphasis is placed on close assessment of airway patency followed by ventilation adequacy (rate, effort/work of breathing, tidal volume, breath sounds).
 - Patients with rapid onset and/or a hx of chronic respiratory illness may desaturate quickly due to minimal oxygen reserve. Correct and timely treatments (high flow oxygen, DuoNeb, CPAP) are key to effectively treating these patients.
- Primary Assessment
- Secondary/Focused assessment
- Vitals: SpO₂, blood pressure, pulse, respirations, lung sounds, BGL, temperature, EtCO₂
- Glasgow Coma Scale (GCS)
- Responsiveness and orientation
- Onset, Provocation, Quality, Radiation, Severity, Time (O.P.Q.R.S.T.)
- Associated Symptoms and Pertinent Negatives (ASPN)
- S.A.M.P.L.E.
- Electrocardiogram (ECG) 3-Lead
- ECG 12-Lead if appropriate
 - ECG 12-Lead Right sided if appropriate



PEDI - Respiratory Assessment

- If patient meets rapid 12-lead criteria: Obtain 12-lead within 5 minutes of patient contact. STEMI alert should be called and/or faxed on scene immediately to receiving destination.



PEDI - Respiratory Distress

Signs and Symptoms:

- Dyspnea without a clear etiology
- Shortness of breath, cough
- Abnormal breath sounds: stridor, wheezing, rhonchi, rales
- Decreased or absent lung sounds
- Increased respiratory rate/work of breathing
- Pursed lips, tripod position, accessory muscle use
- Hemoptysis

History:

- Significant respiratory history
- New onset
- Possible toxic exposure
- Recent chest trauma

Differential:

- Asthma/Bronchospasm
- CHF/Pulmonary edema
- Pneumonia/Upper respiratory infection
- Pneumothorax, Hemothorax
- Alveolar hemorrhage
- Pulmonary Embolism
- Cardiac MI or tamponade
- Inhaled toxins: CO, Cyanide

Standby EMT

- **Oxygen** via most appropriate method
- **DuoNeb** (Albuterol 3 mg/Atrovent 0.5 mg) via Nebulizer
 - May repeat x 2 q 10 minutes
- Position of comfort

MOVE TO MORE APPROPRIATE PROTOCOL

If no beneficial response is seen with DuoNeb, consider other causes and treatment

Basic EMT

- CPAP 3 – 10 cmH2O

Advanced EMT

- IV/IO access
 - IO access > 3 kg
- Fluid bolus
 - 20 ml/kg
 - May repeat once

Paramedic

- Consider DSI/RSI
- Chest decompression if pneumothorax suspected



PEDI - Respiratory Distress

Critical Points:

- A thorough assessment is needed for any patient in respiratory distress. **Move to appropriate protocol following assessment.** If a patient does not fall into a more specific protocol, this protocol (Respiratory Distress) should be used.
- Monitor pulse oximetry and capnography continuously in any respiratory distress patient.
- A silent chest in respiratory distress is a pre-respiratory arrest sign.
- Administer therapeutic oxygen (NC, NRB, BVM, CPAP) for SPO2 < 94%, suspected hypoxia, or at Paramedic discretion.
- Routinely check lung sounds to note any changes and/or improvement.
- Monitor for worsening conditions



PEDI - Airway Obstruction

Signs and Symptoms:

- Partial or complete airway obstruction
- Secondary to foreign body aspiration
- Decreased LOC
- Cyanosis
- Obvious inadequate air exchange

History:

- Recent events
- Recent ACE inhibitor use

Differential:

- COPD exacerbation
- Asthma exacerbation
- Vocal Cord Dysfunction (VCD)
- Anaphylactic reaction
- Medication induced angioedema (ACE-inhibitor use)
- Glossitis
- Epiglottitis

Standby EMT

- Back blows and chest thrusts for complete blockage in conscious infants
- Chest/abdominal thrusts for complete blockage in conscious child
- Initiate CPR in unconscious patient with known airway obstruction
- **Oxygen** via most appropriate method
- Remove foreign body with suction if it has become dislodged and is easily visible.
 - DO NOT push further into oropharynx

Basic EMT

- Same as above

Advanced EMT

- Direct/Video laryngoscopy and removal of foreign object with Magill forceps or suction
 - If patient is unconscious and there is a complete obstruction
- IO/IO access
 - IO access > 3 kg

Paramedic

- Consider surgical airway (cricothyroidotomy) if obstruction is not relieved by other means

Medical Consult

- Surgical airway consult if all indications are not met



PEDI - Airway Obstruction

Critical Points:

- Rapid transport is recommended in all partial or complete airway obstructions
- Partial airway obstructions allow for some air to pass the foreign body. This does NOT mean enough air/oxygen is getting to the lungs. Patients should be encouraged to cough if possible.
- Pulse oximetry and Capnography should be continuously monitored
- Do not intervene if patient has productive cough



PEDI - Bronchospasm

Signs and Symptoms:

- Shortness of breath
- Wheezing, rhonchi, stridor
- Prolonged expiratory phase
- Pursed lip breathing
- Decreased ability to speak
- Increased respiratory rate and effort/work of breathing
- Accessory muscle use

History:

- History of asthma, COPD, chronic bronchitis
- Reactive airway disease- exposure to allergens, smoke, chemicals.
- Home treatment such as at home oxygen or CPAP machine
- Medications

Differential:

- CHF
- Upper respiratory infection
- Anaphylaxis
- Pulmonary embolism, pneumothorax
- Cardiac MI or tamponade
- Hyperventilation/Anxiety
- Inhaled toxins

Standby EMT

- **Oxygen** via most appropriate method
- **DuoNeb** (Albuterol 3 mg/Atrovent 0.5 mg) via Nebulizer
 - May repeat x 2 q 10 minutes

Basic EMT

- CPAP 3 – 10 cmH₂O

Advanced EMT

- IV/IO access
 - IO access > 3 kg
- Fluid bolus
 - 20 ml/kg
 - May repeat once

Paramedic

- **Epinephrine 1: 1,000** 0.01 mg/kg IM
 - Max single dose 0.3 mg
 - May repeat once
- **Methylprednisolone** 1 mg/kg IV/IO
- **Magnesium Sulfate** 25 mg/kg IV/IO over 10 minutes
 - Max dose 1 g
- **Epinephrine Nebulizer** for Stridor
 - 1 mg (1:1,000) in 2 mL NS
 - May repeat once
 - May be administered before or after DuoNeb
- Consider DSI/RSI



PEDI - Bronchospasm

Medical Consult

- Additional **Epinephrine** 1:1,000

Critical Points:

- Monitor pulse oximetry and capnography continuously in any respiratory distress patient.
- A silent chest in respiratory distress is a pre-respiratory arrest sign.
- Administer therapeutic oxygen (NC, NRB, BVM, CPAP) for SPO2 < 94%, suspected hypoxia, or at Paramedic discretion.
- Routinely check lung sounds to note any changes and/or improvement.
- Monitor for worsening conditions



Pedi COPD

Signs and Symptoms:

- Shortness of breath
- Wheezing, rhonchi, stridor
- Prolonged expiratory phase
- Pursed lip breathing
- Decreased ability to speak
- Increased respiratory rate and effort/work of breathing
- Accessory muscle use

History:

- History of COPD
- Chronic bronchitis or emphysema
- Home treatment such as at home oxygen or CPAP machine

Differential:

- CHF
- Upper respiratory infection
- Anaphylaxis
- Pulmonary embolism, pneumothorax
- Cardiac MI or tamponade
- Hyperventilation/Anxiety
- Inhaled toxins
- Asthma

EMT

- **Oxygen** via most appropriate method
- **Duoneb** (Albuterol 3 mg/Ipratropium Bromide 0.5 mg) via Nebulizer
 - May repeat x 2 q 10 minutes

Advanced EMT

- IV/IO access
 - IO access > 3 kg
- CPAP 3-10 cmH2O
- Fluid Bolus
 - 20 ml/kg
 - May repeat once

Paramedic

- **Methylprednisolone** 1 mg/kg IV/IO
 - Max dose 40 mg
- **Magnesium Sulfate** 25 mg/kg IV/IO infusion
 - Max dose 1 g
- **Epinephrine 1: 1,000** 0.01 mg/kg IM
 - Max single dose 0.3 mg
 - May repeat once
- Consider DSI/RSI

Medical Consult

Critical Points:

- Monitor pulse oximetry and capnography continuously in any respiratory distress patient.
- A silent chest in respiratory distress is a pre-respiratory arrest sign.
- Administer therapeutic oxygen (NC, NRB, BVM, CPAP) for SPO₂ < 94%, suspected hypoxia, or at Paramedic discretion.
- Have continuous ECG monitoring
- Allow position of comfort
- Routinely check lung sounds to note any changes and/or improvement.
- Monitor for worsening conditions



PEDI - Croup

Signs and Symptoms:

- “Barking” cough
- Inspiratory stridor, wheezing, rhonchi,
- Fever/Upper respiratory infection
- Shortness of breath
- Pursed lip breathing
- Decreased ability to speak
- Increased respiratory rate and effort/work of breathing
- Accessory muscle use

History:

- History of upper respiratory infection
- Chronic asthma or bronchitis

Differential:

- Croup
- Upper respiratory infection
- Anaphylaxis
- Pulmonary embolism, pneumothorax
- Cardiac MI or tamponade
- Hyperventilation/Anxiety
- Inhaled toxins
- Asthma

Standby EMT

- **Oxygen** via most appropriate method
- **DuoNeb** (Albuterol 3 mg/Atrovent 0.5 mg) via Nebulizer
 - May repeat x 2 q 10 minutes
- **Acetaminophen** 15 mg/kg PO if patient is able to swallow
- **Ibuprofen** 200 mg PO if > 20 kg and able to swallow

Basic EMT

- Same as above

Advanced EMT

- IV/IO access
 - IO access > 3 kg
- **Acetaminophen** 15 mg/kg PR if unable to administer PO
- **Epinephrine Nebulizer**
 - 1 mg (1:1,000) in 2 mL NS
 - May repeat once
 - May be administered before or after DuoNeb
- Fluid Bolus
 - 20 ml/kg
 - May repeat once

Paramedic

- **Methylprednisolone** 1 mg/kg IV/IO



Medical Consult

Critical Points:

- Monitor pulse oximetry and capnography continuously in any respiratory distress patient.
- Imperative not to increase patient agitation, allow guardian to assist with treatment therapies
- A silent chest in respiratory distress is a pre-respiratory arrest sign.
- Administer therapeutic oxygen (NC, NRB, BVM, CPAP) for SPO2 < 94%, suspected hypoxia, or at Paramedic discretion.
- Croup is a viral infection usually seen in ages children 18 months – 3 years of age
- Have continuous ECG monitoring
- Allow position of comfort
- Routinely check lung sounds to note any changes and/or improvement.
- Monitor for worsening conditions



PEDI - Epiglottitis

Signs and Symptoms:

- Drooling
- Shortness of breath
- Stridor, hoarseness
- Severe sore throat
- Fever
- Decreased ability to speak
- Increased respiratory rate and effort/work of breathing
- Accessory muscle use

History:

- Evidence of upper airway obstruction
- History of upper respiratory infection
- Fever

Differential:

- Epiglottitis
- Upper respiratory infection
- Anaphylaxis
- Hyperventilation/Anxiety
- Inhaled toxins
- Asthma

Standby EMT

- **Oxygen** via most appropriate method
- Do Not Inspect the throat
- Keep child calm
 - Allow parent to hold child and assist with blow by O2 delivery

Basic EMT

- Same as above

Advanced EMT

- IV/IO access – ONLY if absolutely necessary for complete airway obstruction
 - IO access > 3 kg
- Fluid Bolus
 - 20 ml/kg
 - May repeat once

Paramedic

- Consider DSI/RSI
- Surgical airway (cricothyroidotomy) If airway is obstructed and unable to intubate

Medical Consult

Critical Points:

- Keep child calm
- Do not inspect throat
- Epiglottitis is a bacterial infection usually seen in children 3 – 7 years of age
- Imperative not to increase patient agitation, allow guardian to assist with treatment therapies
- Do not attempt an IV or airway manipulation unless a complete airway obstruction occurs
- Monitor pulse oximetry and capnography continuously in any respiratory distress patient.
- A silent chest in respiratory distress is a pre-respiratory arrest sign.
- Administer therapeutic oxygen (NC, NRB, BVM, CPAP) for SPO2 < 94%, suspected hypoxia, or at Paramedic discretion.
- Have continuous ECG monitoring
- Allow position of comfort
- Routinely check lung sounds to note any changes and/or improvement.
- Monitor for worsening conditions



PEDI - Pneumonia

Signs and Symptoms:

- Fever may be present (not required for pneumonia)
- Productive cough
- Localized wheezing, rhonchi or rales
- Shortness of breath
- Pain with respirations
- Associated symptoms: “flu like symptoms”, myalgia, cough, chest pain, throat pain, headache, dysuria, abdominal pain, rash

History:

- Recent upper respiratory illness
- History of bronchitis, infection, or respiratory illness/pneumonia
- Recent hospital visit within last 90 days (hospital-acquired pneumonia)
- Gradual onset
- Aspiration risk

Differential:

- Pulmonary edema/CHF
- Sepsis or SIRS (Systemic Inflammatory Response Syndrome)
- Asthma/Isolated bronchospasm
- Bronchitis
- Epiglottitis/Croup
- Aspiration pneumonitis
- Community acquired pneumonia (CAP)
- Hospital-acquired pneumonia (HAP)

Sepsis Screening: if positive move to Sepsis protocol.

Standby EMT

- Appropriate PPE
- **Oxygen** via most appropriate method
- **DuoNeb** (Albuterol 3 mg/Atrovent 0.5 mg) via Nebulizer
 - May repeat x 2 q 10 minutes
- **Acetaminophen** 15 mg/kg PO
- **Ibuprofen** 200 mg PO if > 20 kg

Basic EMT

- CPAP 3 – 10 cm H₂O

Advanced EMT

- IV/IO access
 - IO access > 3 kg
- **Acetaminophen** 15 mg/kg PR
- Fluid Bolus
 - 20 ml/kg
 - May repeat once

Paramedic

- Consider DSI/RSI

Critical Points:

- Pneumonia typically presents in a section of the lung and not bilaterally. Localized adventitious breath sounds are indicative of possible pneumonia.
- Prehospital treatment of pneumonia focuses on preventing or correcting hypoxia and decreasing bronchospasms.
- Monitor all vitals including temperature, EtCO₂, and SpO₂ in any suspected pneumonia patient.
- Patient who present with increased work of breathing with hypoxia can most likely benefit from CPAP application.
- Do not administer additional APAP if the patient has taken any within the last 6 hours.

PALS Sepsis Screening:		
Temperature:	< 96.8°F or > 100.4°F	1 point
Heart Rate:	< 1 year HR > 190 1 – 10 years HR > 140 > 10 years HR > 120	1 point
Respiratory Rate:	< 12 months RR > 50 1 – 10 years RR > 40 > 10 years RR > 30	1 point
Blood Pressure	< 12 months SBP < 70 1 – 10 years SBP < (70 + 2x age) > 10 years SBP < 90	1 point
EtCO ₂ :	< 25 mmHg	1 point
Score > 2 = SEPSIS ALERT		



PEDI - Pulmonary Edema

Signs and Symptoms:

- Dyspnea with auscultated findings of pulmonary edema (bilateral rales)
- Atrial fibrillation may be present
- Jugular vein distention
- Pink, frothy sputum
- Peripheral edema
- Diaphoresis
- Chest pain
- Orthopnea

History:

- Prior history
- Medication (Lasix, digoxin)
- Dyspnea on exertion
- Cardiac history (MI, CHF)
- Paroxysmal nocturnal dyspnea (PND)
- Dietary indiscretion (ESRD)

Differential:

- Pneumonia
- Myocardial infarction
- Pericardial tamponade
- Pulmonary embolism
- Renal failure
- Asthma
- Anaphylaxis
- COPD
- Hypertensive emergency
- Toxic exposure

Standby EMT

- **Oxygen** via most appropriate method

Basic EMT

- CPAP 3 – 10 cmH₂O
 - Consider **DuoNeb** in conjunction with CPAP

Advanced EMT

- IV/IO access
 - IO access > 3 kg

Paramedic

- Consider DSI/RSI

Medical Consult

- **Dopamine** 0.5 – 3 mcg/kg/min IV/IO for cardiogenic shock
- **Norepinephrine (Levophed)** 2 mcg/min IV/IO infusion for cardiogenic shock.

Critical Points:

- Obtain temperature to rule out pneumonia.
- Ketamine preferred for anxiolysis if hypotension is present.
- CHF/Cardiogenic shock may result from AMI, 12-lead should be obtained in all patients with this presentation.
- Careful monitoring of vitals, level of consciousness, and work of breathing is necessary with above interventions and patient condition.
- Opioids can increase respiratory depression and should be used with caution in respiratory compromised patients.
- Allow patient to be in a position of comfort to maximize breathing effort.



PEDI - Pulmonary Embolism

Signs and Symptoms:

- Dyspnea, sudden onset
- Unilateral leg pain/swelling
- Chest pain
- Clear lung sounds
- Hemoptysis
- JVD
- Tachycardia
- A-fib
- Syncope

History:

- Recent surgery
- Thrombosis/Embolism
- Recent travel within 30 days
- Recent immobilization of an extremity
- OCP
- Recent TXA administration may increase PE risk

Differential:

- Pneumonia, Bronchitis
- Asthma/COPD
- Congestive heart failure (CHF)
- Cardiac ischemia/infarction
- Pericarditis
- Cardiac Tamponade
- Pneumothorax
- Costochondritis
- Panic disorder

Standby EMT

- **Oxygen** via most appropriate method
- Place patient in position of comfort
- Supraglottic Airway Device

Basic EMT

- **CPAP** 3 – 10 cm H₂O

Advanced EMT

- IV/IO access
 - IO access > 3 kg
- Fluid Bolus
 - 20 ml/kg
 - Repeat once
- Intubation

Paramedic

- **Consider DSI/RSI**
- **Norepinephrine** 0.1 mcg/kg/min IV/IO infusion for obstructive hypotension (Pulmonary Embolism)
 - Administer if patient remains hypotensive **after 80 ml/kg bolus NS**
 - Titrate to sustain SBP > 70 + 2x age mmHg
- **Dopamine** Infusion 2 - 20 mcg/kg/min
 - Administer if patient remains hypotensive refractory to Norepinephrine



PEDI - Pulmonary Embolism

Critical Points:

- Large PE mortality is due to hemodynamic collapse rather than hypoxemia. Pre-hospital efforts should focus on treating hypoxia along with cardiac support and rapid transport to definitive care.
- RSI procedure/intubation will not likely improve oxygenation in the setting of a large PE.
- If known or suspected large PE, intubation risk (time, paralysis) should be weighed against airway protection. Rapid transport to a facility with PE therapies (thrombolysis) is the goal.



PEDI Trauma Assessment

Signs and Symptoms:

- DCAP-BTLS
- Bleeding/Deformity
- Loss of Consciousness
- Altered Mental Status
- Blast injury
- Radiation injury
- Abdominal distention with associated MOI

History:

- History of recent trauma or high energy exposure
- MOI indicative of trauma: crush, penetrating, amputation, blunt

Differential:

- AMS differentials if applicable
- Chemical/Exposure burn

Assessment

- C.A.B.C.
 - M.A.R.C.H. is acceptable algorithm for primary traumatic assessment
- Secondary assessment
 - Focused assessment for single isolated injury
- OR
- Rapid Trauma Assessment
 - Multiple injuries or multiple systems/locations involved
 - AMS or Unconscious
 - Communication barrier
- GCS
- Vital signs
 - Blood Pressure, palpated pulse (required)
 - Pulse ox, glucose, EKG/12-lead if applicable and time allows, temperature, pain scale, capnography/EtCO₂, CO
- Lung Sounds
- Rapid transport/extrication if indicated
- Select appropriate facility
 - Burns
 - Hand/foot specialties
 - Trauma designation
 - Eye injuries
- Trauma Alert as soon as possible
 - On scene alert preferred as well as updated facility notification during transport
- ASPN
- OPQRST
- SAMPLE
- Pediatric Trauma Score
- On-going assessment, repeat vitals, evaluate interventions/procedures
- Active warming



PEDI - Amputation

Signs and Symptoms:

- Partially severed body part
- Completely severed body part

History:

- Mechanism of Injury: crush/penetrating/laceration
- Time of injury
- Wound contamination
- Medical comorbidities: anemia, COPD, etc.
- Medications: beta blockers, insulin, amphetamines, etc.

Differential:

- Hypovolemic shock
- Deep laceration
- Crush injury without amputation

Standby EMT

- Hemorrhage control
 - Early application of tourniquet for arterial or uncontrolled hemorrhage
- SMR if indicated
- **Oxygen** via the most appropriate method
- Splint any associated fracture or dislocation
- Active warming for shock/traumatic hypovolemia

To care for amputated part:

- Rinse with sterile water, wrap in a damp sterile gauze
- Place in a bag (biohazard or other non-permeable plastic bag)
- Keep cool but do not place directly on

Basic EMT

- Hemostatic gauze/agents for non-compressible life-threatening hemorrhage

Advanced EMT

- IV/IO access
 - IO access > 3 kg
- Fluid Bolus
 - 20 ml/kg
 - May repeat once

Paramedic

- Pain management

Critical Points:

- Promptly apply tourniquet to arterial or life-threatening bleeding. When in doubt apply a tourniquet.
- ONLY department supplied CoTCCC approved tourniquets may be used for patient care.
- Amputations may be high or low kinetic, assess for additional injuries and treat appropriately.
- Partial amputations may retain neurovascular status.
- TIME is critical in amputations for the patient and the severed extremity. Consider AMP.
- Lower limb amputations, especially above the knee, are associated with pelvic and hip fractures/dislocations. Pelvis stability should be assessed, and instability treated quickly.
- Previous blood loss may be difficult to assess in patients wearing baggy/extra clothing, who are mobile, and in dark or wet environments.



PEDI - Burns

Signs and Symptoms:

- Burns, pain, swelling, blistering
- Tissue injury from direct contact with: heat source, chemical reaction, electricity/lightning
- Unconsciousness
- Hypotension/Shock
- Inhalation burns: hoarseness, wheezing, respiratory distress

History:

- Direct contact with: heat source, chemical reaction, electricity/lightning
- Time of injury
- Additional trauma potential

Differential:

- Superficial (1st degree)
- Partial thickness (2nd degree)
- Full thickness (3rd degree)
- Hypovolemic shock
- Type of burn/exposure: thermal, electrical, chemical
- Hypothermia
- Cardiac arrhythmia

Standby EMT

- Remove the burn source
- **Oxygen** via the most appropriate method
- Treat underlying injuries
- Assess burns and associated injuries
 - Record TBSA of each type of burn for 2° and 3°
- Dress burns as follows:
 - TBSA of 2° and 3° < 15% use wet sterile dressing
 - TBSA of 2° and 3° > 15% use dry sterile dressing or burn sheet

General Care:

- Remove jewelry and restricting clothing
- Brush off any powdered chemical
- Irrigate chemical burn site with water, if appropriate to chemical
- Keep the patient warm after removing burn

Basic EMT

- Same as above

Advanced EMT

- Intubation
- IV/IO access
 - IO access > 3 kg
- Fluid bolus
 - %TBSA x weight in kg x 4
 - Administer ½ of total volume over first 8 hours
 - Alternate formula: 0.25mL / kg (x TBSA) / hour

Paramedic

- Pain management
- DSI/RSI for respiratory/inhalation burns
- Surgical airway (cricothyroidotomy) procedure
- Consider Air Medical Provider (AMP)

Critical Points:

- Critical Burns (Consider Burn Center):
 - Inhalation/hands/feet/face/neck/genitals/joints/circumferential burns
 - Electrical burns
 - 2° and 3° > 15 % TBSA
 - Patient < 12 and > 65 years of age
 - Inhalation Injuries/Burns with any one of the following:
 - Singed nasal hairs or oral mucosa
 - Erythema of the palate, soot in the mouth, larynx or sputum
 - Rapid, shallow ventilation with tachypnea > 40 AND decreased mental status
 - Respiratory rate < 8
 - Mechanical airway obstruction from trauma, edema, or laryngospasm
 - Signs of respiratory distress such as nasal flaring, respiratory crowing or stridor, anxiety, agitation, or combativeness
 - Unconsciousness
 - GCS ≤ 13
- Transport critical burns to a burn center using an Air Medical Provider when patient condition and circumstances allow.
- Unstable patients without definitive airway or risk of airway compromise should be stabilized at closest appropriate facility.
- Burn patients can present with multisystem trauma, hypothermia, cardiac arrhythmias and respiratory abnormalities.
- Assess TBSA using the Rule of Nines provided in the Appendix
- Extensive burn patients lack the ability to thermoregulate and are prone to hypothermia. Do not place ice on extensive burns.



PEDI - Evisceration

Signs and Symptoms:

- Pain
- Bleeding
- Protrusion of internal organs through a wound

History:

- Trauma causing an evisceration

Differential:

- Penetrating injuries
- Soft tissue injuries
- Blast injuries
- Abdominal lacerations
- Multi-system trauma

Standby EMT

- SMR if indicated
- **Oxygen** via most appropriate method
- Cover wound/organs with sterile, moist dressing and bandage
- If localized uncontrolled bleeding can be visually identified without gross manipulation apply dressing and pressure to area/vessel.
 - Do NOT wound pack abdominal cavity

NEVER attempt to replace protruding organs back into the body cavity

Basic EMT

- Same as above

Advanced EMT

- IV/IO access
 - IO access > 3 kg

Paramedic

- Pain management

Critical Points:

- Patients with traumatic hypotension or suspected exsanguination should be treated under the Multi-system Trauma Protocol.
- Strict NPO at patient will likely go to surgery.



PEDI - Eye Injury

Signs and Symptoms:

- Injury to the globe, open or closed, including: Corneal abrasion, foreign body in the eye, chemical burn, lacerated or avulsed globe, "arc" burns of globe
- Excessive tearing and burning of the eyes, nasal drainage, salivation
- Decreased or loss of vision
- Pain

History:

- Sprayed with CS/OC spray
- Trauma resulting in an eye injury
- Eye pain with unknown etiology

Differential:

- Allergies
- Anxiety

Standby EMT

- Do not remove foreign body if globe penetrated
 - Stabilize in place and cover both eyes
- Chemical burn/CS or OC spray
 - Flush continuously with copious amounts of water or NS
 - 20 minutes preferred if wash station available
 - Do not let the run off from the affected eye contaminate the non-infected eye
- Open injury to globe
 - Shield both eyes
- Corneal abrasion, ultraviolet (arc) burn, or foreign body
 - **Tetracaine** 1 – 2 gtt in affected eye(s) PRN
 - Remove foreign body if **not** embedded and globe **not** penetrated
 - Shield affected eye
- Flush/irrigate with sterile water and/or normal saline 2 – 3 liters per affected eye

Basic EMT

- Same as above

Advanced EMT

- IV/IO access
 - IO access > 3 kg

Paramedic

- Pain management
- Morgan lens

Medical Consult

- Contact Medical Control or Poison Control prior to administering Tetracaine for chemical burns

Critical Points:

- Pain management may be utilized in conjunction with Tetracaine to provide additional analgesia.
- Eye injuries can cause extensive stress and emotional anxiety, provide comfort and verbal reassurance to keep the patient from exacerbating the injury. If necessary, move to Anxiety and Emotional Distress Protocol.
- Try to keep patients from blinking or rubbing the affect eye(s).
- If irritation is due to an exposure, try to identify the substance and obtain information or MSDS for the ED/poison control.
- Transport may be delayed for best irrigation practices (wash eye station in a lab) if patient condition and cooperation allow. Providing analgesia and/or tetracaine may be beneficial to assist with irrigation.



PEDI - Head Trauma

Signs and Symptoms:

- Altered Mental Status
- Loss of consciousness
- Decreased GCS
- Respiratory distress/failure
- Vomiting
- Convulsions
- Posturing
- Pain, swelling, bleeding

History:

- Trauma etiology resulting in a head injury
- Time of injury
- Mechanism (blunt vs penetrating)
- History of TBI, concussions, surgical plates/stents

Differential:

- Non-traumatic intracranial hemorrhage/CVA
- Neurological disease/disorder
- Concomitant spinal injury
- Hypo/Hyperglycemia
- Overdose/intoxication
- Behavioral/psychiatric
- AMS differentials
- Multi-system trauma/exsanguination

Standby EMT

- Hemorrhage control
- Helmet removal
 - For airway management if clinically indicated
- SMR if indicated
- **Oxygen** via most appropriate method
- Obtain GCS
- Consider restraint procedure

General Helmet Removal

Maintain neutral alignment with padding as needed after removal

Football Helmet Removal

Leave helmet in place and remove face mask only. If helmet must be removed, remove helmet and shoulder pads together as one unit to maintain neutral alignment

Basic EMT

- Same as above

Advanced EMT

- IV/IO access
 - IO access > 3 kg
- Fluid bolus
 - 20 ml/kg
 - May repeat once

Paramedic

- Refer to more appropriate protocol to address symptoms
- Pain management
- DSI/RSI procedure
- Therapeutic hyperventilation if s/s of herniation are present
 - EtCO₂ 30 – 35 mmHg

Critical Points:

- Rapid transport to appropriate facility is crucial in the presence of severe head trauma.
- Record accurate GCS during primary assessment and monitor for any changes in responsiveness and GCS.
- Do NOT estimate or guess a GCS. See GCS Appendix for reference.
- Severe head injuries are likely to show rapid changes in mental status and presentation. Continuously re-assess and monitor for changes.
- A single episode of hypoxia and/or hypotension can significantly increase morbidity and mortality with head injury.
- TXA is contraindicated in the presence of a known or suspected head injury.
- **Hyperventilation** in head injury:
 - Short term option used for **severe head injury, GCS \leq 8 or unresponsive.**
 - Evidence of severe head injury with possible herniation are **blown pupil, decorticate/decerebrate posturing, bradycardia, decreasing GCS and irregular respirations.**
 - **Ventilate at a rate to maintain EtCO₂ between 30 – 35 mmHg.**
- **Hypotension** in the trauma patient:
 - Limit IV fluids unless the patient is hypotensive (SBP < 90 mmHg)
 - Assess for tension pneumothorax
 - Assess for internal bleeding
 - **Hypotension in the presence of a TBI is most likely due to other causes not attributed to the TBI.**
- **Concussions**
 - Traumatic brain injury (TBI) involves any number of symptoms including slow/delayed reasoning or speech patterns, confusion, LOC, vomiting, persistent headache and/or vertigo following a head injury.
 - Consider ALS or Physician assessment for any non-resolving symptoms after 15 minutes.
 - EMS providers should not make any return-to-play decisions.
- Position of comfort or head elevated 15-30° is preferred. Do not place in Trendelenburg position or have legs elevated.



PEDI - Multi-System Trauma

Signs and Symptoms:

- Injury to the chest, abdomen, or pelvis
- Multiple soft-tissue or musculoskeletal injuries
- AMS
- Unconscious
- Hypotension or shock

History:

- Mechanism of injury
- Associated damage to scene/vehicle/building
- Position or location relative to mechanism
- Speed of vehicle

Differential:

- Underlining medical etiology: hyper/hypoglycemia
- Non-traumatic hypotension
- Hypothermia
- Internal bleeding
- Spinal injury

Standby EMT

- Hemorrhage control
 - Early application of tourniquet for arterial or life-threatening hemorrhage
 - Compression dressing (gauze) and bandaging for compressible hemorrhage
- Occlusive dressing
 - Sucking chest wounds
 - Penetrating trauma from the neck to the naval
- Active warming for shock/traumatic hypovolemia
- SMR if indicated
- **Oxygen** via the most appropriate method
- Obtain GCS
- Splint any associate fracture or dislocation
- Supraglottic airway device

Basic EMT

- Hemostatic gauze/agents for non-compressible life-threatening hemorrhage
- Early application of pelvic binder if indicated

Advanced EMT

- IV/IO access
 - IO access > 3 kg
- Fluid bolus
 - 20 ml/kg
 - May repeat once
- Consider secondary access
- Intubate



PEDI - Multi-System Trauma

Paramedic

- Chest decompression procedure if indicated
- Surgical airway (cricothyroidotomy) if indicated
- DSI/RSI procedure
- Pain management
 - Consider Ketamine as primary analgesia for multi-system trauma
- Consider Air Medical Provider (AMP)

Medical Consult

- Notify receiving facility with Trauma Alert and that patient may meet massive transfusion protocol

Critical Points:

- Promptly apply tourniquet to arterial or life-threatening bleeding. When in doubt apply a tourniquet.
- ONLY department supplied CoTCCC approved tourniquets may be used for patient care.
- Rapid transport to appropriate facility is crucial in the presence of Multi-System Trauma.
- Record accurate GCS during primary assessment and monitor for any changes in responsiveness and GCS.
- Do NOT estimate or guess a GCS. See GCS Appendix for reference.
- Severe traumatic injuries are likely to show rapid changes in mental status and presentation. Continuously re-assess and monitor for changes.
- A single episode of hypoxia and/or hypotension can significantly increase morbidity and mortality with head injury and Multi-System Trauma patients.
- **DO NOT administer pressors for traumatic induced shock/hypovolemia.**



PEDI - Musculoskeletal Trauma

Signs and Symptoms:

- Pain on palpation or movement
- DCAP-BTLS
- Dislocation
- Open/closed fracture
- Decreased or absent distal circulation, motor, and/or sensation

History:

- Mechanism of injury
- Recent trauma
- Previous injury of the affected site
- Time from injury to arrival on scene

Differential:

- Compartment syndrome/Crush injury
- Chronic long-term injury/condition
- Osteoporosis/Arthritis
- Penetrating trauma
- Multi-System Trauma
- Neurological compromise
- Infection

Standby EMT

- Hemorrhage control
 - Early application of tourniquet for arterial or life-threatening hemorrhage
 - Compression dressing (gauze) and bandaging for compressible hemorrhage
- Occlusive dressing
 - Sucking chest wounds
 - Penetrating trauma from the neck to the naval
- Active warming for shock/traumatic hypovolemia
- SMR if indicated
- **Oxygen** via the most appropriate method
- Obtain GCS
- Splint any associate fracture or dislocation
 - If circulation, motor function, and/or sensation is compromised, gently reposition extremity by applying inline traction
 - Only attempt once and stop if resistance is met
- External cooling if injury site is isolated

Basic EMT

- Hemostatic gauze/agents for non-compressible life-threatening hemorrhage
- Early application of pelvic binder if indicated

Advanced EMT

- IV/IO access
 - IO access > 3 kg
- Fluid bolus
 - 20 ml/kg
 - May repeat once

Paramedic

- Pain Management



PEDI - Musculoskeletal Trauma

Critical Points:

- Promptly apply tourniquet to arterial or life-threatening bleeding. When in doubt apply a tourniquet.
- ONLY department supplied CoTCCC approved tourniquets may be used for patient care.
- Assess distal circulation, motor function and sensation (CMS) before and after splinting extremity injuries.
- Move to Amputation protocol if partial or complete amputation.
- Rapid transport for any suspected vascular compromise.



PEDI - Penetrating Injury

Signs and Symptoms:

- A penetrating injury to any body part
- Entrance and/or exit wounds
- Embedded foreign body

History:

- Mechanism of injury
- Note ballistics
- Consider contaminants/toxins on penetrating foreign body
- Consider trajectory of penetrating object

Differential:

- Musculoskeletal trauma
- Blunt trauma
- Behavioral/Mental health self-harm

Standby EMT

- Always ensure provider safety, request and stage for law enforcement if indicated
- Hemorrhage control
 - Early application of tourniquet for arterial or life-threatening hemorrhage
 - Compression dressing (gauze) and bandaging for compressible hemorrhage
- Occlusive dressing
 - Sucking chest wounds
 - Penetrating trauma from the neck to the naval
- SMR if indicated
 - SMR is rarely necessary with penetrating trauma and may increase injury
- **Oxygen** via most appropriate method
- Stabilize impaled objects and splint any associated fracture or dislocation
- Active warming for shock/traumatic hypovolemia
- Restraint procedure if indicated

Basic EMT

- Hemostatic gauze/agents for non-compressible life-threatening hemorrhage

Advanced EMT

- IV/IO Access
 - IO access > 3 kg
- Fluid bolus
 - 20 ml/kg
 - May repeat once

Paramedic

- Chest decompression
- DSI/RSI procedure
- Surgical airway (cricothyroidotomy) if indicated
- Pain management
- Consider Air Medical Provider (AMP)

Critical Points:

- Promptly apply tourniquet to arterial or life-threatening bleeding. When in doubt apply a tourniquet.
- ONLY department supplied CoTCCC approved tourniquets may be used for patient care.
- Partial amputations may retain neurovascular status.
- Previous blood loss may be difficult to assess in patients wearing baggy/extra clothing, who are mobile, and in dark or wet environments.
- Rapid transport to appropriate facility is crucial in the presence of penetrating thoracic or upper extremity trauma.
- Record accurate GCS during primary assessment and monitor for any changes in responsiveness and GCS.
- Do NOT estimate or guess a GCS. See GCS Appendix for reference.
- A single episode of hypoxia and/or hypotension can significantly increase morbidity and mortality with penetrating and/or Multi-System Trauma patients.
- Utilize Multi-System Trauma Protocol for additional injuries or traumatic induced hypovolemia.
- **DO NOT administer pressors for traumatic induced shock/hypovolemia.**
- **All potential evidence (clothes) should be preserved as best possible and placed in a permeable bag and handed over to ED staff or LE. Note individual/RN who receives the items in patient care report.**



PEDI - Sexual Assault

Signs and Symptoms:

- Signs of assault or injury
- Rectal or genital bleeding
- Pain, swelling, contusions, scars, chafing, bite marks to genital area
- Pain with urination or bowel movement
- Mood disturbance

History:

- Report of recent sexual assault
- Unexplained memory loss
- Possible exposure to “date rape” drugs: alcohol, flunitrazepam (Rohypnol), gamma-hydroxybutyric acid (GHB), gamma-butyrolactone (GBL), ketamine

Differential:

- Domestic violence
- Strangulation
- Blunt trauma
- Anxiety disorders

Standby EMT

- Always ensure provider safety, request and stage for law enforcement if indicated
- Provide emotional support
- Treat underlying injuries

Basic EMT

- Same as above

Advanced EMT

- Same as above.

Paramedic

- Pain management

Critical Points:

- Try to advise the patient not to eat, drink, chew gum, smoke or put anything into their mouth.
- Advise the patient to not change clothes, use the bathroom, bath or shower.
- Avoid sedating medications when possible for sexual assault victims.
- Reassure the patient they can receive medical care even if they choose not to report the assault.
- Keep assessment and SAMPLE history brief. Details about the assault will be taken in the ED.
- **Unless patient specifically requests otherwise, transport known or suspected sexual assaults to Baylor Scott and White Emergency Room, the local facility with Sexual Assault Nurse Examiner.**
- **All potential evidence (clothes) should be preserved as best possible and placed in a permeable bag and handed over to ED staff or LE. Note individual/RN who receives the items in patient care report.**



PEDI - Spinal Trauma

Signs and Symptoms:

- Presence of decreased neurological function below site of injury
- Loss of sensation
- Inability to move
- Hypotension

History:

- Mechanism of injury
- Elapsed time since injury and neurological compromise (delayed paralysis)
- Previous injury/paralysis

Differential:

- Spinal cord infarction
- Spinal cord Hemorrhage
- Multi-System Trauma
- Isolated head injury
- Stroke/CVA
- Hypovolemia

Standby EMT

- **Oxygen** via most appropriate method
 - Respiratory compromise may be present due to absence of respiratory drive
- SMR Procedure
 - Request additional resources (manpower) for patient packaging and movement

Basic EMT

- Same as above

Advanced EMT

- IV/IO Access
 - IO access > 3 kg
- Fluid bolus
 - 20 ml/kg
 - May repeat once

Paramedic

- **Dopamine** 2 – 20 mcg/kg/min IV/IO for neurogenic shock
 - Administer if patient remains hypotensive after 80 ml/kg NS bolus
 - Titrate to sustain SBP > (70 + 2x age) mmHg
- Pain Management
- Consider DSI/RSI



PEDI - Spinal Trauma

Critical Points:

- Any movement, such as a log roll, should be weighed against the risk and only performed with adequate personnel. Additional resources for packaging and movement will likely be needed.
- Transport to appropriate facility and/or consider Air Medical Provider (AMP).
- Perform full Rapid Trauma Assessment (RTA) in these patients. Assume pain feedback mechanisms are not present or compromised and visually inspect/palpate during RTA.
- The acute neurologically compromised patient is still a trauma patient. Assess and treat C.A.B.C. or M.A.R.C.H. algorithm as normal with an emphasis on not moving the patient and maintaining spinal integrity.
- Consider early, on scene, notification to trauma facility.



PEDI - Taser

Signs and Symptoms:

- Taser probe embedded in a patient

History:

- Taser use/discharge
- Be cognizant for excited delirium
- Cardiac disease, abnormalities, arrhythmias

Differential:

- Consider excited delirium
- Overdose/Intoxication
- Trauma
- Behavioral/Mental health
- AMS differentials

Standby/EMT Basic

- Always ensure provider safety, request and stage for law enforcement if indicated and not already on scene (Taser's can be purchased by the general public)
- Assure electrical output is no longer surging through the probe/wires
 - cartridge housing/taser wires should be disconnected from the taser or battery source
- Remove probe from patient unless embedded in breast, groin/genitals, neck or facial areas
 - Grab as low on the probe as possibly with a firm grip.
 - Holding the skin taught around the probe, quickly pull back on probe removing it from the skin
- Wound care
- ALS consult/assessment is required

Advanced EMT

- See above

Paramedic

- Cardiac assessment

Critical Points:

- Do not remove taser probes from breast tissue, groin, neck, face, or eyes. These locations pose a high risk for complications and should be removed at an ER.
- Remove taser probes at a 90 degree angle pulling quickly.
- Probes typically have a small barb at the end which keeps them embedded.
- Initial set of vitals should be assessed on all taser removals including temperature and glucose.
- ALS providers should perform full cardiac assessment including 3-lead and 12-lead if possible.
- Consider overdose, excited delirium and other comorbidities which may cause a patient to be altered or behave unusually.



PEDI - Traumatic Arrest

Signs and Symptoms:

- Trauma: evidence of blunt or penetrating injuries
- Pulseless
- Apneic
- Any non-perfusing rhythm in the presence of acute trauma

History:

- Traumatic etiology
- Surgical problem

Differential:

- Medical etiology preceding traumatic event as cause of arrest
- Tension Pneumothorax
- Hemothorax
- Uncontrolled hemorrhage: internal or external
- Hypovolemic shock
- Unstable pelvic fracture
- Signs incompatible with life

Standby EMT

- CPR
 - BVM ventilations with 100% O₂
- AED application
- **Oxygen** via most appropriate method
- Hemorrhage control
 - Early application of tourniquet for arterial or life-threatening hemorrhage
 - Must stop/reverse hypovolemia to obtain ROSC
- Occlusive dressing
 - Sucking chest wounds
 - Penetrating trauma from the neck to the naval
- SMR procedure
- Supraglottic airway device

Basic EMT

- Early application of pelvic binder if indicated

Advanced EMT

- Intubation
- IO/IV Access
 - IO access > 3 kg
- Fluid bolus
 - 20 ml/kg
 - May repeat once

Paramedic

- Chest Decompression if indicated
 - Bilateral decompression (if indicated) is recommended in the presence of blunt force traumatic arrest



PEDI - Traumatic Arrest

- Surgical airway (cricothyroidotomy) if indicated
- Rhythm appropriate treatment per specific protocol
- NG/OG tube placement

Medical Consult

- Pre-Hospital Termination if patient does not meet Field Termination Procedure requirements

Critical Points:

- Refer to Trauma Resuscitation Termination Procedure if indicated.
- Agonal respirations are treated as apneic breathing.
- Patients with suspected blunt force trauma found pulseless and apneic after basic airway maneuvers should receive bilateral chest decompression (if indicated), and ECG assessed.
- Mechanical CPR device is contraindicated in these patients.
- Early rapid transport with interventions performed during transport is the key to survival in traumatic arrests.
- If arrest is witnessed by responder, transport immediately with full resuscitation efforts.
- All vitals and H's and T's should be assessed in traumatic arrests where resuscitation efforts are being provided.
- The key to successful ROSC in traumatic arrest is identifying and correcting the cause of arrest.
- Multi-System Traumatic interventions (e.g. tourniquets, occlusive dressings, needle decompression, fluid bolus, external warming) should be initiated during resuscitation attempts.
- Any changes in patient condition, refer to the appropriate protocol



12-Lead ECG Monitoring

General

Prehospital 12-lead electrocardiograms (ECG) benefit patient care by alerting receiving physicians to potential fibrinolytic candidates, by decreasing the time to in-hospital fibrinolytic administration, and by providing a baseline ECG for comparison. The goal is to obtain a 12 Lead within 5 minutes of patient contact if indicated.

Indications

Patients presenting with

- Chest pain or pressure of presumed cardiac etiology
- Shortness of breath of presumed cardiac etiology

Precautions

- Obtaining a base line 12-Lead ECG is **preferred** before treatment is initiated. However, **Do Not** significantly delay treatment and/or transport to conduct test.
- When placing electrodes on female patients, always place leads V3 – V6 **under** the breast rather than on the breast.
- Never use the nipples as reference points for electrode location as nipple locations may vary widely.

Procedure

1. Whenever possible, attempt to obtain 12-Lead with patient in supine position.
2. If patient does not tolerate, place in semi-reclining or sitting position.
3. Input patient sex and age into the monitor. These are necessary for accurate interpretation by the ECG machine/monitor. Name can also be inputted if time and patient condition allows.
4. Prep the skin and shave hair as necessary.
5. Apply electrodes as follows and attach the appropriate lead to each electrode:

Limb Leads: Extremities

(RA) Right arm
(RL) Right leg
(LA) Left arm
(LL) Left leg

Precordial Leads: Chest

V1 – Fourth intercostal space to the right of the sternum
V2 – Fourth intercostal space to the left of the sternum
V3 – Directly between leads V2 and V4
V4 – Fifth intercostal space at midclavicular line
V5 – **Level** with V4 at anterior axillary line
V6 – **Level** with V5 at midaxillary line

6. Reduce as much artifact as possible; have patient relax arms/legs, do not bump or move patient, decrease “road noise” or other unnecessary motion.
7. Ask the patient to remain motionless for about 10-20 seconds. DO NOT have patient hold their breath or compromise airway/oxygenation for 12-lead acquisition.
8. Acquire the 12-Lead ECG.
9. If the ECG report detected noise (e.g., patient motion or a disconnected electrode) take appropriate action and re-acquire the 12-Lead ECG.

Considerations

Chest Lead Positioning

- *Locating the V1 position (fourth intercostal space) is critically important because it is the reference point for locating the placement of remaining V leads. To locate the V1 position*
 1. Place your finger at the notch in the top of the sternum.
 2. Move your fingers slowly downward about 1.5 inches until you feel a slight horizontal ridge or elevation. This is the “angle of Louis” where the manubrium joins the body of the sternum.
 3. Locate the second intercostal space on the right side, lateral to and just below the angle of Louis.
 4. Move your finger down two more intercostal spaces to the fourth intercostal space, which is the V1 position.

Right Sided 12-Leads

- When a 12-Lead is obtained with ST and T wave changes that are highly suggestive of Inferior wall involvement, move Chest Leads V4, V5, and V6 to the exact location on the R side of the patient’s chest.
- When documenting on the ECG strip, write an “R” or “Right” next to each lead that was moved.

Posterior 12-Leads

- When a 12-Lead is obtained with ST and T wave changes that are highly suggestive of posterior wall involvement, move chest leads V4, V5, and V6. V4 becomes V7, which goes on the posterior axillary line. V5 becomes V8, which goes on the midscapular line. V6 becomes V9, which goes on the left spinal border. Each of these leads should be in the same horizontal plane as V4, V5, V6.
- When documenting on the ECG strip, add a “P” or write “Posterior” to each lead that was moved. Re-label V4-V6 as V7-V9.



Adenosine Administration

Indication

- SVT
- Undifferentiated tachycardia

Contraindication

- Sick-sinus syndrome (except in the presence of a functioning artificial pacemaker)
- Second or third degree heart block

Procedure

1. Verify cardiac rhythm and patient status indicating adenosine administration.
2. Ensure that patient is on ECG monitoring and is receiving Oxygen if indicated.
3. EXPLAIN the procedure and side effects to the patient. They may feel some transient discomfort such as chest pain, chest heaviness, SOB, or hot/flushed.
4. Prepare injection lock with alcohol or iodine.
5. Administer Adenosine **rapidly** followed by an immediate 10-20 ml NS flush.
 - This is best accomplished by using an IV administration line connected to a bag of fluid.
 - i. Connect adenosine at the closet port/luer lock to the patient with a flush connected at the next closest port/luer lock.
 - ii. Rapidly push the adenosine then the flush in successive order followed by flowing the fluid wide open.
 - IV site should be no more distal than the antecubital fossa
 - NS infusion TKO
6. If no conversion is observed with two minutes, administer second dose according to protocol.
7. If the patient becomes hypotensive, support with positioning and fluid bolus.
8. Record ECG for entire medication administration sequence.
9. Re-evaluate vital signs and patient status after each Adenosine administration.

Indications

- Medical Cardiac Arrest

If the Auto Pulse is available for use, the Auto Pulse will be applied to any adult patient requiring external cardiac compression at the earliest possible moment, unless contraindicated.

Contraindications

- Traumatic cardiac arrest
- Patient whose weight is greater than 300 pounds or 136 kilograms.
- Under the age of 18
- Late pregnancy

Complications

- If a malfunction occurs, immediately revert to manual CPR

Procedure:

1. Place the patient in a seated upright position.
2. Cut or remove the clothing from the patient's upper torso.
3. Place the Auto Pulse behind the patient's back while still in a seated upright position.
4. Lay the Auto Pulse and the patient down on the ground.
5. Turn the Auto Pulse on.
6. Connect Chest/Life Band across the chest of the patient.
7. Lift the Chest/Life Band straight up to ensure it is free of twists.
8. Push the "Green" button once to start the sizing process.
9. Push the "Green" button a second time to start the compression cycle.
10. Check for a carotid pulse with compressions every 2 minutes.
11. Ventilate patient during compression pause and when prompted while in continuous mode.
12. Upon ROSC or to check for pulses, press "Orange" button to pause compression and "Green" to resume compressions.
13. Monitor airway for continued patency while Auto Pulse is in use.
14. Replace battery as needed.

Special Notes

- Always minimize any interruptions to compressions when using the Auto Pulse.
- Deployment of Auto Pulse should not postpone initiation of manual compressions.
- Do not place or position the patient on the Auto Pulse in either a face down orientation or on the patient's side.
- Check that the patient is correctly aligned on the Auto Pulse platform and that the Life Band Load Distributing Band is correctly positioned at the patient's armpit. Check alignment prior to turning on the device, periodically during use, after moving the patient to a different surface and frequently during transport.
- Press the STOP/CANCEL button prior to re-aligning the patient.

- Do not place any straps or restraints across the Life Band during active operation
- Do not use the Auto Pulse platform alone to carry a patient. Instead secure the Auto Pulse platform to the top of a Long Extrication Device or designated carrying tarp to transport the patient.
- If a System Error occurs during active operation, **immediately revert back to manual compressions.**
- Do not touch the patient while the Auto Pulse is analyzing the patient's size.
- Check the vents during operation to ensure that they are not obstructed by sheets or patients' clothes.
- Do not place hands under the Life Band while the Auto Pulse is analyzing the patient's size or during active operation.
- Use of the Auto Pulse for a prolonged period of time may result in minor skin irritation to the patient. With large patients, check the skin at the sides under the Life Band.
- Do not use a Life Band if it has any apparent cuts or tears.
- Ensure the battery is securely latched (snaps into place) before moving Auto Pulse or initiating chest compressions.
- When inserting the battery into the Auto Pulse platform or the charger, do not slam it into position but rather slide it in carefully so the connectors are not damaged. Ensure that the battery locks in place.
- Do not remove a battery from the Battery Charger during a Test Cycle.
- Use care when moving patients with large abdomen (shifting of excess flesh may cause the Life Band to move/break).
- Defibrillation **can be done** with the Auto Pulse running.



Autovent Ventilator

Indications:

- Patients in both respiratory and cardiac arrest
- Patients with profound hypoxia evidenced by any of the following:
 1. Respiratory arrest
 2. Obvious cyanosis
 3. Altered mental status
 4. Poor air exchange upon auscultation
 5. Oxygen saturation (SpO₂) below 90%

Contraindications:

- Patients under 44 lbs, or 20 kg, lean body weight

Procedure

- **If patient is in respiratory arrest but has a pulse:**
 1. Attach to and turn on **oxygen** supply source
 2. Turn on Autovent (adjust BPM knob)
 3. Ensure proper function by briefly occluding patient valve to ensure audible pressure alarm function with relief at standard settings
 4. Attach appropriate sized ventilation mask to Autovent Patient Valve
 5. Set Tidal Volume to initial setting that most nearly equals 6 mL/lb of patient lean body weight (10-15 mL/kg). Adjust as needed within appropriate range to achieve positive visible chest rise with positive breath sounds upon auscultation.
 6. Set Breaths Per Minute (Ventilatory Rate) at 8-40 BPM. Initial Rate setting can be adjusted within the appropriate color-coded range as needed to change minute volumes
 7. Apply facemask to patient with two hands and use either head tilt and/or jaw thrust to maintain patent airway
 - i. Maintain mask seal and monitor inspiratory pressure
 - ii. If audible alarm is heard, check for airway obstruction or occlusion and adjust tidal volume as necessary
 8. Observe for chest rise and have second rescuer listen to both lungs for air exchange.
- **If patient is in respiratory and/or cardiac arrest:**
 1. Attach to and turn on **oxygen** supply source
 2. Turn on Autovent (adjust BPM knob)
 3. Ensure proper function by briefly occluding patient valve to ensure audible pressure alarm function with relief at standard settings
 4. Attach appropriate sized ventilation mask to Autovent Patient Valve
 5. For adult use:
 - i. Set Tidal Volume control to volume that most nearly equals 5 – 8 mL/kg of patient ideal body weight
 - ii. Set Ventilator Rate at 8 - 10 BPM
 - iii. Ensure that Tidal Volume and Rate selected are color coded in the WHITE band



Autovent Ventilator

- **For pediatric use:**
 1. Set Tidal Volume control to volume that is 5-6 mL/kg ideal body weight
 2. Set Rate control at setting whose color code is ORANGE 12-20 BPM
 3. Apply facemask to patient with two hands and use either head tilt and/or jaw thrust to maintain patient airway. Maintain mask seal and monitor inspiratory pressure
 4. If audible alarm is heard, check for airway obstruction or occlusion and adjust tidal volume as necessary.
 5. Observe for chest rise and have second rescuer listen to both lungs for air exchange
 6. Second rescuer finds landmark and performs chest compressions continuously at appropriate rate
 7. In the event of any suspected failure or problem such as failure of the chest rise or Audible Alarm Alert, see below.
- **Alarm Alert/Troubleshooting**
 1. Immediately second rescuer listens to both lungs for air exchange
 2. If no air exchange:
 - i. Reposition head and mask
 - ii. Consider Obstructed Airway Procedures
 3. Check Patient Valve for foreign material or blockage
 4. Check Patient Hose connection to Control Box
 5. Check all Control Settings (Inspiratory Time, Volume, Rate)
 6. If unable to resolve the suspected problem promptly (approximately 30 seconds or less):
 - i. Remove patient hose from Autovent case
 - ii. Insert Universal 22 mm OD mouthpiece into hose
 - iii. Blow into mouthpiece with a slow, full breath
 7. By auscultation, listen for air exchange while watching for positive visible chest rise
 8. Consider Obstructed Airway Procedure or alternative method of ventilation

General

Conscious patients with a patent airway should be placed in a position of comfort consistent with their illness or injury. Patients with compromised airway should be managed in a manner consistent with their illness or injury.

Procedure for Establishing and Maintaining an Airway

1. Open patient's airway using the appropriate technique for the patient's condition.
 - Medical patient: Head Tilt-Chin lift, or Head Tilt-Jaw thrust
 - Trauma patient: Modified Jaw Thrust (jaw thrust with neutral neck alignment)
2. The patient's airway should be maintained and secured using the appropriate airway device
 - Oropharyngeal Airways should be used in unconscious patients or patients without a gag reflex.
 - Nasopharyngeal Airways are better tolerated in conscious patients or in the presence of a gag reflex.
 - **Do not** use in small infants. Bleeding may occur in children with large adenoids.
 - **Do not** force. **Always** use lubricant.
 - If necessary, refer to individual advanced airway procedures.

Procedure for Suctioning the Airway

1. Turn patient to side if possible, maintaining spinal immobilization in trauma patient.
2. Suction the oropharynx with a large bore rigid or flexible catheter.
3. Suction the lower airway with a flexible catheter down the ET tube and utilize a sterile technique (ALS personnel).
4. Attempt to limit to 10 – 15 sec. at a time. Suctioning may cause bradycardia.
5. Pre-oxygenate patient prior to and in between procedure if possible.

Procedure for Infant Airway Obstruction:

- Five back blows followed by five chest thrusts are to be used – **No Abdominal thrusts.**
- Finger sweep should only occur if foreign body is visualized. Blind finger sweeps are **NOT** performed.

Procedure for Adult and Pediatric Airway Obstruction:

Complete Airway Obstruction:

1. If the patient is conscious and standing, perform Heimlich maneuver per AHA guidelines until obstruction is removed or patient become unconscious.
2. If patient is unconscious, re-position airway and perform CPR (jaw thrust or head-tilt/chin-lift)
3. *In the event abdominal thrusts are unsuccessful at removing the obstruction and the patient's airway remains completely obstructed (ALS Providers):*

- Insert a laryngoscope or video laryngoscope gently into the oropharynx to visualize any foreign body.
 - If a foreign body can be visualized, magill forceps may be used to assist in removal of the foreign body.
4. If the obstruction is not relieved:
 - Proceed to approved cricothyroidotomy as outlined in the appropriate procedure.
 5. If the obstruction is relieved:
 - Apply high flow oxygen per airway/oxygenation procedure.
 - Assess the adequacy of ventilations and support as needed.
 - Consider intubation if appropriate.
 - Suction aggressively. Vomiting and aspiration commonly occur after relief of an airway obstruction. Be prepared to quickly and aggressively suction the patient.

Partial Airway Obstruction

1. Have patient assume a position of comfort, unless risk of spinal injury, then immobilization is indicated.
2. Apply high flow O₂.
3. Suction upper airway secretions as appropriate.
4. As long as the patient is moving air or coughing, no attempts should be made to relieve a partial airway obstruction.
5. Abdominal thrusts will not be effective and may be injurious to the patient who is still moving air.
6. If patient demonstrates evidence of deterioration (change in mental status, inability to ventilate), treat as complete airway obstruction.

Pediatric Considerations

Anatomic and Physiologic Features Unique to Children

1. Large tongues which may occlude the airway and are difficult to sweep away during intubation.
2. Small airway diameter. Minimal edema and swelling may obstruct the airway.
3. Short trachea that predisposes for extubation during transport or head extension.
4. Anterior larynx which often makes intubation difficult. Cricoid pressure should aid in visualization.
5. Infants have large heads that cause a sniffing position. These patients may require a towel roll under their backs to correct airway position.
6. The epiglottis is soft and “U” or omega shaped.
7. The smallest diameter of the airway is at the cricoid ring, below the cords. This is why uncuffed ET tubes are used in small children.
8. The pediatric airway approaches the size of an adult airway at 8 or 9 years of age.
9. Infants are obligate nose breathers until 2 – 6 months of age.
10. The diaphragm is the main muscle used for breathing in infants due to the underdeveloped intercostal muscles. This may cause inflated stomachs secondary to crying.



Blood Draw Request

General

- Per HB 3775 of the State of Texas, a Justice of the Peace in the State of Texas can order a paramedic to draw blood to determine the alcohol content or the presence of chemical substances. **This bill became effective 09/01/99.**
- TAMU EMS Paramedic may perform a blood draw with a signed/confirmed warrant by TCOLE certified officer.
- TAMU EMS Paramedic may perform a blood draw with consent of the patient/individual.
- A certified paramedic acting at the request of a Justice of the Peace shall not incur any civil or criminal liability as a result of the blood draw.
- If, for any reason, a TAMU paramedic feels uncomfortable performing this procedure, he/she should contact the Administrator on Duty immediately. If a supervisor is unavailable, ask EMS Communications to contact one of the following individuals via paging or telephone:
 - AOD, EMS Manager or Assistant Manager, Operations Coordinator, Clinical Coordinator.

Procedure

1. Blood draw should be done under the supervision of the requesting Officer or Justice of the Peace.
2. Use the blood draw kit as supplied by the Officer or Justice of the Peace.
3. Don appropriate personal protective equipment.
4. Cleanse the venipuncture site using povidone-iodine prep pad from the kit. **Do not use alcohol preps**-this will alter the accuracy of the test results.
5. Make venipuncture with an 18 or 20 ga catheter or needle.
6. Withdraw blood into provided tubes using the needleless vacutainer equipment.
7. Slowly invert the tubes at least 5 times to assure proper mixing of the blood and the anticoagulant.
8. Discontinue the I.V. unless otherwise indicated.
9. Complete all necessary documentation with the requesting Officer or Justice of the Peace. The paramedic who drew the blood sample should sign any required forms or labels and observe the blood tubes being sealed by the officer.
10. If not already done, an incident number should be generated from EMS dispatch office.
11. Accurate and thorough documentation of the circumstances and events should be recorded including the **name of the JP and/or Peace Officer** requesting procedure, site of the blood draw, time performed and time the blood sample was released to the Peace Officer.
12. Have the Officer or other authorized individual sign as having received the blood sample to **document chain of custody** after being drawn by EMS. This documentation is important so that the integrity of the blood draw by TAMU EMS is not in question.
13. Include **documentation of site preparation** as well as **use of Betadine or povidone** solutions. This documentation is important in the event the procedure and/or outcome of the test results are challenged in a court of law.



Blood Glucose Analysis

Indications

Patients with a known history of hypoglycemia or diabetes mellitus. Any patient presenting with syncope, altered mental status or other signs/symptoms of possible hypo/hyperglycemia.

Notes

All glucometers come with test solutions for accuracy checks and/or calibration. Glucometers should be checked regularly to ensure appropriate calibration- refer to user manual for details.

Procedure

1. Wipe pad of finger with alcohol prep.
2. Allow time for alcohol to dry.
3. Stick finger with the lancet device and press finger to form a small drop of blood.
 - Blood samples can be obtained from the site used to establish I.V access, or from separate venipuncture site.
4. Touch and hold the Test End (tip) of the Test Strip to the drop of blood until adequate sample has been acquired.
5. Blood will automatically be drawn into the Test Strip and the timer will begin to count down.
6. After countdown the blood glucose result will appear in the display window.
7. Document the glucometer reading and treat the patient as indicated by the analysis and protocol.
 - If “Hi” reading appears, BGL is usually >600 mg/dl (refer to Glucometer manual for specifics)
 - If “Lo” appears the patient’s BGL is usually < 20 mg/dl (refer to Glucometer manual for specifics)
8. Repeat glucose analysis as indicated for reassessment after treatment.
9. Dispose of the used lancet in sharps container.

Indications

Imminent delivery with crowning

Procedure

1. Prepare and sterilize/clean providers, equipment and scene as time allows.
2. Utilize provided OB kit.
3. Place mother in dorsal lithotomy position (lay mother supine with feet above her hips)
4. Delivery should be controlled so as to allow a slow methodical delivery of the infant. This will prevent injury to the mother and infant.
5. Support the infants head as needed.
6. Once the head is delivered, sweep fingers around the baby's neck feeling for a nuchal cord. If it is present, slip the cord over the head. If unable to free the cord from the neck, double clamp the cord and cut between the clamps.
7. Suction the airway with a bulb syringe.
8. Have the baby's head face the mother's inner thigh. Grasping the head with hands over the ears, pull down with gentle traction to allow delivery of the anterior shoulder.
9. Gently pull up on the head to allow delivery of the posterior shoulder.
10. Slowly deliver the remainder of the infant. This should happen relatively quickly and spontaneously.
11. Following delivery, place the proximal clamp at least 10 cm away from the child's umbilicus. This will allow for placement of an umbilical catheter if necessary. Place distal clamp approximately 5 cm away from the proximal clamp and cut the cord between the clamps.
12. Suction airway as needed and dry and stimulate the newborn.
13. Record APGAR scores at 1 and 5 minutes.
14. Follow the Newly Born Protocol for further treatment.
15. The placenta will deliver spontaneously, usually within 5 minutes of the infant. Do not force the placenta to deliver.
16. Massaging the uterus may facilitate delivery of the placenta and decrease bleeding by facilitating uterine contractions.
17. Continue transport to the hospital.

General

Continuous positive air pressure (CPAP) is a non-invasive positive pressure ventilation (NIPPV) method that helps to improve the work of breathing and oxygenation for individuals with various cardiopulmonary complaints. CPAP allows for a constant increased pressure across alveoli which increases surface area for gas exchange and does not allow alveoli to collapse promoting decreased work of breathing and increased oxygenation.

Indications

- Adult patient with increased work of breathing
- Significant respiratory distress that is not response to conventional therapy AND
 - o $SpO_2 < 92\%$
 - o Respiratory rate > 25 breaths per minute
 - o Use of accessory muscles or retractions

Contraindications

- Hypotension- systolic blood pressure < 90 mmHg
- Unable to form proper seal with mask
- Facial trauma
- GCS < 10
- Inability to maintain open airway
- Current or expected emesis, excessive secretions
- Apnea
- Inadequate respiratory effort
- Suspected pneumothorax or chest trauma
- Tracheostomy

Considerations

- The mask is not designed to require extensive tightening. A snug fit is normally all that is needed for proper face-mask seal.
- If air leaks are present, lightly loosen the Velcro straps. Rarely does the mask need to be tightened to decrease leaks.
- Anxiolytics or dissociative may be necessary to assist with airway management in a patient who is experiencing low saturation, confusion, or agitated delirium.
- All monitoring equipment should be in place including BP, ECG, Pulse Ox, $EtCO_2$

Procedure

1. Connect CPAP circuit directly to an Oxygen source via Ohio adaptor or high flow connector.
2. Attach the circuit to the appropriately sized mask and turn the oxygen on with an initial dialed pressure of 5 cm H_2O .
3. Instruct the patient on what to expect and, if possible, have the patient place the mask on their face to get use to the flow. If the patient is not able, assist them with placing the mask and forming a seal. A NC may be left on under the mask to promote additional oxygenation and $EtCO_2$ monitoring if a seal can be maintained.
4. Secure the mask with the provided straps. The OmniClip, forehead piece, should be adjusted to find the best position on the patient's forehead.
5. Upper and lower clips should be secured first to the mask, then Velcro tabs adjusted for a secure fit.
6. Adjust CPAP pressure to desired setting based on appropriate SDO.
7. Nebulized Albuterol/DuoNeb can be administered through the provided circuit.



Delayed Sequence Intubation

General

Delayed Sequence Intubation (DSI) is the preferred method of intubation for TAMU EMS. DSI is an emergency airway management procedure which allows for increased preoxygenation and denitrogenating prior to intubation. It is particularly useful in patients who are experiencing AMS, agitated delirium, have low saturation, and require intubation. The DSI procedure differs from Rapid Sequence Intubation (RSI) by separating the administration of the induction agent from the administration of the paralytic. The induction agent, typically Ketamine, allows the continuation of spontaneous breathing and the retention of airway reflexes to promote increased oxygenation.

Indications

- Patients with saturation < 94% requiring intubation
- Conscious or semi-conscious patients who are not compliant or responsive with preoxygenation attempts prior to intubation

Contraindications

- Any patient with a secure airway and adequate oxygenation and ventilation
- Inadequate personnel or other resources to safely carry out procedure
- RSI procedure should be utilized for patient with SpO₂ ≥ 94% and holding requiring emergent airway management

Considerations

- Maximum of 2 intubations attempts are allowed
- DSI is not a rushed procedure and requires time and personnel to accomplish

Procedure

This procedure is best accomplished in an organized fashion with a similar approach as “pit crew” CPR. Provider roles should be assigned during preparation and all equipment should be obtained and ready. Suggested roles are airway assistant, intubator, drug administrator and someone to monitor vitals.

1. Prepare, position and oxygenate
 - a. Prepare for the procedure and assign roles
 - b. Monitoring equipment should be applied: ECG, Pulse Ox, BP, EtCO₂
 - c. Patients should be sat up at a 15-30 degree angle on the stretcher
 - d. Oxygenate - NRB, BVM, CPAP plus NC at 15 LPM, the goal is 100% oxygen for duration of equipment preparation and sedation. No less than 3 minutes for denitrogenation
2. Equipment check/preparation
 - a. All necessary medications should be drawn up and labelled
 - b. Intubation equipment should be checked and prepared: BVM, PEEP, ET tube in 3 sizes, 10 ml syringe, EtCO₂ adapter, c-collar, ET tube holder/securing device, Nasal Cannula, Suction, etc...
 - c. Backup airway should be selected and available
3. Sedation and Pre-Oxygenation



Delayed Sequence Intubation

- a. NC should be applied at 15 lpm if not already done, continue other oxygen therapies as needed
- b. Sedation
 - i. **Ketamine** 2 mg/kg slow IV/IO
 1. Preferred unless patient is hypertensive
 - OR**
 - ii. **Etomidate** 0.3 mg/kg IV/IO Max dose 30 mg
 1. Use if patient is **hypertensive**
- c. Position patient in ear to sternal notch position (pad behind the head to accomplish this position)
- d. Apply BVM with face mask at maximal oxygen flow leaving NC in place
- e. Increase PEEP as needed to achieve maximal SPO₂%
- f. Upon reaching SPO₂ ≥ 94%, begin 3-minute countdown to allow for complete denitrogenation
 - *If SPO₂ ≥ 94% cannot be obtained, the DSI procedure should be aborted and indication for RSI should be assessed
4. Paralysis
 - a. **Rocuronium** 1 mg/kg IV/IO
5. Intubation
 - a. Perform Intubation following adequate paralysis
 - b. If saturation drops below 94%, discontinue intubation attempt and Pre-Oxygenate until SPO₂ ≥ 94% and restart 3-minute countdown
6. Confirm and Secure
 - a. Confirm tube placement
 - b. Secure ET tube and apply cervical collar
7. Post-intubation management
 - a. **Ketamine** 1 mg/kg IV/IO
 - i. Preferred if patient is hypotensive
 - ii. Ketamine provides analgesic effects and additional analgesia is not needed
 - b. **Midazolam** 5 mg OR 0.1 mg/kg slow IV/IO
 - c. **Fentanyl** 1 – 2 mcg/kg max of 200 mcg slow IV/IO



End Tidal CO₂ Colorimeter

General

End tidal CO₂ Capnometry involves the single use of a semiquantitative color change scale measuring expired carbon dioxide percentage. This is primarily used for endotracheal tube or supraglottic airway confirmation. Capnometry reflects CO₂ elimination through a color change indicator.

Procedure

1. Endotracheally intubate the patient or place supraglottic airway.
2. Attach End Tidal CO₂ detector to endotracheal tube at the 15mm adapter
3. Ventilate the patient with BVM observing for color change with each breath*.
 - a. **More Purple: Less CO₂**
 - b. **More Yellow: More CO₂**
4. The Colorimeter can remain in place or be removed following confirmation. Newer colorimeter models allow for continuous monitoring and will indicate color changes with each breath.
5. *ET Tube and Supraglottic airways should be verified frequently and always with each patient move or loss of color change in the End – Tidal CO₂ detector.*

Contraindications

There are no absolute contraindications to capnometry in mechanically ventilated patients if the data obtained is evaluated in conjunction with other diagnostic tests and the patient's overall clinical condition.

Considerations

- It is important to note that although the capnometry provides valuable information about correct tube placement and the efficiency of ventilation, it is not a replacement or a substitute for a complete respiratory assessment.
- **Low or absent cardiac output may negate its use for placement verification.**
- *If a colorimeter is noted to remain constantly yellow, this may be a false positive due to gastric secretions or malfunction. Use another device or alternative CO₂ monitoring and repeat confirmation methods.

Indications

- Difficult intubation with a restricted view of the glottis opening
- ET intubation

Contraindications

- Pediatric patients under the age of 14

Procedure

1. Prepare ET introducer (ETI) device for insertion by curving the ETI/bougie and ensuring the distal tip is formed into a J shape.
2. The ETI may be used with or without an Endotracheal Tube (ET). To use with an ET tube, remove stylet (if applicable) from ET tube and replace with ETI extending the ETI past the distal tip of the ET tube about 10 cm. Form a loop with ET tube and proximal end of ETI and grasp it with the right hand. See figure 1 .
3. Perform laryngoscopy, obtaining the best possible view of glottis opening.
4. Advance the ETI, continually observing its distal tip, with the concavity facing anteriorly.
5. Visualize the tip of the bougie passing posteriorly to the epiglottis where possible, and anterior to the arytenoid cartilages. As the tip of the bougie enters the glottic opening you should either feel 'clicks' as it passes over the tracheal rings or the tip will rest against the wall of the airway (hold- up). This is a good indicator of correct insertion but is not 100% accurate. Failure to elicit clicks or hold-up is indicative of esophageal placement. If hold-up is felt, the bougie should be withdrawn approximately 5 cm to avoid the ET tube impacting against the carina.
6. If the ET tube is not already threaded over the ETI, have an assistant thread the ET tube over the proximal end of the bougie and through the glottic opening. Ensure the distal tip of the ETI remains in the trachea during this process. If the ET tube was already threaded onto the ETI, advance the ET into place.
7. Once the ET tube is in place, hold the ET tube securely and remove the bougie.
8. Secure and verify tube placement according to orotracheal intubation procedure.

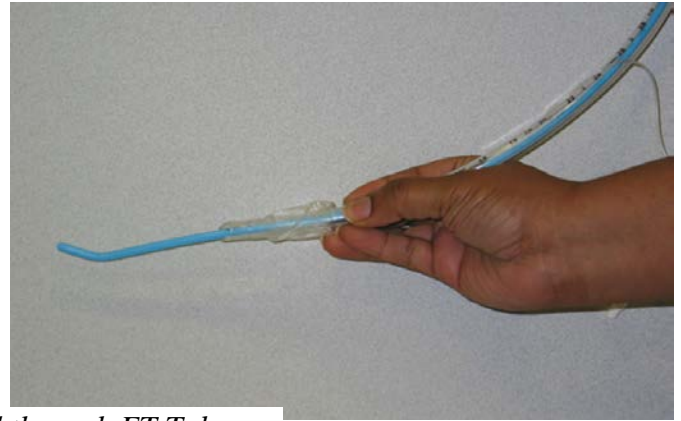
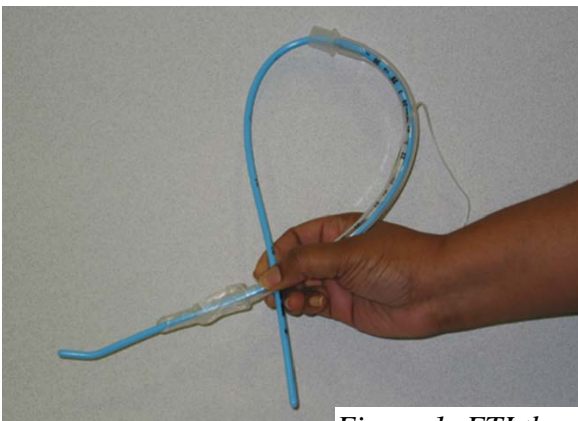


Figure 1: ETI threaded through ET Tube

General

External pacing is provided for the emergency treatment of hemodynamically compromising bradycardia and as directed by TAMU EMS SDOs.

Procedure

1. Prepare the patient by removing clothing from torso and removing any jewelry/piercings that may interfere with electrode or pacing pad placement.
2. Place ECG limb lead (4-lead) electrodes to patient. These are required to remain in place for external pacing.
3. Remove hair, clean and dry areas over which Multifunction Electrode Pads will be placed.
4. Peel off protective covering from pads to expose conductive surface and position pads on patient according to manufacturers recommended placement location on outer package.
5. Push “Pacer” button.
6. Select “Fixed” or “Demand”. If unsure, default should be “Fixed” in the emergency setting.
7. Adjust “Rate” and “Output”
 - a. Rate default should be 80 bpm. Initial set rate should be 10 beats higher than intrinsic rate if intrinsic rate is present. Rate can be dialed down following capture.
 - b. Output in mA should start low, around 30-40 mA, and be dialed up until capture is acquired.
8. Initiate Pacing by selecting the “Start Pacer” button.
9. Adjust “Output” until electrical pacer wave/spike is followed immediately by QRS complex
 - a. Ensure both electrical and mechanical capture have taken place
 - b. Mechanical capture is assessed by palpation of peripheral pulse. Femoral artery and right brachial or radial artery are recommended sites to avoid false positives felt by the muscular response to pacing stimuli.
10. Evaluate for concordance of mechanical pulse with electrical pulse through multiple methods

Considerations

- External pacing can be traumatic for patients. If patient condition allows, be sure to thoroughly explain the procedure and necessity prior to initiation.
- Provide analgesia per SDOs.
- Demand pacing allows the heart to maintain an intrinsic rhythm within the parameters set by the pacing rate. When possible, this is the preferred method.

General

This procedure should be used if medication or fluids are indicated and attempts to establish quick peripheral venous access have been unsuccessful. All medications that can be given via the IV route can also be given IO.

Contraindications

- Patient weighs less than 3 kg
- Fractures of the targeted bone
- Previous, significant orthopedic procedures at insertion site (e.g. prosthetic limb or joint)
- IO in the targeted bone within the past 48 hours
- Infection at area of insertion
- Excessive tissue or absence of adequate anatomical landmarks

Injection Sites

- **Adults** 40 kg or more use Yellow Needle Set
 - o Proximal Humerus (preferred)
 - o Proximal Tibia
 - o Distal Femur
- **Pediatrics** 3 – 39 kg use Blue Needle Set
 - o Distal Femur (preferred)
 - o Proximal Humerus
 - o Proximal Tibia

Procedure

1. Locate insertion site
2. Cleanse insertion site using aseptic technique
3. Prepare EZ IO driver and needle set
4. Stabilize site and insert needle through skin until tip touches bone
 - a. The 5 mm black line must be visible, if not use larger size
 - b. If correct size needle apply gentle pressure and squeeze trigger
5. Remove driver and stylet while stabilizing catheter hub
6. Attach EZ IO Stabilizer and connect primed extension set
7. Conscious patient should now receive 20-50 mg 2% Lidocaine IO (0.5 mg/kg for Pedi)
8. Flush or bolus the EZ IO catheter using steady pressure with 5 – 10 ml of normal saline using a 10 ml syringe
9. Place a pressure bag on solution being infused
10. Dress site, secure tubing and apply wristband
11. Monitor EZ IO site and patient condition
12. Consider pain management

General

For traumatic injuries while wearing a protective helmet, the primary assessment should proceed normally with concern for airway, breathing, and circulation while addressing the potential for cervical spine injury. Helmet removal can be a risky procedure if facial or cervical trauma has occurred.

Procedure

Tight-Fitting Helmets

- If the patient is awake and able to protect their airway, it is generally preferable to leave the helmet in place to assist with immobilization.
- If the patient has an altered level of consciousness and/or is unable to protect his/her airway, the face shield should be immediately removed to allow access to the airway. If the face shield cannot easily be removed, the helmet should be removed while maintaining in-line immobilization.
 - Most athletic trainers have specific equipment for removing facemask quickly and can be an asset with athletic type helmets. They are also trained on the specific helmet type/design and removal.
- If the airway cannot be controlled for any reason with the helmet in place, the helmet should immediately be removed while maintaining in-line immobilization.

Loose-Fitting Helmets

- If the patient is wearing a **loose helmet** that does not conform closely to his/her head, the helmet **should be removed using in-line immobilization prior** to completing the spinal immobilization on the patient.
- The void behind the Occiput created by the helmet and any other protective sports equipment should be filled during the spinal immobilization procedure.

Considerations

- When immobilizing patients with the helmet in place, the backboard portion of most immobilization devices may cause the neck to flex forward when the patient's head is placed on it. For that reason, **head immobilization devices should generally not be used** in these patients. The **helmet** should rest **directly on the backboard** with towel rolls used to provide lateral support to the helmet.
- EMS crews should work closely with team trainers and physicians for organized team sports. When providing scheduled standbys at sporting events, EMS personnel should introduce themselves to the sports medicine personnel of the teams prior to the game.



Hemostatic Dressing

General

Hemostatic dressing is gauze bandaging that has been impregnated with a hemostatic agent. Newer generation hemostatic dressings do not heat up during or after application. Hemostatic dressings should not be used in lieu of a tourniquet for life threatening extremity hemorrhage.

Indication

For the control of moderate to severe compressible hemorrhage primarily in the groin, axillae, and neck that cannot be controlled by any other means.

Contraindications

Wounds involving open thoracic or abdominal cavities.

Procedure

1. Remove any excess blood from the wound while preserving any clots that have formed.
2. Locate the source of the most active bleeding. This is a key step for successful bleeding control.
3. Remove the hemostatic dressing from the package and pack it tightly into the wound directly over the site of the most active bleeding.
4. Apply direct pressure to the bleeding site **while** packing the dressing.
5. After the dressing has fully packed the wound, (more than one gauze may be needed) continue to hold direct pressure for at least 3 minutes.
6. Reassess for bleeding control.
7. DO NOT REMOVE dressing to assess bleeding, leave in place.
8. Cover with roller gauze or other securing method.
9. If the dressing becomes over saturated and bleeding is not controlled, remove the hemostatic dressing and repeat above steps.
10. Rapid transport to appropriate facility.



i-gel[®] Supraglottic Airway

Indications

- Any patient unable to maintain the patency of their airway, requiring mechanical ventilation and/or PEEP
- Failed endotracheal intubation

Contraindications

- Presence of gag reflex (consider appropriate methods of airway management or RSI)
- Airway damage, such as burns, facial trauma or varices.

Procedure

1. Manually establish or secure the airway and oxygenate the patient
2. Choose the correct size of i-gel[®] based on patient's ideal weight.
3. Lubricate back, sides, and front of i-gel[®] with water-based lubricant.
4. Position patient's head appropriately (neutral if c-spine injury suspected, otherwise "sniffing" position).
5. Remove mask and oral airway
6. Introduce leading soft tip of i-gel[®] into the mouth at the direction of the hard palate.
7. Glide the device downwards along hard palate with a continuous but gentle push until definitive resistance is felt.
8. Do not let go of the device until it has been confirmed and secured.
9. Attach BVM and EtCO₂ device.
10. Confirm placement
 - a. Auscultation of bilateral lung sounds
 - b. Absence of gastric sounds during ventilation
 - c. Presence of misting in the i-gel[®]
 - d. Capnometry (EtCO₂ number or Colorimeter)
 - e. Capnography waveform continuous monitoring
11. **If you are unsure of placement, remove tube and ventilate patient with bag-valve mask**
12. Once proper placement is verified, secure the device by sliding the strap underneath the patient's neck and attaching it to the hook ring. Do not over-tighten.
13. Apply end-tidal CO₂ detector (if not already applied) and monitor expired CO₂ continuously.
14. Consider placing an NG/OG tube to clear stomach contents
15. Consider **immobilization** of patient's head with a **c-collar or other device** to decrease neck flexion/extension and maintain airway position
16. **RECONFIRM** tube placement often, **ESPECIALLY AFTER** moving patient or manipulating airway device.



i-gel® Supraglottic Airway

Sizing Chart

i-gel® Size	Patient Size	Ideal Patient Weight
1	Neonate	2 - 5 kg (4.4 – 11 lbs)
1.5	Infant	5 - 12 kg (11 – 26.4 lbs)
2	Small Pediatric	10 - 25 kg (22 – 55 lbs)
2.5	Large Pediatric	25 – 35 kg (55 – 77 lbs)
3	Small Adult	30 - 60 kg (66-132 lbs)
4	Medium Adult	50 - 90 kg (110-200)
5	Large Adult	> 90 kg (>200 lbs)

Indications

- Any patient unable to maintain the patency of their airway, requiring mechanical ventilation and/or PEEP
- Inability to adequately ventilate a patient with a BVM
- Patients with possible increasing ICP

Contraindications

- Presence of gag reflex (consider appropriate methods of airway management DSI/RSI)

Considerations

- All vital signs should be continuously monitored for intubated patients including oxygen saturation, 3-lead ECG, Capnography/Capnometry, heart rate and blood pressure.
- Note and record time of intubation, all confirmation methods, size of tube, depth/length of tube at the teeth, initial EtCO₂, final EtCO₂, and ventilation settings (rate/tidal volume/ease of bagging)

Procedure

1. Manually establish or secure the airway and oxygenate the patient.
2. Choose proper ET tube (and stylet or Endotracheal Introducer).
3. Apply high flow nasal cannula to achieve passive oxygenation .
4. Position patient's head and/or torso as appropriate (neutral if c-spine injury suspected, otherwise "sniffing" position or elevated chest, neck and head).
5. Remove mask and oral adjunct/airway.
6. Insert laryngoscope blade or VL, moving tongue to the left and lifting epiglottis.
7. Visualize glottis and vocal cords. Use Sellick maneuver/BURP to assist if needed.
8. Visualize tube passing through glottic opening.
9. Advance tube until cuff is just past the cords. STOP advancing and inflate cuff.
10. Confirm placement
 - a. Auscultation of bilateral lung sounds
 - b. Absence of gastric sounds during ventilation
 - c. Presence of misting in the tube
 - d. Capnometry (EtCO₂ number or Colorimeter)
 - e. Capnography waveform continuous monitoring
11. **If you are unsure of placement, remove tube and ventilate patient with bag-valve mask.**
12. Once proper placement is verified secure ET tube (ET tube holder/tube tamer, OPA, Bite stick).
13. Apply end-tidal CO₂ detector (if not already applied) and monitor expired CO₂ continuously.
14. Consider placing an NG/OG tube to clear stomach contents after the airway is secured with an ET tube.
15. Consider **immobilization** of patient's head with a **c-collar or other device** to decrease neck flexion/extension and maintain tube position.
16. **RECONFIRM** tube placement often, **ESPECIALLY AFTER** moving patient or manipulating ET tube.



IV Infusion Administration

Continuous Intravenous Medication Infusion

General

Any medication that should be administered via IV infusion as indicated by manufacturer and/or protocol.

Indications for Administration

***Prior** to any pre-hospital medications being administered **All** of the following should be present:

1. Appropriate patient assessment has determined the need for a medication.
2. If possible, patient is interviewed for known allergies and medication history to identify risk of drug interaction or potentiation.
3. The on-scene pre-hospital provider is familiar with:
 - Guideline for administration
 - Actions
 - Side-effects
 - Drug interaction
 - Contraindications
4. Medication is checked for:
 - Expiration date
 - Clarity

Procedure: Continuous Drip

1. Explain the procedure to the patient and inquire for medication allergies.
2. Don appropriate personal protective equipment.
3. Pre-mixed intravenous medications are selected or appropriate dose of medication is added to intravenous fluid bag. Affix label to fluid providing medication name, quantity/dose, date and provider initials. Mix according to medication label to distribute medication.
4. Attach microdrip (60 gtts/ml) administration tubing. Flush air from tubing.
5. Clean saline lock/connection port and ensure patency.
6. Connect microdrip tubing into IV injection port/saline lock (use port closest to patient).
7. Begin medication infusion at appropriate rate ensuring line remains patent (indicated by good flow and absence of infiltration).
8. Record time
9. Monitor patient for intended effects and/or side effects and patency of IV.



ET Tube Administration

Endotracheal Medication Administration

General

Critical patient requiring rapid administration of potentially life-saving medications in which vascular access and/or IO access cannot be established in a timely manner and endotracheal intubation has been successfully accomplished.

Indications for Administration

The medications that may be given down the ET tube are:

- Lidocaine
- Epinephrine
- Atropine
- Naloxone (Narcan)

***Prior** to any pre-hospital medications being administered **All** of the following should be present:

1. Appropriate patient assessment has determined the need for a medication.
2. If possible, patient is interviewed for known allergies and medication history to identify risk of drug interaction or potentiation.
3. The on-scene pre-hospital provider is familiar with:
 - Guideline for administration
 - Actions
 - Side-effects
 - Drug interaction
 - Contraindications
4. Medication is checked for:
 - Expiration date
 - Clarity

Procedure

Note: All medications administered via the ET tube are doubled

1. Endotracheal intubation with confirmation of tube placement
2. Draw up medication or prepare pre-filled syringe for use
3. Reconfirm tube placement by auscultation
4. Pre-oxygenate patient
5. Rapidly inject the medication down the tube in a bolus that is diluted or followed by normal saline to flush the tube. The total flush that should be administered in one bolus is 10 ml maximum following medication administration
6. Give 2-3 rapid ventilations following medication administration
7. Record time
8. Monitor patient for intended effects and/or side effects



Intramuscular Administration

Intramuscular Medication Administration

General

Medications requiring Intramuscular administration

Indications for Administration

***Prior** to any pre-hospital medications being administered **All** of the following should be present:

1. Appropriate patient assessment has determined the need for a medication.
2. If possible, patient is interviewed for known allergies and medication history to identify risk of drug interaction or potentiation.
3. The on-scene pre-hospital provider is familiar with:
 - Guideline for administration
 - Actions
 - Side-effects
 - Drug interaction
 - Contraindications
4. Medication is checked for:
 - Expiration date
 - Clarity

Procedure

1. Explain the procedure to the patient and inquire about medication allergies.
2. Prepare medication and attach an 18 – 22 gauge needle that is 1.5 – 2 inches long.
3. Site is selected and cleansed with alcohol prep (deltoid, dorsal gluteal, ventro-gluteal).
 - a. Deltoid can hold a maximum of 2ml in an adult patient, 1mL max in pediatrics, 0.5ml infants. Larger doses can be divided and administered in both deltoids.
 - b. Larger muscle groups (gluteal, hip, thigh) can hold a maximum of 4ml in adult patients, 2ml max in pediatric, and 1 ml in infants.
4. Spread skin taut, insert needle at 90-degree angle, and aspirate for presence of blood.
 - a. If blood appears, withdraw needle and re-attempt moving 1-2 cm away from original site.
5. If no blood appears in syringe, inject medication slowly.
6. Withdraw the needle and massage the site with alcohol prep or 4x4.
7. Dispose of syringe in sharps container.
8. Place a Band-Aid over the injection site.
9. Record time.
10. Monitor patient for intended effects and/or side effects.



Intranasal Administration

Intranasal Medication Administration

General

Intranasal medication administration when IV access is not obtainable or undesirable. To provide an alternative method for needless medication delivery.

Indications for Administration

***Prior** to any pre-hospital medications being administered **All** of the following should be present:

- Appropriate patient assessment has determined the need for a medication.
- If possible, patient is interviewed for known allergies and medication history to identify risk of drug interaction or potentiation.
- The on-scene pre-hospital provider is familiar with:
 - o Guideline for administration
 - o Actions
 - o Side-effects
 - o Drug interaction
 - o Contraindications
- Medication is checked for:
 - o Expiration date
 - o Clarity

Contraindications

- Facial trauma
- Epistaxis
- Nasal congestion or discharge
- Recent nasal surgery
- Recent cocaine use
- Increased mucous production
- NG or NT tube in place
- Any other recognized nasal mucosal abnormality

Procedure

1. Explain the procedure to the patient and what to expect.
2. Patient should be in a recumbent or supine position. If the patient is sitting, compress the nares with a gloved finger for 1-2 minutes after administration.
3. Draw up medication into a 1 ml syringe with luer-lock tip.
4. Expel any air within the syringe
5. Attach the Mucosal Atomization Device (MAD) to the syringe and confirm that it is secured firmly to the syringe.



Intranasal Administration

6. Visually inspect nares and chose the largest nare or the one with the least obstruction.
7. Insert syringe with the MAD attached into the nares until resistance is met (approximately 1.5 cm).
8. Timing the respirations, RAPIDLY depress plunger after patient exhalation but before inhalation.
9. If needed administer additional dose in other nostril.
10. Record time.
11. Monitor patient for intended effects and/or side effects

Precautions and Comments

- The MAD is reusable on the same patient, dispose after each patient.
- No more than 1 ml of medication should be administered per nostril, ideally less than 0.5 ml per nostril.
- No more than 0.5 ml of medication should be administered per nostril for children under 10 years.
- Succinct doses may be delivered in the same nostril after 5 minutes to allow previous dose to absorb.



Intravenous/Intraosseous Administration

Intravenous/Intraosseous Medication Administration

General

Any patient requiring medications via the intravenous/intraosseous route:

Indications for Administration

***Prior** to any pre-hospital medications being administered **All** of the following should be present:

1. Appropriate patient assessment has determined the need for a medication.
2. If possible, patient is interviewed for known allergies and medication history to identify risk of drug interaction or potentiation.
3. The on-scene pre-hospital provider is familiar with:
 - Guideline for administration
 - Actions
 - Side-effects
 - Drug interaction
 - Contraindications
4. Medication is checked for:
 - Expiration date
 - Clarity

Procedure: IV Bolus

1. Establish vascular access.
2. Explain the procedure to the patient and inquire about medication allergies.
3. Don appropriate personal protective equipment.
4. Medication is prepared in syringe with luer-lock connector or protected-needle. (A needle to insert into a port should only be used as a last resort).
5. All air is cleared from syringe and excess medication expelled.
6. Site is cleansed and patency is confirmed via saline flush and no signs of infiltration.
7. Medication syringe is inserted into capped port of IV/IO line.
8. Proximal IV/IO line is clamped, or flow is controlled to administer medication at appropriate rate.
9. Time taken to administer medication is specific to medication. Flush IV/IO line at appropriate rate to finish administering medication that may remain in the tubing.
10. Monitor IV/IO catheter site for signs of infiltration.
11. Dispose of syringe in appropriate container.
12. Record time.
13. Monitor patient for intended effects and/or side effects.



Nebulizer Administration

Nebulized Medication Administration

General

- Medication requiring nebulized administration

Indications for Administration

***Prior** to any pre-hospital medications being administered **All** of the following should be present:

- Appropriate patient assessment has determined the need for a medication.
- If possible, patient is interviewed for known allergies and medication history to identify risk of drug interaction or potentiation.
- The on-scene pre-hospital provider is familiar with:
 - Guideline for administration
 - Actions
 - Side-effects
 - Drug interaction
 - Contraindications
- Medication is checked for:
 - Expiration date
 - Clarity

Contraindications

- Severely obtunded or unconscious patient
- Adequate tidal volume
 - **Note:** Nebulized medications have little therapeutic effect when given to patient with little to no tidal volume.

Procedure

1. Can be administered by nebulizer with mouth piece attached, neb mask, or positive pressure ventilation (BVM, ET Tube, Supraglottic airway) with appropriate adapters.
2. Explain procedure to patient and assemble nebulizer per factory standards avoiding contamination of equipment.
3. Add appropriate volume of medication into nebulizer chamber and reconnect.
4. Connect oxygen and increase flow until a steady mist is observed, usually 6 – 8 liters/minute
5. Patient is instructed to breathe normally and to hold a deep inspiration every 4 – 5 breaths.
6. Treatment is continued until all medication is gone or is discontinued due to complication in patient condition such as ECG ectopy, increase in heart rate of 20bpm, or worsening condition.
7. Record time and monitor for intended effects and/or side effects.



PO Administration

Oral Medication Administration

General

- Medication administration by oral route in conscious patients who can follow commands. If medication is not dissolvable and needs to be swallowed, patient must be able to swallow without difficulty.

Indications for Administration

***Prior** to any pre-hospital medications being administered **All** of the following should be present:

- Appropriate patient assessment has determined the need for a medication.
- If possible, patient is interviewed for known allergies and medication history to identify risk of drug interaction or potentiation.
- The on-scene pre-hospital provider is familiar with:
 - Guideline for administration
 - Actions
 - Side-effects
 - Drug interaction
 - Contraindications
- Medication is checked for:
 - Expiration date
 - Clarity

Procedure

1. Obtain permission from patient to administer medication. Advise the patient what to expect after medication has been administered (e.g., Nitro may cause headache but should relieve chest pain, etc.)
2. Provide medications to patient **with direction** on the administration (i.e.: to be chewed, swallowed, held under tongue).
3. If needed, provide water for pills that must be swallowed.
4. Record time.
5. Monitor patient for intended effects and/or side effects if applicable.

Note: Oral medications **Should Not** be administered to patients with decreased and/or altered levels of consciousness.



Rectal Medication Administration

General:

Any patient requiring rectal medication administration. If another route is possible such as IV, IM, IN or PO, that route should be utilized prior to PR administration.

Indications for Administration

***Prior** to any pre-hospital medications being administered **All** of the following should be present:

- Appropriate patient assessment has determined the need for a medication.
- If possible, patient is interviewed, if possible, for known allergies and medication history to identify risk of drug interaction or potentiation.
- The on-scene pre-hospital provider is familiar with:
 - o Guideline for administration
 - o Actions
 - o Side-effects
 - o Drug interaction
 - o Contraindications
- Medication is checked for:
 - o Expiration date
 - o Clarity

Contraindications

- Recent rectal, anal or perineal/perianal trauma or surgery.
- Suspected GI bleed or colonic obstruction
- Hypotension

Procedure

1. Position patient appropriately and inform them of the procedure and what to expect (if applicable). Ensure the patient is secure/comfortable during procedure and will not injure or harm themselves or providers.
2. Don personal protective equipment.
3. Attach a # 6-8 fr suction catheter to the end of a syringe that contains medication to be administered.
4. Lubricate the tip of the catheter.
5. Gently insert catheter into rectum 2-4 cm and instill medication.
6. Flush the suction catheter with 5 ml of NS and retract.
7. Record time
8. Monitor patient for respiratory depression, hypotension or any other change in status.



Subcutaneous Administration

Subcutaneous Medication Administration

General:

Any medication requiring subcutaneous administration

Indications for Administration

***Prior** to any pre-hospital medications being administered **All** of the following should be present:

- Appropriate patient assessment has determined the need for a medication.
- If possible, patient is interviewed for known allergies and medication history to identify risk of drug interaction or potentiation.
- The on-scene pre-hospital provider is familiar with:
 - o Guideline for administration
 - o Actions
 - o Side-effects
 - o Drug interaction
 - o Contraindications
- Medication is checked for:
 - o Expiration date
 - o Clarity

Contraindications

- SQ injections are not recommended for patients with poor perfusion (shock)

Procedure

1. Medication is prepared in syringe of 1 ml or less with needle 25-27 ga 1/2 - 5/8 "
2. Explain the procedure to the patient and inquire about medication allergies
3. A site is selected and cleansed. Lateral aspect of the upper arm or leg is suggested
4. Pinch skin up into a fat fold of at least 1"
5. Insert needle at 45-degree angle
6. Aspirate the syringe
7. If no blood appears in syringe, inject medication slowly between dermis and muscle tissue
8. Withdraw the needle and gently massage site with alcohol wipe or 4x4
9. Dispose of syringe in sharps container
10. Place a Band-Aid over the injection site
11. Record time.
12. Monitor patient for intended effects and/or side effects.



General

The Morgan Lens is a medical device which provides the most effective means of ocular (eye) irrigation. It provided continuous lavage to the cornea and conjunctiva, floating on the irrigation solution and never physically touching the cornea.

Indications

Lavage of chemical or thermal burns to the eye or small diameter non-embedded foreign material.

Procedure

1. Reassure the patient and explain the procedure and the need for lavage.
2. Apply topical ocular anesthetic (Tetracaine), if indicated and available.
3. Peel open sterile packaging and attach the Morgan Lens to the Morgan Lens Delivery Set, a fluid administration set, or syringe.
4. **Start a minimal flow** through the Morgan Lens
5. Have the patient look down, insert Morgan Lens under upper lid.
6. Have the patient look up, retract lower lid, put lens in place.
7. Adjust flow to the desired rate and absorb outflow. Do not let outflow run into other eye, mouth or nose. Tape tubing to the patient's forehead to prevent accidental removal of the lens. **DO NOT RUN THE MORGAN LENS DRY.**
8. Removal- continue flow during removal. Have patient look up, retract lower lid – hold position and slide the Lens out. Once Lens is removed, stop the flow of solution.

Morgan Lens Uses

	Solution	Mode with Morgan Lens	Rate	Frequency
Acid burns or other ocular injury due to solvents, gasoline, detergents, etc.	Lactated Ringer's* Solution Recommended due to pH: LR 6.0 to 7.5 NS 4.5 to 7.0	Morgan Lens Delivery Set or I.V. set-up	500 ml rapid/free flow. Reassess and continue at slower rate.	Once. Repeat as necessary. Continuous until pH of cul-de-sac is returned to normal (approximately 7.0 to 7.3). Repeat as necessary.
Alkali burns		Morgan Lens Delivery Set or I.V. set-up	2000 ml rapid/free flow. Reassess. Continue at 50 ml/hour or 15 drops/minute.	
Non-embedded foreign bodies		Morgan Lens Delivery Set or I.V. set-up	500 ml rapid/free flow. Reassess and continue at slower rate.	Once. Repeat as necessary.
Foreign body sensation with no visible foreign body	20 cc sterile solution	20 cc syringe	Slowly without force.	Once. Repeat once if necessary.

General

Tension Pneumothorax is a life-threatening condition. Decompressing the chest is considered potentially lifesaving and may be performed on any patient found in cardiac arrest or multi-system trauma **WITH** signs of hemodynamic instability (Hypotension and/or falling systolic blood pressure, narrowing pulse pressure), **AND one or more** of the following indications.

Indications

Patients presenting with

- Increased respiratory difficulty/increased difficulty in bagging
- Sudden decrease in level of consciousness
- Loss of peripheral pulses
- Pale and/or cyanotic with diaphoretic skin
- Diminished or Absent unilateral breath sounds
- Distended neck veins
- Tracheal deviation (often a late sign)
- Pulseless electrical activity
- Subcutaneous Emphysema

Precautions

- Crepitus and/or subcutaneous air may be present with a tension pneumothorax
- Always insert needle over (cephalic) rib to avoid neurovascular bundle

Complications

- Creation of a simple pneumothorax if not already present
- Laceration of blood vessels and/or nerves
- Laceration of lung
- Infection due to poor aseptic technique

Procedure

1. Use designated decompression needle or attach appropriate size needle to 10 mL syringe
 - In adults, use a 10 ga needle or largest available of appropriate length (3 ¼ inches inches)
 - In children < 12 years, use a 14 ga needle/catheter
5. Identify intercostal space at mid-clavicular line, between the 2nd and 3rd ribs (Alternatively, the fifth intercostal space at anterior-axillary line may be used).
6. Swab site with cleaning solution.
7. Position the tip of the needle just over the top of the 3rd rib at the mid-clavicular line, Insert needle into the chest at 90° angle to the chest wall. At the pleural cavity a slight “give” is felt. Advance further into chest until bevel of the needle clears the pleura.
8. Advance the catheter over the needle and then remove needle.
9. If decompression occurs a rush of air may be heard.



Needle Decompression

10. Connect Heimlich valve tubing (if available), making sure to pay attention to proper flow directions of the valve.
11. Secure catheter to chest
12. Catheter may be connected to **LOW** suction intermittently to assist evacuation of pneumothorax.
13. If suction is not available or contraindicated, positive pressure BVM will help to inflate the lung and push out compressing air in the pleural space. This will take multiple breaths to accomplish.

Special Notes

- Individuals who have chronic COPD may have a spontaneous pneumothorax that progress to a tension pneumothorax.
- A tension pneumothorax may be precipitated by the occlusion of an open chest wound dressing.
- Rush of air and/or patient improvement indicates correct placement,
- If the patient has sustained multi-system trauma, bilateral decompression may be required.
- **Once the needle is placed, Prehospital personnel should not remove it.** If the needle has been improperly placed, tape the needle to the patient's chest and repeat the procedure.

Indications

Nasogastric/Orogastric insertion may be performed on unconscious patients in any of the following situations:

- Cardiac arrest patients for the purpose of alleviating abdominal distention
- Patients who have ingested non-caustic poisons or excessive amounts of medications with **medical control consultation**
- Hyperthermic patients to lower body temperature with **medical control consultation**

Contraindications

- NG/OG insertion **should not** be performed if the patient is convulsing unless the patient is already intubated
- **DO NOT** delay transport to accomplish this procedure

Procedure

1. Raise head of bed to high fowler's position if possible. Support the patient's head and shoulders with a pillow
2. Select appropriate catheter size
 - Adults: 12 – 18 fr
 - Pediatric: 8 – 12 fr
6. Measure the tube by placing the tip of the tube on the patient's nose, then extend the tube to the tip of the ear lobe and then to the end of the xyphoid process. Mark the distance to be inserted.
7. Curve the end of the tube by coiling the first 6 inches tightly around your finger and lubricate tip with water-soluble jelly.
8. Tilt patient head forward. Pass the tube through the nose downward but do not force. If severe resistance is met, remove the tube, lubricate and try the other nostril.
9. If patient is conscious, have them swallow. Advance the tube with each swallow.
10. After the tube has been inserted halfway, instruct the patient to talk, if there is any hoarseness or the patient is unable to speak, withdraw the tube and attempt re- insertion
11. Once tube has been inserted, verify proper placement by injecting 10 – 20 ml of air through the tube into the stomach while auscultating the stomach just below the xyphoid process. You should hear a "whooshing" sound of air entering the stomach.
12. Connect tube to suction and use lowest possible setting that is effective to remove stomach contents if indicated.

If lavage is approved by medical consultation:

13. Introduce lavage fluids (Sodium Chloride solution) in 20 – 30 ml portions and remove the stomach contents. The general rule of thumb is 20 ml in / 20 ml out.
14. Continue this lavaging until returning fluid is clear.
15. Anchor tube to the patient's nose with tape that has been wrapped around the tube. Do not allow any pressure to be placed on the patient's nares
16. Confirm placement as needed during transportation or after patient movement.

Indications

Orthostatic vital signs are serial measurements of blood pressure (B/P) and pulse (P) that are taken with the patient in the supine, sitting and standing positions. This test is performed to determine how a patient compensates with changing positions. It is commonly performed on patients who complain of nausea, vomiting, diarrhea, GI bleed and syncope.

Contraindications

- Chest pain or pressure of presumed cardiac etiology, and/or
- Inability to stand without assistance or keep postural tone during the test.

Procedure

1. Place the B/P cuff on the patient. For consistency, the same arm with the same cuff and location of pulse measurement should be used.
2. Initially, the patient needs to be supine. If the supine position compromises the patient's breathing status or comfort level, assist them to a position that is as flat as possible. It is **recommended that two (2) sets** of vital signs be taken in the supine position, **using the second set as the baseline.**
3. The second measurement should be taken with the patient in the sitting position. The patient should be sitting upright, with their legs dangling at the side of the bed or stretcher.
4. The third measurement should be obtained with the patient in the standing position.
Note: If the patient is unable to stand omit this measurement and utilize readings obtained in the sitting position.
5. **Allow one minute between measurements.**
6. **Findings of a** decrease of 20 mmHg in systolic pressure, an increase of 10 mmHg in the diastolic pressure and/or an increase in heart rate of 20 beats per minutes **is considered a positive finding.**
7. Dizziness or lightheadedness upon changing positions is a positive finding.

General

For patients that have suffered trauma, or a medical condition in which it is necessary to reduce the level of discomfort to the patient, reduce anxiety that is associated with severe pain, and to assist the patient's ability to help tolerate the treatment, and transport of the patient to the appropriate receiving facility.

Indications

- Pain secondary to any nature of illness, or mechanism of injury

Contraindications

- Hypersensitivity/allergy
- Active labor
- Avoid narcotic administration if there is a possibility of patient refusing transport to ER

Considerations

- Rule out other possible causes of abdominal pain prior to treating any patient for kidney stones (see **Abdominal Pain** protocol)
- Do not administer **Fentanyl** and **Morphine** to the same patient
- Beware of synergistic effect of combining **Promethazine** with **Morphine** or **Fentanyl**, causing profound decreases in level of consciousness, respiration, and blood pressure
- **Morphine** is the treatment of choice for burns and chest pain
- **Fentanyl** is the treatment of choice for significant orthopedic injuries
- **Ketamine** is the treatment of choice for multi-system trauma or hemodynamically unstable trauma patients
- Ketamine may be administered at half the dose following Fentanyl or Morphine to achieve adequate pain relief
- Orthopedic injuries resulting in suspected fractures with muscle spasms may warrant judicious use of **Midazolam** or **Diazepam** in conjunction with lower doses of **Fentanyl** – **beware of synergistic effects**
- **Fentanyl** may be administered to patients that are allergic to Morphine, however you should remain prepared for a possible allergic reaction
- Pain management should begin as soon as possible in all patients and prior to other treatments in stable patients
- Simple pain management techniques such as positioning, splinting, and cold packs can significantly decrease a patient's pain and need for additional therapies

Procedure

1. Place patient on all monitors
2. Have advanced airway equipment available
3. **Naloxone** should be readily available when administering pain medications
4. Use aseptic technique throughout procedure
5. Confirm proper medication and dosage

USE WITH EXTREME CAUTION IF SUSPICION OF ALCOHOL OR OTHER INTOXICANT INGESTION.



Pain Management

For minor pain where IV/IO/IM/IN medications are not indicated or appropriate:
Consider PO Acetaminophen 15 mg/kg - Max dose 1000 mg

ADULT

Standby EMT

- Positioning/Splinting
- External Cooling (Ice Pack)
- **Acetaminophen** 650 – 975 mg PO
- **Ibuprofen** 400 – 800 mg
 - **DO NOT ADMINISTER** to patients who may need acute surgical interventions (i.e. open fractures/fracture deformities)

Basic EMT

- Same as above

Advanced EMT

- IV/IO
- **Ketorolac** 30 mg IV/IO or 60 mg IM
 - **DO NOT ADMINISTER** to patients who may need acute surgical interventions (i.e. open fractures/fracture deformities)

Paramedic

- **Morphine** 2 – 5 mg IV/IO/IM over 2 minutes
 - May repeat x 2 q 10 minutes
 - Max total dose 20 mg
- **Fentanyl** 1 mcg/kg IV/IO/IN over 2 minutes
 - May repeat 0.5 mcg/kg q 5 minutes
 - Max total dose of 200 mcg OR 2 mcg/kg, **whichever is lower.**
- **Ketamine** 0.1 - 0.3 mg/kg slow IV/IO/IN
 - Max single IV/IO dose 30 mg
 - If unable to give IV/IN then 50 – 100 mg IM
 - May repeat once after 10 minutes
 - IV dose may be administered via drip

Medical Consult

- Additional pain medication

Standby EMT

- Positioning/Splinting
- External Cooling (Ice Pack)
- **Acetaminophen** 15 mg/kg PO
- **Ibuprofen** 200 mg PO if > 20 kg
 - **DO NOT ADMINISTER** to patients who may need acute surgical interventions (i.e. open fractures/fracture deformities)

Basic EMT

- Same as above

Advanced EMT

- IV/IO
- **Ketorolac** 0.5 mg/kg IV/IO/IM
 - Max 15 mg
 - **DO NOT ADMINISTER** to patients who may need acute surgical interventions (i.e. open fractures/fracture deformities)

Paramedic

- **Morphine** 0.1 mg/kg IV/IO/IM
 - Max single dose 2 mg
 - May repeat once in 10 minutes
- **Fentanyl** 1 mcg/kg IV/IO/IN over 2 minutes
 - May repeat 0.5 mcg/kg q 5 minutes
 - Max total dose of 100 mcg OR 2 mcg/kg, **whichever is lower.**
- **Ketamine** 0.1 mg/kg slow IV/IO/IN
 - If unable to give IV/IN then 0.5 mg/kg IM
 - May repeat once after 15 minutes
 - IV dose may be administered via drip

Medical Consult

- Additional pain medication

PEDIATRIC



Patient Safety Restraint

General

Pre-hospital Patient Restraints (PPR) should be considered as a last resort whenever a patient requiring immediate medical treatment becomes a threat to himself, others or emergency personnel. This should be accomplished with the least amount of force necessary to protect the patient and emergency personnel. Other techniques such as verbal de-escalation, reality orientation, distraction or less restrictive therapeutic means should be attempted prior to PPR.

Indications

- Any patient who may harm themselves, or others
- To facilitate monitoring of sedated or intubated patients

Considerations

Law enforcement officers should be requested for assistance on any patient who may be a harm to themselves or others and who require physical restraints.

If EMS personnel have entered a location that becomes unstable/unsafe EMS personnel should remove themselves from the scene and move to a location of safety until Law enforcement arrives. If necessary, EMS personnel should leave medical equipment to accomplish this task. The safety of EMS personnel comes first.

The AOD should be notified as soon as possible when patient safety restraint is attempted. This can be accomplished through a dispatch notification or phone call.

Procedure

1. Attempts should be made to calm the patient and de-escalate the situation.
2. Request law enforcement assistance and consider chemical restraint per protocol and/or contacting medical control.
3. Additional manpower should be requested prior to attempting this procedure. A minimum of five (5) responders should be present to safely apply PPR. Four-Point restraints (restraining both arms and both legs) are preferred.
4. Restrain the patient in a lateral or supine position utilizing “soft” restraints.
 - No device such as backboards, splints, or other devices will be on top of the patient.
 - The patient may never be restrained in a prone position.
 - TAMU EMS should never use hard restraints (e.g., handcuffs, plastic ties, or leathers) to restrain patients.
 - The patient should not have hands and feet bound behind them, “hog tied” in any fashion by EMS provider.
5. Manufactured restraints such as Posey should be used if in stock. Additionally, acceptable restraints for EMS personnel include sheets, wristlets and/or triangle bandages.



Patient Safety Restraint

6. In addition to securing both arms and legs, it may be helpful to tether the hips, thighs and chest. Tethering the thighs just above the knees prevents kicking more effectively than restraining the ankles.
7. A spit hood or surgical mask may be placed **LOOSELY** over the patient's mouth to prevent spitting on emergency personnel. No other items should be placed over the patient's face or head.
8. A c-collar may be applied to limit the mobility of the patient's neck, decreasing the patient's range of motion to protect from biting as well as prevent injuries to the patient.
9. Restraints **SHOULD NEVER** be placed in such a way that prevents evaluation of the patient's mental status or interferes with necessary patient care activities.
10. EMS personnel should monitor distal circulation and pulses to prevent further injury to the patient
11. **Continuous ECG, pulse oximetry, end tidal and blood pressure monitoring (every 5 minutes) are mandatory while being cared for by TAMU personnel.**
12. **Patients restrained by TAMU personnel should receive chemical safety sedation to prevent further excessive agitation and struggling against patient safety devices. Continued struggling against safety devices can lead to hyperkalemia, rhabdomyolysis and cardiac arrest.**
13. Full documentation of all events and patient's condition are required on the Patient Care Report (PCR) whenever Patient Safety Restraints are utilized.



Patient Safety Sedation

General

Patient Safety Sedation (PSS) is a last resort for safely calming extremely agitated patients when physical restraints have proven to be minimally effective and may further compromise the life, limb or safety of the patient. In all events, attempts should be made to “talk the patient down” prior to physical and/or patient safety sedation.

Indications

- Extremely agitated patients demonstrating the potential to harm themselves, or others when all other attempts to calm have been unsuccessful

Considerations

Law enforcement officers should be requested for assistance on any patient who may be a harm to themselves or others and who require physical restraints.

If EMS personnel have entered a location that becomes unstable/unsafe EMS personnel should remove themselves from the scene and move to a location of safety until Law enforcement arrives. If necessary, EMS personnel should leave medical equipment to accomplish this task. The safety of EMS personnel comes first.

Vascular access should be accomplished prior to Patient Safety Sedation if EMS personnel are able to accomplish with minimum risks to the patient and EMS personnel. If unable to obtain due to patient agitation, vascular access should be obtained as soon as possible after Patient Safety Sedation medications have been administered IM. Fluid therapy for hypotension should be considered to maintain a systolic blood pressure of > 90 mmHg

Procedure

1. Evaluate patient mental status
2. Attempts should be made to calm the patient and de-escalate the situation.
3. Have sedative medications prepared for injection. Prepare for possible hypotension or CNS depression side effects
4. Administer sedative medication
 - If alcohol is suspected, **Ketamine** is preferred
 - **Ketamine** 1 – 2 mcg/kg IV or 4 mg/kg IM
 - OR**
 - **Midazolam** 2 – 5 mg IM/IV if SBP > 90 mmHg
 - May repeat 2 - 5 mg IV twice
5. Restrain the patient in a lateral or supine position utilizing “soft” restraints.
 - No device such as backboards, splints, or other devices will be on top of the patient.
 - The patient may never be restrained in a prone position.



Patient Safety Sedation

- TAMU EMS should never use hard restraints (e.g., handcuffs, plastic ties, or leathers) to restrain patients.
 - The patient should not have hands and feet bound behind them, “hog tied” in any fashion by EMS provider.
6. Restraints **SHOULD NEVER** be placed in such a way that prevents evaluation of the patient’s mental status or interferes with necessary patient care activities.
 7. EMS personnel should monitor distal circulation and pulses to prevent further injury to the patient
 8. **Continuous ECG, pulse oximetry, end tidal and blood pressure monitoring (every 5 minutes) are mandatory while being cared for by TAMU personnel.**
 9. Full documentation of all events and patient’s condition are required on the Patient Care Report (PCR) whenever Patient Safety Restraints are utilized.
 10. The AOD should be notified as soon as possible when patient safety sedation is attempted. This can be accomplished through a dispatch notification or phone call.

General

Extrinsic Positive End Expiratory Pressure (PEEP) can be used to increase the pressure within the lungs and thus increase oxygenation saturation in the body (Henry's Law) during mechanical and non-invasive ventilation. This is primarily achieved through opening up alveoli and decreasing atelectasis.

Indication

Any patient with evidence of moderate to severe atelectasis, aspiration, alveolar infiltration or refractory increased work of breathing. Ex. Pulmonary edema, near drowning, smoke or fume inhalation with severe respiratory distress.

Contraindications

Presence of a pneumothorax or tension pneumothorax.

Considerations

When using PEEP with a BVM and face mask, a face-to-mask seal must be maintained during inhalation and exhalation. ET tubes and supraglottic airways have adequate seal pressures to support PEEP.

Procedure

1. Attach PEEP valve to exhalation port adapter of BVM.
2. Attach BVM to Endotracheal tube, supraglottic airway or mask
3. Select appropriate PEEP setting per SDO
 - a. 5 – 10 cm H₂O is typically recommended
4. Ventilate the patient as usual ensuring a seal is maintained the entire time
5. Record time
6. Observe ECG rhythm and vital signs closely. PEEP may cause dysrhythmias and/or changes in vitals. Discontinue or decrease PEEP if significant adverse responses occur.



Pulse Oximetry Monitoring

General

The pulse oximeter allows for the assessment of respiratory function by measuring unsaturated and saturated hemoglobin within the blood. The difference between the two is the percentage of saturation. The percent of hemoglobin saturated with oxygen is referred to as Oxygen Saturation (SpO₂ or O₂ Sat). A normal SpO₂ for healthy individuals is 95 – 100%. A low (93%) or falling SpO₂ indicates that the airway or ventilatory status may be compromised.

Indication

Patients presenting with:

- suspected hypoxemia
- Cardiac problems
- Multiple system trauma
- Altered level of consciousness

Precautions

- The pulse oximeter interprets **carboxy**hemoglobin (COHb) as saturated hemoglobin and provides a falsely elevated reading in the presence of carbon monoxide.
- High oxygen saturation is not an indicator of sufficient oxygen delivery to the tissues, as this depends on cardiac output, and the amount of hemoglobin and level of vasoconstriction present.
- Pulse oximetry readings may be difficult to obtain in states of low perfusion (shock), cold extremities/environments, and/or during vasoconstriction.

Procedure

1. The probe should be applied to a finger or toe whenever possible.
 - a. Non-dominant hand on the ring finger (digit 4) is the recommended location.
 - b. Placing the pulse ox distally from the BP cuff will cause consistent decreased readings due to cuff inflation.
 - c. If necessary, clean or remove any debris, dirt, fingernail polish, etc., to facilitate a better reading.
2. Ensure adequate reading is being obtained by monitoring Pulse Oximeter waveform.
 - a. Common interference can occur from other light sources (direct sunlight, fluorescent and xenon arc lighting). Cover the pulse ox device if this is observed.
3. Utilize disposable adhesive adapter for adults or pediatrics as needed.
4. Record pulse ox readings at application and before, during, and after any oxygen therapy or other interventions.

Pediatric Considerations

- Special probes may be required to obtain readings in pediatric patients.



Push Dose Epinephrine

General

- Bolus dosing of epinephrine is an adjunct prior to vasopressor drip in hypotensive patients with a Systolic Blood pressure < 90

Indications

- Hypotension

Contraindications

- Systolic Blood Pressure > 90

Considerations

- Must be given in conjunction with a fluid bolus

Procedure

1. Expel 9 ml of fluid from a 1 mg/10 ml 1:10,000 cardiac epinephrine syringe
2. Replace the 9 ml of EPI with 9 ml of normal saline to get a 10 mcg/ml concentration
3. Administer 0.5 – 2 ml (5 – 20 mcg)
 - a. May repeat x 3 q 5 minutes PRN to maintain SBP > 90



Rapid Sequence Intubation

General

Rapid Sequence Intubation allows for emergent airway management in a patient with active breathing, present airway reflexes and/or risk of aspiration. RSI involves the near simultaneous administration of an induction agent followed by paralytic (neuromuscular blocking agent) to increase intubation success and decrease potential complications. It is only to be utilized when Delayed Sequence intubation (DSI) is not indicated.

It should always be the goal to achieve oxygen saturation of $\text{SpO}_2 \geq 94\%$ prior to intubation attempt if patient condition allows, regardless of acronym chosen.

Indications

Patients requiring intubation with $\text{SpO}_2 \geq 94\%$ and holding and at least one of the following:

- lack of airway protection
- impending obstruction
- impaired oxygenation
- pending respiratory arrest

Patients requiring intubation with $\text{SpO}_2 < 94\%$ who would not respond to oxygenation and ventilation efforts (DSI) to increase saturation and at least one of the following:

- lack of airway protection
- impending obstruction
- impaired oxygenation
- pending respiratory arrest

Contraindications

- Any patient with a secure airway and adequate oxygenation and ventilation
- Inadequate personnel or other resources to safely carry out procedure
- DSI procedure is indicated

Considerations

- Maximum of 2 intubations attempts are allowed
- RSI is not a rushed procedure and requires time and personnel to accomplish

Procedure

This procedure is best accomplished in an organized fashion with a similar approach as “pit crew” CPR. Provider roles should be assigned during preparation and all equipment should be obtained and ready. Suggested roles are airway assistant, intubator, drug administrator and someone to monitor vitals.

1. Prepare, Position and Oxygenate
 - a. Prepare for the procedure and assign roles
 - b. Monitoring equipment should be applied: ECG, Pulse Ox, BP, EtCO₂
 - c. Position the patient
 - d. Oxygenate - NRB, BVM, CPAP plus NC at 15 LPM, the goal is 100% oxygen for duration of equipment preparation and sedation
2. Equipment check/preparation



Rapid Sequence Intubation

- a. All necessary medications should be drawn up and labelled
- b. Ensure equipment is functioning and ready: Intubation blades/handle or VL, suction, BVM, ET tube +/- one size, lubricant, c-collar, stethoscope, colorimeter, ET tube holder/securing device, 10 ml syringe, Bougie, etc...
- c. Backup airway should be selected and available
3. Sedation and Paralysis
 - a. NC should be applied at 15 lpm if not already done, continue other oxygen therapies as needed
 - b. Premedicate
 - i. **Fentanyl** 1 – 2 mcg/kg IV/IO Max dose 200 mcg
 - ii. **Atropine** 0.5 – 1 mg IV/IO (for bradycardia)
 - c. Induction
 - i. **Etomidate** 0.3 mg/kg IV/IO Max dose 30 mg
 1. Use if patient is **hypertensive**
 - OR**
 - ii. **Ketamine** 2 mg/kg Slow IV/IO
 1. Preferred if patient is hypotensive or has respiratory distress
 - d. Paralysis following adequate induction
 - i. **Rocuronium** 1 mg/kg IV/IO
4. Intubation immediately following paralysis
 - a. Visualize tube passing through chords then inflate cuff
 - b. If saturation drops below **90%**, discontinue attempt and reoxygenate the patient
5. Confirm and Secure
 - a. Confirm tube placement
 - b. Secure ET tube and apply cervical collar
6. Post-intubation management
 - a. **Ketamine** 1 mg/kg IV/IO
 - i. Preferred if patient is hypotensive
 - ii. Ketamine provides analgesic effects and additional analgesia is not needed
 - b. **Midazolam** 5 mg OR 0.1 mg/kg slow IV/IO
 - c. **Fentanyl** 1 – 2 mcg/kg max of 200 mcg slow IV/IO

General

Pelvic fractures are a leading cause of mortality in the presence of severe blunt force trauma. Bleeding pelvic fractures associated with hemodynamic instability may have up to 40% mortality. The only available treatment options in the pre-hospital environment to address pelvic fractures is a pelvic binder.

Indications

- Suspected pelvic fracture based on mechanism of severe blunt force trauma or blast injury with one or more of the following
 - Pelvic pain
 - Any major lower limb amputation or near amputation
 - Physical examination findings of pelvic fracture (neurologic deficits, blood at urethral meatus, rectum or vagina, massive hematuria, unequal leg length)
 - Unconsciousness
 - Shock
- Elderly patients are at an increased risk of pelvic fractures. Falls and minor trauma may be considered severe blunt force trauma and could result in unsuspecting pelvic fractures.

Considerations

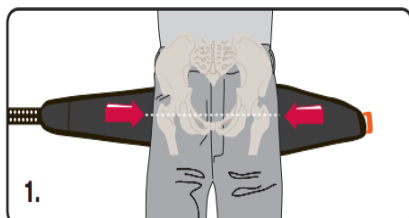
- There is no indication of substantial harm, beyond the risk of pressure injury to the skin, associated with pelvic binder use.
- The binder should be placed at the level of the greater trochanters for reduction of the pubic symphysis diastasis. Placing the sling higher at the ASIS (anterior “hip bone”) will not achieve adequate reduction.
- Pelvic sling placement is recommended during the “Circulation” or “C” phase of the assessment following life threats. It should not take priority over Massive external hemorrhage (MARCH algorithm) nor Airway or Breathing therapies.
- Pelvic slings should be placed prior to moving a patient when possible.
- Ideally the binder should be placed next to the skin rather than over any clothing for more accurate placement and to prevent removal at the ED. If placed over clothing ALL solid objects must be removed.
- Distal limbs should be secured together and internally rotated if possible, to reduce movement and increase pelvic stability.

Procedure

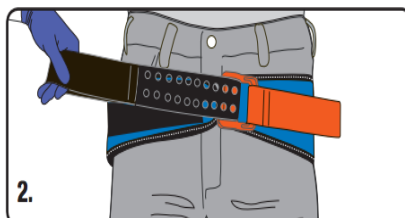
1. Locate the greater trochanters of the femur where the device will be applied.
2. Slide the pelvic sling under the patient’s pelvis. Placing it under the thighs and sliding it into position may reduce overall movement.
3. Feed the black precision strap through the buckle.
4. Pull the orange trap handle and the black precision strap in opposite directions until an audible “CLICK” is heard and felt.
5. While maintaining retention, immediately press the black precision strap onto the Velcro surface of the sling. Do not be concerned if you hear or feel a second “CLICK” after securing the black precision strap. The correct retention will be maintained

Applies in 3 Easy Steps

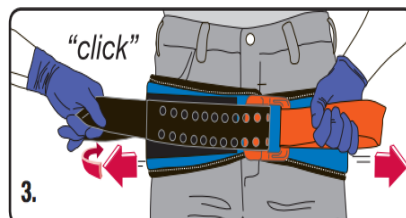
no trimming, no cutting, no guessing



1. Remove objects from patient's pocket or pelvic area. Place SAM Pelvic Sling II black side up beneath patient at level of trochanters (hips).



2. Place **BLACK STRAP** through buckle and pull completely through.



3. Hold **ORANGE STRAP** and pull **BLACK STRAP** in opposite direction until you hear and feel the buckle click. Maintain tension and immediately press **BLACK STRAP** onto surface of SAM Pelvic Sling II to secure. You may hear a second click as the sling secures.

Selective Spinal Motion Restriction (SMR)

Indications

History or mechanism suggesting possible spinal injury (e.g., high-speed rollover MVC, driving accident, fall, etc.).

Any patient that meets **ANY ONE** of the following criteria **SHOULD** be treated under the Spinal Motion Restriction Procedure.

- Patient < 6 or > 65 years of age with mechanism
- Altered mental status and/or decreased level of consciousness including drugs or alcohol
- Presence of neurological deficit or complaint
- Presence of spinal pain and/or midline tenderness with palpation or voluntary range of motion
- Distracting injuries of any kind (e.g., long bone fractures, abdominal pain, chest pain, crushing injuries, extensive BSA burns, etc.)
- Communication barrier

Contraindications

- Penetrating trauma without evidence of spinal injury
- Moving the head into a neutral in-line position is contraindicated if:
 - There is pain and/or muscle spasm upon movement.
 - Patient holds head angulated (tilted) to the side and is unable to move it.
 - The maneuver cannot be safely performed due to limited space or other conditions.

Procedure

1. Restrict spinal motion (manually holding c-spine).
2. Assess the head and neck for obvious injuries and distended neck veins prior to applying an appropriately sized rigid cervical collar.
3. If ambulatory, allow patient to move to stretcher.
4. If non-ambulatory, use appropriate device to move patient to stretcher with minimal spinal motion holding neutral in line position during patient movement.
5. If possible, rigid moving devices should be removed and patient transported on the stretcher mattress with minimal patient motion. Head blocks/towel rolls or other padding may be used to keep head in neutral in line position.
6. Secure the patient to the stretcher for transport.

Considerations

Paramedic may remove previously applied selective spinal motion restrictions if ALS assessment suggests patient is at low risk for spinal injury.

Special equipment such as football players in full pads and helmet may remain immobilized with helmet and pads in place.

SMR may be adapted for the elderly or patient's with abnormal body habitus who cannot lie supine. Secure these patients in a position of comfort while minimizing spinal motion.

General

Spitting on providers is not acceptable behavior by any patient and carries potential risk for disease transmission. Providers are not expected to “tolerate” spitting. If faced with a spitting patient, providers are expected to remain calm and ethical and contact law enforcement. If necessary, providers should leave the scene until law enforcement arrives. If Patient Provider Restraint or Sedation is necessary, appropriate protocols and procedures should be followed. Once safe to do so, a spit sock hood, surgical mask, or oxygen mask may be used as a barrier.

**Texas Penal Code Title 5. Ch. 22 defines knowingly offensive or provocative physical contact (spitting) with another person as a Class A misdemeanor. If this offensive is on a public servant lawfully discharging an official duty, this becomes a felony of the third degree.*

Indications

- Patients whom are combative, aggressive and/or altered and are spitting or attempting to spit on providers or other public safety personnel.

Considerations

- Patient must be breathing effectively and have a patent airway
- **DO NOT** use unless patient is under control and restrained.
- **DO NOT** use on anyone that is unable to adequately maintain their own airway.
- Remove patient’s eyewear before application.
- If there is difficulty applying due to large size head use a different approved device (surgical mask).

Procedure

1. Place the spit hood over the head of the patient per manufacturer directions or loosely apply surgical or oxygen mask to patient.
2. Adjust for proper fit.
3. **CONTINUOUSLY** monitor patient’s airway, respiratory status, and pulse oximetry.
4. **IMMEDIATELY** remove surgical mask, oxygen mask, or spit hood if any question of airway patency or potential compromise.



Stroke and LVO Screening

General

Standardized Stroke and Large Vessel Occlusion (LVO) Screening should be performed on any patients exhibiting signs or symptoms of a possible stroke or unexplained neurological event. Symptoms include AMS, visual disturbances, changes in speech or memory, discoordination, or unexplained malaise. The VAN screening tool allows for better assessment and prediction of a large arterial occlusive stroke that often has a poorer outcome. Large vessel occlusion strokes are best treated with interventional clot management rather than thrombolytic.

Indications

- Stroke like signs or symptoms
- Unexplained neurological symptoms
- AMS

Contraindications

- Inability to follow commands or perform assessment
- Previous deficits or neurological compromise which would make findings inconclusive

Considerations

Perform a Cincinnati Stroke Screen first. If the Cincinnati Stroke Screen is negative, no additional assessment needs to be performed. The stroke screen is considered negative.

If the Cincinnati Stroke Screen is positive, the provider should then perform the VAN Screening. Findings should be reported as Stroke Screen negative or Stroke Screen Positive with Negative/Positive VAN Screening.

Procedure

Cincinnati Stroke Screen

1. Facial Droop (+/-)
Have the patient smile and observe for unilateral facial paralysis.
2. Arm Drift (+/-)
Have the patient hold both arms straight in front of them with palms up (supination) for 10 seconds with their eyes closed. Observe for any weakness indicated by arm drift of one or both arms.
3. Speech (+/-)
Have the patient repeat a sentence. Observe for accuracy and normal articulation.
Example sentence: "You can't teach an old dog new tricks."

VAN- Vision, Aphasia, Neglect Screening Tool for Large Vessel Occlusion (LVO)

The patient must have EITHER arm weakness (one or both) and at least one VAN abnormality, OR all three VAN abnormalities for a positive stroke screening.

1. **Arm Weakness-** Lift both of the patient's arms to 90 degrees if sitting, 45 degrees if supine. Ask the patient to hold the position for 10 seconds, then let go, and count to 10 out loud.
 - a. Normal
 - b. Mild- minor drift
 - c. Moderate- drift goes all the way down
 - d. Severe- flaccid or no antigravity



Stroke and LVO Screening

2. **Visual Disturbance-** If possible, sit, kneel or stand facing the patient about 3 feet apart. Tell the patient to look at your nose. With your arms raised to 90 degrees, raise a finger(s) to each side of their field of vision and ask the patient to tell you how many fingers are raised. If baseline visual acuity is poor, wiggle a finger to assess ability to detect movement.
 - a. Normal
 - b. Field Cut- right or left impairment
 - c. Double Vision- uneven eyes
 - d. Blind New Onset
3. **Aphasia-** Point to two different objects and ask the patient to identify them. Ask the patient to repeat a phrase such as “Today is a sunny day.” Ask the patient to follow two commands such as “Close and open your eyes,” and “Make a fist.”
 - a. Normal
 - b. Expressive- inability to speak or paraphasic errors; not counting slurring of words
 - c. Receptive- not understanding or following commands
4. **Neglect-** (Visual) Ask the patient to track your finger to each side. (Tactile) Ask the patient to close their eyes. Tell them you are going to touch them on the arm. Instruct the patient to tell you whether they feel touch on their right, left, or both arm (s). Touch both arms simultaneously.
 - a. Normal
 - b. Forced Gaze- inability to track to one side
 - c. Ignoring One Side- preference to one side
 - d. Unable to feel both sides- at the same time or unable to identify own arm

Control-Cric Surgical Airway

Indications

- Critical patient in whom a patent airway cannot be maintained or established by oropharyngeal or nasopharyngeal airway, BVM, supraglottic airway or Orotracheal Intubation.
- Critical patient with severe maxillofacial trauma, inflammation or severe swelling of the airway or other mechanism resulting in a life-threatening upper airway obstruction/compromise.

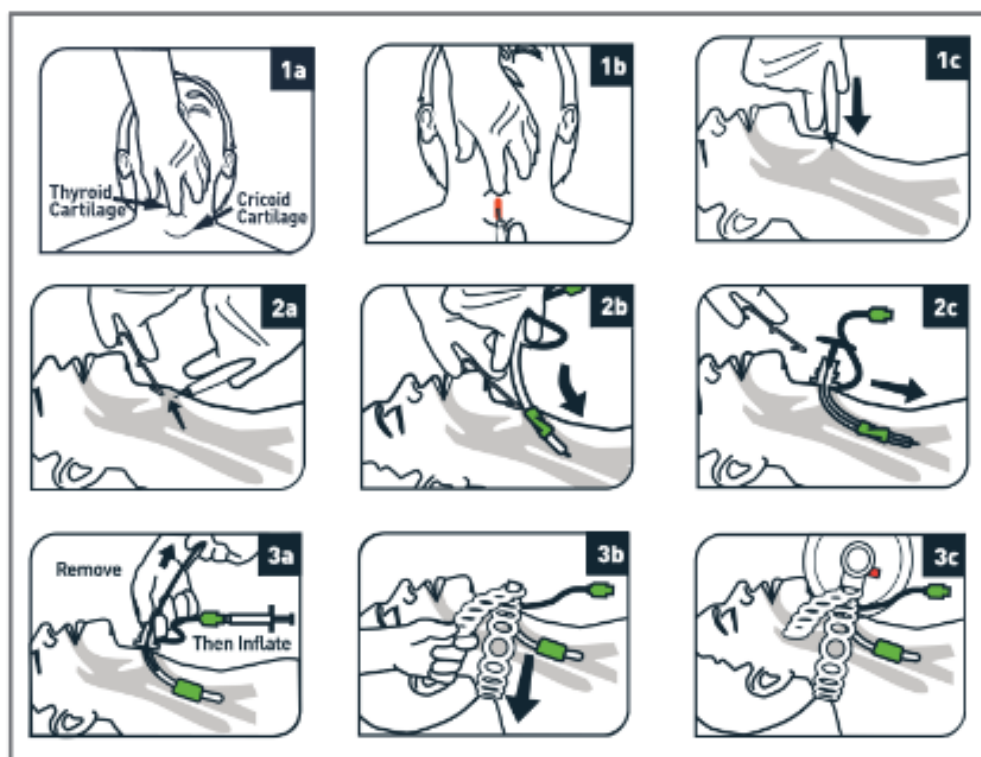
Contraindications

- An airway obtainable by any other means
- Unable to identify landmarks for the procedure
- Inhospitable environment to perform the procedure or lack of adequate personnel

Procedure

1. Position patient supine and identify the cricothyroid membrane. Stabilize the larynx with thumb and middle finger with non-dominant hand. Cleanse the site.
2. Use the Cric-Knife to incise skin. A vertical skin incision from mid-thyroid cartilage to the cricoid cartilage is recommended (usually about 2 finger breaths). In patients with a thick neck a longer incision may be needed. A horizontal skin incision may be used when landmarks are evident.
3. After palpating the cricothyroid membrane, turn the Cric-Knife to a horizontal position over the cricothyroid membrane. Push the blade downward, perpendicular to the trachea, until the blade is fully inserted and the airway is entered.
4. While maintaining downward force, slide the tracheal hook down the handle with your thumb until the hook is felt to enter the trachea, and it disengages from the handle. Grab the tracheal hook with the non-dominant hand, lifting up on the thyroid cartilage.
5. Insert Cric-Key through incision. Confirm placement by moving the device along anterior wall of trachea to feel for the tracheal rings. Indicators of incorrect placement could be: tenting of the skin, difficulty advancing the Cric-Key tube, or lack of tactile feedback from the tracheal rings.
6. Once placement has been confirmed, advance Cric-Key tube to the flange. Stabilize the Cric-Key tube and pivot the tracheal hook toward the patient's shoulder to remove from airway.
7. While stabilizing the Cric-Key tube, remove the Cric-Key introducer. Inflate the cuff until resistance is met.

8. Confirm placement
 - a. Auscultation of bilateral lung sounds
 - b. Absence of gastric sounds during ventilation
 - c. Presence of misting in the tube
 - d. Capnometry (EtCO₂ number or Colorimeter)
 - e. Capnography waveform continuous monitoring
9. Secure with stabilizing strap.



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Medical Resus Termination

Purpose

This procedure guides termination of ALS efforts in the pre-hospital setting when an adult patient experiences a non-traumatic cardiac arrest. The In-Charge Paramedic on scene may initiate this procedure without on-line medical control in the following circumstances:

- Resuscitation efforts were inappropriately initiated when Criteria for Death/Withholding Resuscitation were present
- A valid Out of Hospital Do Not Resuscitate (OOH-DNR) form or identification device was discovered after resuscitation efforts were initiated. An original OOH-DNR form or copy from any U.S state is acceptable.
- Criteria has been met to terminate resuscitation efforts as outlined in this protocol

Procedure

Resuscitation efforts **should not be terminated** in patients meeting the following criteria :

1. The patient whose cardiac arrest may be associated with hypothermia and submersion.
2. The patient who has persistent ventricular fibrillation or ventricular tachycardia.
3. The patient who has suffered cardiac arrest while in the care of TAMU-EMS personnel.

Resuscitation efforts **may be terminated** in patients meeting the following criteria:

1. The patient must be at least 18 years of age;
2. Cardiac arrest is not associated with traumatic etiology (see Trauma Resuscitation Termination)
3. Successful airway established with placement verification. Acceptable management includes secured endotracheal tube, supraglottic or surgical airway with adequate ventilation with BVM
4. Successful IV or IO access
5. High quality CPR and appropriate advanced life support protocols applied throughout the resuscitation and no reversible causes identified
6. Persistent asystole or agonal rhythm for **at least 20 minutes after** ALS interventions have begun and no return of spontaneous circulation (palpable pulse) at any time
7. ETCO₂ is consistently 10 mm Hg or less
8. No neurologic activity at any time after arrest (eye opening or motor response)
9. All TAMU Paramedics on scene agree with decision to terminate resuscitation.

If the above criteria are not met for resuscitation efforts to be terminated, the in-charge paramedic shall either transport or contact medical control for termination approval.

If any family member or responsible party indicates an objection to the termination of resuscitative efforts, the resuscitation efforts shall continue until consultation with on-line medical control.



Medical Resus Termination

If an on-line medical control physician is involved in the decision to terminate resuscitation, efforts must continue while:

1. The family is counseled regarding the futility of further resuscitation;
2. The request to discontinue resuscitation is approved by on-line medical control physician.

When pre-hospital resuscitation efforts are terminated, TAMU EMS personnel should tie off and securely knot all established IV lines and disconnect the IV fluid bag. All IV/IO catheters and airway devices should remain in place. Monitor leads, defibrillation pads, and other disposable equipment/supplies should remain in place.

The In-Charge Paramedic should notify the EMS Communications Center that the code was terminated and request law enforcement to respond if not already on scene.

TAMU EMS personnel should be attentive to the psychological needs of the patient's family or immediate party and provide support as needed.



Trauma Resus Termination

Purpose

This procedure guides termination of ALS efforts in the pre-hospital setting when an adult patient experiences a traumatic cardiac arrest. The In-Charge Paramedic on scene may initiate this procedure without on-line medical control if resuscitation efforts were inappropriately initiated when Criteria for Death/Withholding Resuscitation were present.

It is important to emphasize that **Transport is Treatment** for the multi-system trauma patient. This protocol is not intended to delay on scene management of the trauma patient.

Procedure

Do NOT attempt traumatic resuscitation criteria:

- Confirmed arrest > 15 minutes due to traumatic mechanism (blunt or penetrating).
- **Blunt force traumatic** arrest prior to EMS arrival found pulseless and apneic in asystole or PEA < 40 following basic airway maneuvers **and** bilateral needle compression (if indicated).
- **Penetrating traumatic** arrest prior to EMS arrival found pulseless and apneic in asystole or PEA < 40 following basic airway maneuvers.
- Isolated penetrating trauma to the head found pulseless and apneic in asystole or PEA < 40 following basic airway maneuvers.

Resuscitation efforts **should not be terminated** in patients meeting the following criteria:

1. The patient whose cardiac arrest may be associated with hypothermia and submersion.
2. The patient who has persistent ventricular fibrillation or ventricular tachycardia.
3. The patient who has suffered cardiac arrest while in the care of TAMU-EMS personnel.

Resuscitation efforts **may be terminated** in traumatic patients meeting the following criteria:

1. The patient must be at least 18 years of age
2. Successful airway established with placement verification. Acceptable management includes secured endotracheal tube, supraglottic or surgical airway with adequate ventilation with BVM
3. Successful IV or IO access with NS bolus of 1000 ml
4. High quality CPR and appropriate advanced life support protocols applied throughout the resuscitation and no reversible causes identified
5. Persistent asystole or agonal rhythm for **at least 20 minutes after** ALS interventions have begun and no return of spontaneous circulation (palpable pulse) at any time
6. ETCO₂ is consistently 10 mm Hg or less
7. The patient should have bilateral chest decompression performed if indicated
8. No neurologic activity (GCS >3) at any time after arrest
9. All TAMU Paramedics on scene agree with decision to terminate resuscitation.



Trauma Resus Termination

If any family member or responsible party indicates an objection to the termination of resuscitative efforts, the resuscitation efforts shall continue until consultation with on-line medical control.

If an on-line medical control physician is involved in the decision to terminate resuscitation, efforts must continue while:

1. The family is counseled regarding the futility of further resuscitation;
2. The request to discontinue resuscitation is approved by on-line medical control physician.

When pre-hospital resuscitation efforts are terminated, TAMU EMS personnel should tie off and securely knot all established IV lines and disconnect the IV fluid bag. All IV/IO catheters and airway devices should remain in place. Monitor leads, defibrillation pads, and other disposable equipment/supplies should remain in place.

The In-Charge Paramedic should notify the EMS Communications Center that the code was terminated and request law enforcement to respond if not already on scene.

TAMU EMS personnel should be attentive to the psychological needs of the patient's family or immediate party and provide support as needed.



Tourniquet Application

Indication

Life threatening limb hemorrhage that cannot be controlled with direct pressure or other simple measures, as may occur with a laceration, penetrating trauma or mangled extremity.

Contraindications

An injury where bleeding can be controlled by other measures.

Procedure

Two Handed Application:

1. If possible, expose the extremity by removing clothing in proximity to the injury.
2. Route the band around the limb, pass the strap through the slit of the buckle, and position the tourniquet directly over skin at least 5 cm proximal to bleeding site.
3. Pull the strap (CAT self-adhering band) around the extremity as tight as possible.
 - a. Should be tight enough that 3 fingers cannot be slid between the band and the limb.
4. Twist the rod until bleeding stops.
5. Lock the rod in place with the clip.
6. Assess for the presence of bleeding and ensure distal pulses are not present.
7. Record the date/time of application. This must be relayed to the ED physician at the receiving facility.

Considerations

- The tourniquet is effectively applied when there is a cessation of bleeding from the injured extremity, indicating total occlusion of arterial blood flow.
- Any preexisting distal pulse should be absent at this time as well.
- Use in combination with hemostatic dressing if indicated.
- **Only TAMU EMS provided CoTCCC approved tourniquets should be used on patients.**

General

Vagal maneuvers work by stimulating the autonomic nervous systems vagus nerve. This in turn may cause an intrinsic decrease in HR avoiding the need for other therapies in the presence of Narrow Complex Tachycardia.

Indications

- Narrow Complex Tachycardia

Contraindications

- None for Valsalva maneuver

Procedure

1. Ensure that patient is cardiac monitoring and 12-lead has been performed ruling out other possible etiologies.
2. If indicated, oxygen should be applied, and vascular access obtained.
3. Record the ECG rhythm continuously while performing all Vagal maneuvers.
4. Instruct the patient to cough forcefully several times. If this is ineffective proceed to the Valsalva maneuver.

Valsalva Maneuver

1. Have the patient take a deep breath and “bear down” against a closed glottis, as if trying to “clear” or “pop” his or her ears. Other descriptions include “bear down” as if taking a bowel movement. Have the patient perform this for as long as they can. (Alternative method: Remove plunger from a small syringe and instruct patient to blow through small end.)
2. If no conversion, repeat the procedure, up to three attempts total.



Acetaminophen

Other names:	Tylenol, Paracetamol, APAP
Class:	Antipyretic / Analgesic
Actions:	<p>Mechanism of action is not fully understood, but decreases fever by acting on the hypothalamic temperature regulation area. Elevates pain threshold.</p> <p>Onset: 10-30 minutes</p> <p>Duration: 4 hours</p> <p>Half-life: 2-4 hours</p>
Indications:	Fever reduction and pain management
Contraindications:	<p>Hypersensitivity to acetaminophen</p> <p>Prior dose within 4 hours</p> <p>Acetaminophen overdose (may be a combination product)</p> <p>Acute liver failure or severe chronic liver disease</p> <p>Severe renal insufficiency</p> <p>Shock</p>
Side Effects:	Rare in normal doses. Liver damage can occur in acute overdoses or from chronic use. Stevens-Johnson Syndrome, a serious skin disorder, has also been rarely reported.
Dosage:	<p>Adult: 650 – 975 mg PO/PR - PO if no N/V</p> <p>Pediatric: 15 mg/kg PO/PR - PO if no N/V See Pediatric Acetaminophen Dosing Chart</p>
Notes:	<p>May be given in conjunction with ibuprofen</p> <p>Elixir may be given rectally or via NG tube if patient is unable to take orally</p> <p>Acetaminophen is found in many OTC cold medicines, beware of overdosing</p> <p>Maximum dosage in 24 hours is 75 mg/kg or 4,000 mg/day, whichever is less.</p> <p>Hepatic damage begins with an acute ingestion of 150 mg/kg (10-12 grams in adult).</p>
Supplied:	<p>Unit dose oral elixir</p> <p>Tablets/capsules</p>
Authorization:	<p><u>PO/PR</u></p> <p>Standby EMT</p> <p>Basic EMT</p> <p>Advanced EMT</p> <p>Paramedic</p>



Acetaminophen

Pediatric Acetaminophen Dosing Chart										
Weight in lbs	6	12	20	30	40	50	60	70	80	90
Weight in Kg	2.7	5.5	9.1	13.6	18.2	22.7	27.3	31.8	36.4	40.9
Dosage in mg	40.9	81.8	136.4	204.5	272.7	340.9	409.1	477.3	545.5	613.6
Dosage in ml	1.3	2.6	4.3	6.4	8.5	10.6	12.8	14.9	17.0	19.2

Dosage in mL is based on 32mg / 1mL elixir



Adenosine

Other names:	Adenocard
Class:	Antiarrhythmic
Actions:	Slows conduction time through the AV node Onset: 5 – 10 seconds Duration: 10 seconds Half-life: < 10 seconds
Indications:	Narrow complex SVT or PSVT Secondary to amiodarone in a wide complex tachycardia of unknown etiology
Contraindications:	Hypersensitivity to adenosine 2nd or 3rd AV Block – except in patients with functioning artificial pacemaker Sick Sinus Syndrome – except in patients with functioning artificial pacemaker Use in pregnancy only if clearly needed (category C) Use caution in patients that are wheezing - causes mild-moderate exacerbation of acute asthma/COPD
Side Effects:	Flushing Chest pain Brief period of asystole or bradycardia Ventricular ectopy Headache and Nausea
Dosage:	Adult: 6 or 12 mg RAPID IV/IO followed by 10 ml flush If no conversion, give 12 mg RAPID IV/IO followed by 10 ml flush Do not exceed 30 mg total dose of Adenosine Pediatric: 0.1 mg/kg (up to 6 mg) RAPID IV/IO followed by flush If no conversion, give 0.2 mg/kg (up to 12 mg) RAPID IV/IO followed by flush, may be repeated once Do not exceed 0.5 mg/kg total dose of Adenosine
Notes:	Short half-life - rapid NS bolus and proximal IV site or humoral head IO are essential Less effective in patients taking Theophylline
Supplied:	Single dose vials
Authorization:	Paramedic



Amiodarone

Other names:	Cordarone														
Class:	Antiarrhythmic														
Actions:	<p>Prolongs duration and refractory period of the myocardial action potential, decreasing AV conduction and sinus node function.</p> <p>Onset: Rapid onset</p> <p>Duration: 30 – 45 minutes</p> <p>Half-life: Varies by route of administration. Apparent short half-life after IV dose is likely drug redistribution rather than true body elimination.</p> <p>Oral half-life is 60-142 days</p>														
Indications:	<p>Pulseless V-fib / Pulseless V-tach</p> <p>Stable wide complex tachycardia</p> <p>2nd line for unstable atrial fibrillation (especially in elderly)</p>														
Contraindications:	<p>Hypersensitivity</p> <p>Severe SA node disease/Sick Sinus Syndrome</p> <p>2nd or 3rd degree AV block</p> <p>Severe bradycardia without a functioning pacemaker</p> <p>Cardiogenic shock</p> <p>Caution in patients with ANAPHYLXIS to shellfish or imaging contrast media</p>														
Side Effects:	<p>Bradycardia</p> <p>Prolonged QT/Torsades de pointe (especially with other medications that prolong the QTc interval)</p> <p>Arrhythmias – various, may increase resistance to cardioversion</p> <p>Hypotension</p> <p>Nausea and vomiting</p>														
Dosage:	<p>Adult:</p> <table><tr><td>Ventricular fibrillation/Pulseless V Tach:</td><td>300 mg IV/IO Bolus</td></tr><tr><td>Narrow/Wide complex tachycardia:</td><td>150 mg IV/IO loading dose</td></tr><tr><td>Ventricular ectopy:</td><td>150 mg IV/IO loading dose</td></tr><tr><td>Post resuscitation management:</td><td>1 mg/min IV/IO infusion</td></tr></table> <p>Loading Dose</p> <p>Mix 150 mg amiodarone in 100 ml D5W, infuse over 10 minutes.</p> <p>Initiating Infusion:</p> <p>Mix 150 mg amiodarone in 100 ml D5W, run infusion at 1 mg/min. The infusion should be started within 20 minutes of arrhythmia resolution.</p> <p>Pediatric</p> <table><tr><td>Ventricular fibrillation/Pulseless V Tach:</td><td>5 mg/kg IV/IO Bolus</td></tr><tr><td>Narrow/Wide tachycardia with pulse:</td><td>5 mg/kg IV/IO over 20 – 60 minutes</td></tr><tr><td>Ventricular ectopy:</td><td>5 mg/kg IV/IO over 20 – 60 minutes</td></tr></table>	Ventricular fibrillation/Pulseless V Tach:	300 mg IV/IO Bolus	Narrow/Wide complex tachycardia:	150 mg IV/IO loading dose	Ventricular ectopy:	150 mg IV/IO loading dose	Post resuscitation management:	1 mg/min IV/IO infusion	Ventricular fibrillation/Pulseless V Tach:	5 mg/kg IV/IO Bolus	Narrow/Wide tachycardia with pulse:	5 mg/kg IV/IO over 20 – 60 minutes	Ventricular ectopy:	5 mg/kg IV/IO over 20 – 60 minutes
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Narrow/Wide tachycardia with pulse:	5 mg/kg IV/IO over 20 – 60 minutes														
Ventricular ectopy:	5 mg/kg IV/IO over 20 – 60 minutes														



Amiodarone

Post resuscitation management: 5 mg/kg IV/IO over 20 – 60 minutes

Notes:

Drugs whose effects may be increased by Amiodarone

Propanolol	Beta blocker
Verapamil	Calcium channel blocker
Diltiazem	Calcium channel blocker

Drugs whose effect may increase side effects of Amiodarone

Bretylium	Hypotension
Morphine Sulfate	Hypotension
Fentanyl	Hypotension and bradycardia

Other drug interactions

Dilantin	Decreases serum levels of Amiodarone
Cimetidine	Increases serum levels of Amiodarone
Digitalis	Digitalis toxicity

Supplied: 150 mg vial

Authorization: Paramedic

Other names:	ASA
Class:	Antiplatelet salicylate
Actions:	<p>Permanently binds to platelets inhibiting platelet aggregation; reduces coronary vascular clotting associated with acute myocardial infarction</p> <p>Onset: 1 – 3 minutes</p> <p>Duration: 30 – 60 minutes</p> <p>Half-life: 2 – 6 hours</p>
Indications:	<p>Chest pain with suspected ACS</p> <p>Other cardiac events such as CHF</p>
Contraindications:	<p>Hypersensitivity</p> <p>Pediatric patients</p> <p>Known or suspected active hemorrhage</p> <p>Inherited bleeding disorder</p>
Side Effects:	<p>Esophageal and gastric irritation</p> <p>Nausea/Vomiting</p> <p>Abdominal pain</p> <p>GI bleeding</p> <p>Easier bruising</p>
Dosage:	<p>Adult:</p> <p>324 mg PO for cardiac chest pain or related events.</p> <p>Pedi</p> <p>There are no pediatric indications for this medication</p>
Notes:	<p>Do not use coated ASA. Uncoated tablets should be chewed</p> <p>Patient may take a mouthful of water to wash down medication</p> <p>Should be administered regardless of prior anticoagulation or prior aspirin use</p>
Supplied:	81 mg tablets
Authorization:	<p>Standby EMT</p> <p>Basic EMT</p> <p>Advanced EMT</p> <p>Paramedic</p>

Class:	Anticholinergic
Actions:	<p>Inhibits the action of acetylcholine, blocking vagal responses, thus increasing the heart rate; reverses effects of organophosphate poisons, some mushrooms, and pilocarpine overdose.</p> <p>Onset: Rapid onset</p> <p>Duration: 2 -6 hours</p> <p>Half-life: 2 – 3 hours</p>
Indications:	<p>Symptomatic bradycardia</p> <p>Asystole</p> <p>Organophosphate poisoning</p> <p>Advanced airway procedure (decreases salivation)</p>
Contraindications:	Suspected head injury
Side Effects:	<p>Tachycardia</p> <p>Dilated pupils</p> <p>Headache</p> <p>Dry mouth</p>
Dosage:	<p>Adult:</p> <p>Bradycardia: 0.5 mg Rapid IV/IO. Repeat PRN x 3 q 5 minutes</p> <p>Organophosphate poisoning: 2-6 mg Rapid IV/IO q 5-10 min until symptoms resolve</p> <p>Pediatric</p> <p>Bradycardia: 0.02 mg/kg IV/IO. May repeat once after 5 minutes.</p> <ul style="list-style-type: none"> • Minimum single dose 0.1 mg • Maxi single dose is 0.5 mg <p>Organophosphate poisoning:</p> <ul style="list-style-type: none"> • < 12 yrs old: 0.02-0.05 mg/kg IV/IO every 5-10 minutes until symptoms improve. <ul style="list-style-type: none"> ○ Minimum single dose 0.1 mg. ○ Maximum single dose is 0.5 mg. • 12 yrs and older: 1-2 mg IV initially. If no response, double the dose every 5-10 minutes until symptoms improve. Repeat effective dose as needed. <p>Pre-Intubation: 0.02 mg/kg IV/IO 3-5 minutes before intubation.</p> <ul style="list-style-type: none"> • Minimum single dose 0.1 mg. • Maximum single dose is 0.5 mg.
Notes:	<p>Use caution in the AMI patient</p> <p>Only temporarily effective for organophosphate poisoning. Repeat doses usually necessary.</p>



Atropine

Supplied: 1 mg pre-filled syringe
Multi-dose vial

Authorization: Paramedic



Calcium Chloride

Class:	Electrolyte
Actions:	Improves myocardial contractility and may enhance ventricular automaticity. Stabilizes cardiac membrane Onset: Rapid onset Duration: 30 minutes – 2 hours Half-life: unknown
Indications:	Cardiac arrest with known renal failure Calcium channel blocker toxicity Crush injury with HyperKalemia
Contraindications:	Hypersensitivity Not a first line cardiac arrest drug, except in renal patients DO NOT mix with Sodium Bicarbonate in same IV line. Precipitates when mixed.
Side Effects:	Hypotension Flushing Warm feeling Nausea Cardiac arrhythmias
Dosage:	Adult: 1 g IVP in cardiac arrest with known renal disease 1 g in 100 ml of NS over 10 minutes for symptomatic calcium channel blocker OD. Pediatric 20 mg/kg in 100 ml NS over 10 minutes for symptomatic calcium channel blocker OD. Max dose of 1 g.
Notes:	Rapid push may cause bradycardia Infiltration may cause tissue necrosis
Supplied:	1 g prefilled syringe
Authorization:	Paramedic



Dextrose

Class:	Carbohydrate
Actions:	Provides free sugar for quick absorption into blood and brain. Onset: Rapid onset Duration: Varies Half-life: Varies
Indications:	Symptomatic hypoglycemia
Contraindications:	None for the hypoglycemic patient.
Side Effects:	Hyperglycemia IV infiltration may cause tissue necrosis
Dosage:	Adult: Dextrose 10% IV/IO wide open <ul style="list-style-type: none">• Administer until symptoms resolve or BGL > 60 mg/dL• Repeat blood glucose level check after 10 grams (100mL)• Repeat as needed to maintain adequate mental status and/or BGL > 60 mg/dL Dextrose 50% 12.5—25 g IV/IO <ul style="list-style-type: none">• May be repeated x 1 in 10 min Pediatric: < 1 yr old - Dextrose 10% - Give 5 mL/kg IV/IO bolus. May repeat PRN. 1-12 yrs old - Dextrose 25% - Give 2 mL/kg IV/IO bolus. To make D25%, mix NS 25 mL with D50% 25 mL. > 12 yrs old - Dextrose 50% - Give 1 mL/kg IV/IO bolus.
Notes:	Tissue necrosis occurs with infiltration Dextrose is a quick fix with short duration, patient will still need to eat. Dextrose 50% will cause a spike to BGL followed by sharp rebound, Dextrose 10% causes a more gradual rise.
Supplied:	D10% 25 g in 250 ml NS, premixed IV solution D50 % 25 g prefilled syringe (50mL)
Authorization:	Advanced EMT Paramedic



Diazepam

Other names:	Valium
Class:	Benzodiazepine, CNS depressant
Actions:	Enhances CNS action of GABA neurotransmission producing sedative/anxiolytic effect. Onset: 1 – 3 minutes Duration: 30 – 60 minutes Half-life: 1.5 – 2.5 hours
Indications:	Acute anxiety reactions Alcohol withdrawal to relieve acute delirium tremens or agitations Anticonvulsant Sedation before cardioversion in conscious patients
Contraindications:	Hypersensitivity Hypotension Alcohol Intoxication
Side Effects:	Apnea Hypotension Amnesia Euphoria
Dosage:	Adult: 2 – 10 mg slow IV/IO (4 – 20 mg PR) Lower doses (2 – 5 mg) for elderly and debilitated patients Pediatric 0.2 – 0.3 mg/kg Slow IV/IO (0.4 – 0.6 mg/kg PR) until desired effect If < 10 years, maximum dose of 5 mg If > 10 years, maximum dose is 10 mg
Notes:	Hypotension is common in pediatric and geriatric populations Continuous monitoring of BP, pulse, and SPO2 is mandatory
Supplied:	5 mg/ml vial
Authorization:	Paramedic



Diltiazem

Other names:	Cardizem
Class:	Calcium channel blocker
Actions:	<p>Inhibits calcium ion influx across cell membrane during cardiac depolarization, slows SA /AV node conduction time.</p> <p>Onset: 2 – 5 minutes</p> <p>Duration: 1 – 3 hours</p> <p>Half-life: 3 – 5 hours</p>
Indications:	Unstable atrial fibrillation / flutter with rapid ventricular response (HR > 160 bpm)
Contraindications:	<p>Asymptomatic patient</p> <p>Sick sinus syndrome</p> <p>2nd or 3rd degree block</p> <p>Acute MI</p> <p>Uncontrolled hypotension</p>
Side Effects:	<p>Cardiac dysrhythmia, heart block</p> <p>Bradycardia</p> <p>Hypotension</p> <p>Palpitations</p>
Dosage:	<p>Adult:</p> <p>0.25 mg/kg Slow IV/IO</p> <ul style="list-style-type: none">• Max initial dose is 20 mg <p>If no conversion after 15 minutes, 0.35 mg/kg Slow IV/IO</p> <ul style="list-style-type: none">• Max second dose 25 mg <p>If hypotension is concern, infuse over 10 min in 100 ml NS.</p> <p>Pedi</p> <p>There are no pediatric indications for this medication</p>
Notes:	<p>Manage hypotension with fluid bolus</p> <p>Cut dose in half for patient on beta blockers. Max dose is 10 mg.</p>
Supplied:	25 or 50 mg vial
Authorization:	Paramedic



Diphenhydramine

Other names:	Benadryl	
Class:	Antihistamine	
Actions:	Binds to histamine receptor sites to prevent further allergic response. Onset: Rapid onset Duration: 4 – 8 hours Half-life: 2.4 – 7 hours	
Indications:	Allergic Reaction Dystonic reaction	
Contraindications:	Known drug allergy BP < 90 systolic MAO inhibitor use	
Side Effects:	Drowsiness Hypotension Dizziness Thickened mucous secretions	
Dosage:	Adult: 25 – 50 mg PO/IV/IO/IM or any combination thereof. Pediatric: <ul style="list-style-type: none">• < 6 yrs old: 1 mg IV/IO/IM or any combination thereof• 6-11 yrs old: 25 mg IV/IO/IM/PO or any combination thereof• 12 yrs and older: Use adult dosing	
Notes:	Patient may become extremely drowsy. Patient must be transported after IV/IM administration Standby EMTs should give 25 mg PO on adult patients who will be transported. Paramedic may then administer additional 25 mg IV/IO/IM PRN.	
Supplied:	50 mg vial 25 mg PO tablets/capsules	
Authorization:	<u>Oral</u> Standby EMT Basic EMT	<u>All routes</u> Advanced EMT Paramedic



Dopamine

Class:	Inotropic agent
Actions:	Stimulates alpha and beta-1 adrenergic receptors; produces inotropic and vasopressor effects Onset: Rapid Duration: 1-2 minutes Half-life: 2.5 minutes
Indications:	Hypotension due to cardiogenic, septic, spinal shock
Contraindications:	Known hypersensitivity Hypotension due to hypovolemia
Side Effects:	Dysrhythmias Tachycardia
Dosage:	Adult: 5 – 10 mcg/kg/min IV/IO infusion – Beta 1 stimulant for increased heart rate and contractility 10 – 20 mcg/kg/min IV/IO infusion – Alpha stimulant for peripheral vasoconstriction Pediatric: 2-10 mcg/kg/min IV/IO infusion
Notes:	Can be deactivated by alkaline solutions. Do not give sodium bicarbonate in the same IV line. Beta-blockers may block inotropic response Sympathomimetics may exacerbate tachycardia and/or dysrhythmias Fetal anoxia may occur when used in pregnancy
Supplied:	Premixed 1600 mcg/ml infusion bag
Authorization:	Paramedic

Other names:	Albuterol and Atrovent, albuterol and ipratropium bromide.
Class:	Bronchodialator
Actions:	Stimulates beta-2 receptors to relax bronchial smooth muscles, expand airways Onset: Immediate Duration: 2 – 4 hours Half-life: 2 – 6 hours
Indications:	Asthma / Wheezing Allergic reaction COPD Suspected HypoKalemia with crush injury
Contraindications:	Known allergy to component drugs Congestive heart failure
Side Effects:	Dizziness Tachycardia Hyperactivity Anxiety
Dosage:	<p>Adult: 2.5 mg albuterol and 0.5 mg of atrovent in 3 ml solution via nebulizer. Repeat x2 q 5 min PRN.</p> <p>Pediatric: 2.5 mg albuterol and 0.5 mg of atrovent in 3 ml solution via nebulizer. Repeat x2 q 5 min PRN.</p>
Notes:	May be given in-line in intubated patients May be given in-line to patients on CPAP
Supplied:	Premixed bullet containing 2.5 mg albuterol and 0.5 mg Atrovent in 3 ml NS solution.
Authorization:	<p>Standby EMT</p> <p>Basic EMT</p> <p>Advanced EMT</p> <p>Paramedic</p>



Epinephrine

Other names:	Adrenaline
Class:	Sympathomimetic
Actions:	Stimulates alpha, beta-1, and beta-2 receptors at different doses Onset: IV: Rapid, IM: 5-10 minutes Duration: IV: 20 – 30 Minutes, IM: 1 -4 hours
Indications:	Cardiac arrest Vascular collapse Anaphylactic reaction Bronchospasms
Contraindications:	None in emergent setting
Side Effects:	Ventricular irritability Tachycardia Palpitations Nausea / Vomiting Anxiety
Dosage:	Adult Cardiac Arrest: 1 mg (1:10,000) IV/IO, may repeat q 5 minutes PRN Vascular collapse: 1 mg (1:10,000) IV/IO Anaphylaxis: 0.3 mg (1:1000) IM, may repeat q 5 minutes PRN Bronchospasm: 0.3 mg (1:1000) IM 1 mg (1:1000) in 2 ml NS nebulized, may repeat once PRN Pediatric Cardiac Arrest: 0.01 mg/kg (1:10,000) IV/IO, may repeat q 5 minutes PRN Vascular collapse: 0.01 mg/kg (1:10,000) IV/IO Anaphylaxis: 0.01 mg/kg (1:1000) IM, may repeat q 5 minutes PRN ▪ Max single dose 0.3 mg Bronchospasm: 0.01 mg/kg (1:1000) IM ▪ Max single dose 0.3 mg 1 mg (1:1,000) in 2 ml NS nebulized, may repeat once PRN
Notes:	Obtain 12 lead ECG after administration
Supplied:	1 mg /1ml vial or ampule (1:1,000) 1 mg / 10 ml prefilled syringe or vial (1:10,000)
Authorization:	<u>1:1,000 IM for Anaphylaxis</u> Standby EMT Basic EMT Advanced EMT
	<u>All other uses and forms</u> Paramedic

Other names:	Amidate
Class:	Anesthetic
Actions:	Potentiates the inhibitory neurotransmitter GABA that counteracts excitatory neurotransmitters Onset: within 1 minute Duration: 3 – 5 minutes Half-life: Approximately 75 minutes
Indications:	Conscious sedation for intubation
Contraindications:	Hypersensitivity Sepsis, shock Use with caution in elderly, may need lower dose Use with caution in severe liver or kidney disease, may need lower dose Pregnancy category C – use only if potential benefit justifies the potential risk to the fetus
Side Effects:	Apnea Bradycardia / arrhythmia exacerbation Transient myoclonic movements Anaphylactoid reaction (similar to anaphylaxis, treated similarly)
Dosage:	Adult: 0.3 mg/kg Slow IV/IO <ul style="list-style-type: none">• Max dose 30 mg Pedi 0.3 mg/kg Slow IV/IO <ul style="list-style-type: none">• Max dose 30 mg
Notes:	Rapid administration may cause myoclonic muscle spasms causing jaw clenching and/or laryngospasm resulting in a difficulty airway.
Supplied:	40 mg / 20 ml vial
Authorization:	Paramedic

Other names:	Sublimaze
Class:	Narcotic (Schedule II)
Actions:	<p>Binds to opioid receptors, producing analgesia sedation</p> <p>Onset: Immediate</p> <p>Duration: 30 – 60 minutes</p> <p>Half-life: 3 – 12 hours</p>
Indications:	<p>Control of moderate-severe pain in patients with trauma, potential for hypotension, or abdominal pain</p> <p>Intubation adjunct</p> <p>Transcutaneous pacing adjunct</p>
Contraindications:	<p>Hypersensitivity</p> <p>Hypotension (only with online medical control approval)</p> <p>Neonates < 1 month old due to potential adverse bradycardia</p>
Side Effects:	<p>Apnea / Respiratory depression</p> <p>Hypotension</p> <p>Bronchoconstriction</p> <p>Laryngospasm</p> <p>Chest wall syndrome – rare; stiffness of chest wall after rapid administration of larger doses (> 5 mcg/kg) requiring supportive ventilation/oxygenation</p>
Dosage:	<p>Adult:</p> <p>1 – 2 mcg/kg IV/IO/IN for moderate-severe pain. Repeat q 5 min PRN.</p> <ul style="list-style-type: none"> Max total dose of 200 mcg. <p>Pediatric</p> <p>0.5 – 1 mcg/kg IV/IO/IN for moderate-severe pain. Repeat q 10 min PRN.</p> <ul style="list-style-type: none"> Max total dose 100 mcg
Notes:	<p>DEA Schedule II medication. Follow storage, usage, and disposal guidelines.</p> <p>Causes less histamine release than other opiates, thus less itching and less hypotension.</p> <p>Reversible with naloxone.</p>
Supplied:	50 mcg/ml vial or carpupject
Authorization:	Paramedic



Glucagon

Class:	Antihypoglycemic
Actions:	Stimulates conversion of stored hepatic glycogen to glucose Onset: 5 – 10 minutes Duration: 12 – 27 minutes Half-life: 8 – 18 minutes
Indications:	Hypoglycemia without IV access Beta blocker OD Calcium channel blocker OD Adjunct to epinephrine in anaphylaxis if patient is taking a beta blocker
Contraindications:	Hypersensitivity Allergy to glycerin or phenol Caution in patients with prolonged fasting or malnutrition (low glycogen stores) Caution in patients with adrenal insufficiency
Side Effects:	Nausea / Vomiting Hypotension Tachycardia
Dosage:	Adult: Hypoglycemia 1 mg IM Beta Blocker OD 2 mg in 50 ml NS IV/IO Pediatric Hypoglycemia • IF < 20 kg: 0.5 mg IM • IF > 20 kg: 1 mg IM Beta Blocker OD 0.05 mg/kg IV/IO Max dose of 2 mg.
Notes:	Temporary fix, will still need IV dextrose Consult Medical Control for administration in calcium channel blocker overdose
Supplied:	1 mg vial dry powder to be reconstituted in 1 ml H2O or NS
Authorization:	Advanced EMT Paramedic



Ibuprofen

Other names:	Motrin, Advil, IBU
Class:	NSAID
Actions:	Blocks prostaglandin synthesis, temporarily inhibits platelet aggregation for drug duration Onset: 30 minutes Duration: 6 hours Half-life: 2-4 hours
Indications:	Fever reduction Pain management
Contraindications:	Hypersensitivity Gastritis or known peptic ulcer disease Inherited or acquired bleeding disorders - including anticoagulant use Severe liver or renal disease No ibuprofen tablets < 5 years old
Side Effects:	Esophageal and gastric irritation Nausea Abdominal pain GI bleeding
Dosage:	Adult: 200 – 400 mg PO <ul style="list-style-type: none">• Max daily dosage of 1200 mg Pediatric: 200 mg PO IF > 20 kg and able to swallow pills
Notes:	May be given in conjunction with APAP
Supplied:	200 mg tablets / capsules
Authorization:	Standby EMT EMT Advanced EMT Paramedic

Other names:	Ketalar
Class:	Anesthetic. DEA Schedule III
Actions:	<p>Multiple, including blocking NMDA receptors in the CNS causing decreased sensory processing and dissociative amnesia</p> <p>Onset: IV: 30 seconds, IM: 3 -4 minutes</p> <p>Duration: IV: 5 – 10 minutes, IM: 12 v- 25 minutes</p> <p>Half-life: 2.3 hours</p>
Indications:	<p>Combative patients unresponsive to Midazolam</p> <p>Agitation from suspected alcohol intoxication</p> <p>Agitation from psychosis</p> <p>Preferred pain management for trauma</p>
Contraindications:	<p>Hypertensive crisis</p> <p>Angina</p> <p>Signs of elevated ICP</p>
Side Effects:	<p>Apnea</p> <p>Laryngospasm</p> <p>Increased BP</p> <p>Nausea</p> <p>Increased oral secretions</p>
Dosage:	<p>Adult:</p> <p>Safety sedation: 2 mg/kg IV/IO or 4 mg/kg IM</p> <p>Cardioversion sedation: 0.5 mg/kg IV/IO/IN</p> <p>DSI/RSI Induction: 2 mg/kg IV/IO</p> <p>Pain management: 0.1 – 0.3 mg/kg slow IV/IO/IN</p> <ul style="list-style-type: none"> Max single dose 30 mg 50 – 100 mg IM <p>Pediatric</p> <p>Safety sedation: 1 mg/kg IV/IO or 2 mg/kg IM</p> <p>Cardioversion sedation 0.5 mg/kg IV/IO/IN</p> <p>DSI/RSI Induction: 2 mg/kg IV/IO</p> <p>Pain management: 0.1 mg/kg IV/IO/IN</p> <ul style="list-style-type: none"> Consider placing in 50 ml NS and infuse over 5 min
Notes:	<p>May be administered as an infusion with close monitoring.</p> <p>Midazolam will reduce emergence phenomenon, a schizophrenia mimic that increases risk of injury</p> <p>Airway monitoring and respiratory support are critical</p>



Ketamine

Supplied: 100 mg/ml vial

Authorization: Paramedic



Ketorolac

Other names:	Toradol
Class:	NSAID
Actions:	<p>Inhibits prostaglandin synthesis by competitive blocking of cyclooxygenase; reduces pain</p> <p>Onset: IV: Immediate, IM: 10 minutes</p> <p>Duration: 6 – 8 hours</p> <p>Half-life: 2.5 hours</p>
Indications:	Pain management
Contraindications:	<p>Hypersensitivity</p> <p>Asthma</p> <p>Renal insufficiency</p> <p>Patients that will require surgery (ie. open fractures, deformities)</p> <p>Minor pain</p> <p>History of or active gastrointestinal ulcer, GI bleeding</p> <p>Labor and delivery patients</p> <p>Suspected stroke</p> <p>Inherited or acquired bleeding disorders, including anticoagulation</p>
Side Effects:	<p>Drowsiness</p> <p>Dry mouth</p>
Dosage:	<p>Adult:</p> <p>30 mg slow IV/IO</p> <p>60 mg IM</p> <p>Pediatric</p> <p>There are no pediatric indications for this medication</p>
Notes:	Do not administer with other NSAIDs. Ask patient about recent self-administered NSAIDs
Supplied:	30 mg/ml vial
Authorization:	<p>Advanced EMT</p> <p>Paramedic</p>

Other names:	Trandate
Class:	Beta blocker
Actions:	Reduces blood pressure by s electively antagonizing alpha-1 adrenergic receptors and non-selectively antagonizing beta-1 and beta-2 adrenergic receptors
Onset:	2 – 5 hours
	Duration: 16 – 18 hours
	Half-life: 5.5 hours
Indications:	SBP > 220 mmHg and/or DBP > 120 mmHg
Contraindications:	<ul style="list-style-type: none"> Hypersensitivity Bradycardia AV heart blocks Cardiogenic shock Asthma
Side Effects:	<ul style="list-style-type: none"> Severe bradycardia Syncope Hypotension Nausea / Vomiting Headache Dyspepsia
Dosage:	
Adult: 1	0 mg slow IV/IO. May repeat PRN to achieve 20 % reduction MAP
Pedi:	There are no pediatric indications for this medication
Notes:	<ul style="list-style-type: none"> Not for routine use. May block beta receptors needed for albuterol
Supplied:	5 mg/ml vial or carpuject
Authorization:	Paramedic

Other Names:	Xylocaine, Lidoject		
Class:	Antiarrhythmic		
Actions:	Decreases depolarization, automaticity, and excitability of the ventricle during diastole. Onset: 45 – 90 seconds Duration: 10 – 20 minutes Half-life: 2.5 – 8 hours		
Indications:	Ventricular Fibrillation / Ventricular Tachycardia Pain management during IO use Pre-Intubations to blunt ICP/IOP Malignant PVCs <ul style="list-style-type: none">- Occurring in the context of myocardial ischemia- Occur > 6/min- Occur in salvos (2 or more)- Fall close to a T wave- Multifocal		
Contraindications:	Hypersensitivity Bradycardia 2 nd or 3 rd degree AV blocks Idioventricular or escape rhythms (arise below the AV node) Wolf-Parkinson-White syndrome		
Side Effects:	Nausea / Vomiting Seizures Tachycardia		
Dosage:	Adult Arrhythmias <ul style="list-style-type: none">Initial: 1 mg/kg IV/IO or 2 mg/kg ET if no IV/IOSubsequent: 0.5 mg/kg IV/IO; max of 3 mg/kgInfusion: 2 – 4 mg/min IV/IOIO site anesthetic: 40 mg slow IO push prior to use of line. Pediatric Arrhythmias: 1 mg/kg IV/IO or 2 mg/kg ET if no IV/IO Intubation: 1 mg/kg IV/IO 3 minutes before intubation		
Notes:	2 nd line agent if amiodarone unavailable. Do not administer if amiodarone has been given		



Lidocaine

Supplied: 100 mg 2% prefilled Syringe
2 g/500 ml D5W premixed infusion

Authorization: Paramedic



Lorazepam

Other names:	Ativan
Class:	Benzodiazepine
Actions:	Enhances GABA neurotransmission in CNS producing sedative/anxiolytic effect Onset: 1 – 3 minutes Duration: 30 – 60 minutes Half-life: 1.5 – 2.5 hours
Indications:	Sedation prior to intubation Anxiolytic Chemical restraint Anticonvulsant
Contraindications:	Hypersensitivity Hypotension Alcohol Intoxication
Side Effects:	Apnea Hypotension Amnesia Euphoria
Dosage:	Adult: 1 – 2 mg IV/IO/PR. Repeat x 1 q 5 minutes PRN. Pediatric: 0.1 – 0.2 mg/kg IV/IO/PR. Repeat x 1 q 5 minutes PRN.
Notes:	Hypotension is a common side effect in pediatric and geriatric patients. Continuous monitoring of BP, pulse, and SpO2 is critical.
Supplied:	4 mg/ml vial
Authorization:	Paramedic



Magnesium Sulfate

Other Names:	Sulfamag
Class:	Electrolyte, Anticonvulsant
Actions:	Decreases acetylcholine release from nerve endings; inhibits calcium ions Onset: Immediate Duration: 30 minutes Half-life: 4 hours
Indications:	Refractory Ventricular Fibrillation – Torsades de Pointes Refractory status asthmaticus Pre-eclampsia HTN>180 systolic or 120 diastolic, edema, AMS Eclampsia with seizures
Contraindications:	Heart block Renal failure
Side Effects:	Respiratory Depression CNS depression Heart block Warm, flushed feeling Burning at injection site
Dosage:	Adult: Bronchospasms: 1 g in 10 ml NS slow IV/IO over 2 minutes. Torsades de Pointes: 2 g IV/IO bolus, undiluted. Preeclampsia: 4 g in 250 ml NS slow IV/IO over 10-15 minutes. 4 g IM, divided into 2 g doses, each diluted in 6 ml NS, in each gluteus maximus. Eclampsia (seizure): 4 g in 250 ml NS running wide open. 4 g IM, divided in 2 g doses, each diluted in 6 ml NS, in each gluteus maximus. Pediatric Bronchospasms: 25-50 mg/kg IV/IO bolus, undiluted. Maximum of 2 g. Torsades de Pointes: 25 mg/kg slow IV/IO over 2 minutes. Maximum of 2 g.
Supplied:	0.5 g/ml vial or prefilled syringe
Authorization:	Paramedic



Methylprednisolone

Other names:	Solu-Medrol
Class:	Corticosteroid
Actions:	Inhibits accumulations of inflammatory cells at inflammation sites Onset: Rapid Duration: 7 days Half-life: 18 – 36 hours
Indications:	Allergic reaction Asthma
Contraindications:	Hypersensitivity Sepsis, systemic infection
Side Effects:	Insomnia Hyperglycemia Increase risk for infection Frequent urination
Dosage:	Adult: 125 mg slow IVP/IOP Pediatric: 2 mg/kg slow IVP/IOP, maximum dose 125 mg
Notes:	Use caution in diabetics due to hyperglycemia effects
Supplied:	125 mg vials
Authorization:	Paramedic



Midazolam

Other names:	Versed
Class:	Benzodiazepine
Actions:	Enhances GABA neurotransmission in CNS producing sedative/anxiolytic effect Onset: 1 – 3 minutes Duration: 30 – 60 minutes Half-life: 1.5 – 2.5 hours
Indications:	Sedation for intubation Anxiolytic Chemical restraint Anticonvulsant
Contraindications:	Hypersensitivity Hypotension Alcohol Intoxication
Side Effects:	Apnea Hypotension Amnesia Euphoria
Dosage:	Adult: 2 – 5 mg IV/IO/IN - Repeat once after 5 minutes PRN 4 – 10 mg IM - Repeat once after 5 minutes PRN Pediatric 0.1 – 0.2 mg/kg IV/IO/IM/IN - Repeat once after 5 minutes PRN
Notes:	Hypotension is a common side effect in pediatric and geriatric patients. Continuous monitoring of BP, pulse, and SPO2 is critical.
Supplied:	5 mg/ml vial
Authorization:	Paramedic



Morphine Sulfate

Class:	Narcotic, Schedule II
Actions:	Binds to opioid receptors, producing analgesia sedation Onset: Immediate Duration: 30 – 60 minutes Half-life: 3 – 12 hours
Indications:	Pain management Pulmonary edema associated with CHF Chest pain / cardiac ischemia
Contraindications:	Hypersensitivity Acute abdominal pain Multi-system trauma Use caution in conjunction with other CNS depressants
Side Effects:	Apnea Respiratory depression Hypotension Dizziness Orthostatic hypotension Nausea and vomiting
Dosage:	Adult: 2 – 4 mg IV/IO/IM. Repeat q 10 min PRN <ul style="list-style-type: none">• Max total dose 20 mg• Call Medical Control for additional dosage for burn patients Pediatric 0.05 mg/kg IV/IO/IM. Repeat q 10 min PRN <ul style="list-style-type: none">• Max singles dose is 2 mg• Max total dose is 5 mg
Notes:	DEA Schedule II medication. Follow storage, usage, and disposal guidelines.
Supplied:	10 mg/ml vial or carpuject
Authorization:	Paramedic



Naloxone

Other names:	Narcan	
Class:	Opioid antagonist	
Actions:	Displaces opiates at CNS opiate-occupied receptor sites blocking narcotic effect Onset: 1 – 2 minutes Duration: 45 minutes Half-life: 60 – 90 minutes	
Indications:	Apnea or respiratory depression due to suspected opiate overdose	
Contraindications:	Supraglottic Airway Device in place, Intubated patient, or impending usage of such procedures	
Side Effects:	Can cause flash pulmonary edema upon reversal Large dosages will cause sudden withdrawal symptoms including vomiting, tremors, arrhythmias, etc.	
Dosage:	Adult: 2 mg IV/IO/IN for narcotic OD. Repeat x2 q 10 minutes PRN. Titrate to respiratory response. Pediatric 0.2 mg/kg IV/IO/IN Repeat x1 PRN <ul style="list-style-type: none">• Max single dose of 2 mg. to• Max total dose of 0.4 mg/kg	
Notes:	Titrate to effective respiratory effort Naloxone has no effect on non-opiate depressants Watch for violent reactions when patients regain consciousness For IN administration, 1 ml per nostril	
Supplied:	Prefilled syringe	
Authorization:	<u>Intranasal</u> Standby EMT Basic EMT	<u>All routes</u> Advanced EMT Paramedic



Nitroglycerine

Other names:	NitroStat, Nitrolingual spray
Class:	Vasodilator
Actions:	<p>Venous and arterial dilation resulting in decreased preload, decreased systemic vascular resistance, and decreased myocardial oxygen consumption.</p> <p>Onset: 1-3 minutes</p> <p>Duration: 30-60 minutes</p> <p>Half-life: 1-4 minutes</p>
Indications:	<p>Ischemic chest pain</p> <p>Congestive heart failure (CHF)</p>
Contraindications:	<p>Known hypersensitivity</p> <p>Use of erectile dysfunction medications (<u>Viagra</u>, <u>Cialis</u>, or <u>Levitra</u>) in the past 24 hours.</p> <p>Hypotension, SBP < 100 mmHg</p>
Side Effects:	<p>Headache</p> <p>Nausea/Vomiting</p> <p>Hypotension</p> <p>Palpitations</p> <p>Weakness</p> <p>Vertigo</p>
Dosage:	<p>Adult:</p> <p>0.4 mg SL q 5 min PRN</p> <p>Pediatric:</p> <p><u>Contact Medical Control</u></p>
Side Effects:	<p>Headache</p> <p>Nausea/Vomiting</p> <p>Hypotension</p> <p>Palpitations</p> <p>Weakness</p> <p>Vertigo</p>
Notes:	<p>Obtain 12 Lead prior to use</p> <p>Use with caution if inferior myocardial infarction suspected</p> <p>Nitroglycerin decomposes when exposed to light or heat</p>
Supplied:	0.4 mg Tablets
Authorization:	Paramedic



Norepinephrine

Other names:	Levophed
Class:	Sympathomimetic catecholamine
Actions:	Stimulates alpha and beta-1 adrenergic receptors; produces inotropic and vasopressor effects Onset: Rapid Duration: 1-2 minutes Half-life: 2.5 minutes
Indications:	Distributed, obstructive, or cardiogenic shock
Contraindications:	Hypersensitivity Hypovolemic shock
Side Effects:	Dysrhythmias Tachycardia
Dosage:	Adult: 2 – 12 mcg/min IV/IO infusion Pediatric: <u>Contact Medical Control</u>
Notes:	Can be deactivated by alkaline solutions. Do not give sodium bicarbonate in the same IV line. Beta-blockers may block inotropic response Sympathomimetics may exacerbate tachycardia and/or dysrhythmias Fetal anoxia may occur when used in pregnancy
Supplied:	1 mg/ml vial
Authorization:	Paramedic



Normal Saline

Other names:	0.9% Sodium Chloride	
Class:	Isotonic crystalloid solution	
Actions:	Expands circulating volume by approximating sodium content of the blood. Each liter provides 154 mEq of sodium and 154 mEq of chloride	
Indications:	Maintain a patent intravenous site Hypovolemia Dilution of medication and/or as a flushing agent for rapid IV medication administration Irrigation solution for eyes and wounds	
Contraindications:	Use with caution in CHF patients	
Side Effects:	Fluid overload/Edema Electrolyte imbalance Hypertension	
Dosage:	Adult: 250-500 ml IV/IO bolus Pediatric: 20 ml/kg IV/IO bolus	
Notes:	Frequently auscultate breath sounds for rales which suggests pulmonary edema	
Supplied:	50-1000 ml bags 10 ml prefilled syringe	
Authorization:	<u>Irrigation Only</u> Standby EMT Basic EMT	<u>All other usages</u> Advanced EMT Paramedic



Ondansetron

Other names:	Zofran						
Class:	Antiemetic						
Actions:	<p>Reduces nausea by blocking serotonin receptors in the chemoreceptor trigger zone of the medulla oblongata, thus reducing stimulation of the CNS vomiting center</p> <p>Onset: 3-5 minutes</p> <p>Duration: 4-8 hours</p> <p>Half-life: 3.5-5 hours</p>						
Indications:	Prevention and treatment of nausea and/or vomiting						
Contraindications:	<p>Hypersensitivity</p> <p>ODT contains aspartame and should not be used in patients with phenylketonuria</p> <p>Patients with known or suspected QT prolongation</p>						
Side Effects:	<p>Anxiety</p> <p>Dizziness</p> <p>Drowsiness</p> <p>Fatigue</p> <p>Dry mouth</p>						
Dosage:	<p>Adult:</p> <p>4 mg IV/IO/ODT Repeat q 5 – 10 min PRN</p> <ul style="list-style-type: none">• Max dose 8 mg <p>Pediatric:</p> <p>< 8 kg 2 mg IV/IO only</p> <ul style="list-style-type: none">• Max dose 2 mg <p>> 8 kg 4 mg IV/IO/ODT</p> <ul style="list-style-type: none">• Max dose 4 mg						
Notes:	<p>Do not split tablets</p> <p>Any combination of IV and ODT is allowed</p> <p>Once an IV is established successive doses should be given IV only</p> <p>May cause prolonged QT interval which can potentially lead to arrhythmias</p>						
Supplied:	<p>Vial</p> <p>Oral disintegrating tablets (ODT)</p>						
Authorization:	<table><tr><td><u>ODT only</u></td><td><u>All routes</u></td></tr><tr><td>Standby EMT</td><td>Advanced EMT</td></tr><tr><td>Basic EMT</td><td>Paramedic</td></tr></table>	<u>ODT only</u>	<u>All routes</u>	Standby EMT	Advanced EMT	Basic EMT	Paramedic
<u>ODT only</u>	<u>All routes</u>						
Standby EMT	Advanced EMT						
Basic EMT	Paramedic						



Oral Glucose

Other names:	Glucose 15, Glucose Gel
Class:	Carbohydrate glucose source
Actions:	Provides rapid sugar for quick absorption in the blood stream Onset: 10 minutes Duration: Varies Half-life: N/A
Indications:	Hypoglycemia
Contraindications:	Inability to protect airway Unconscious
Side Effects:	Hyperglycemia
Dosage:	Adult: 15 Grams PO - Repeat PRN Pediatric: 7.5 – 15 Grams PO
Notes:	Effects may be short-lived. Patient will need to eat ASAP.
Supplied:	Tube or gel pack
Authorization:	Standby EMT Basic EMT Advanced EMT Paramedic



Oxygen

Other names:	O ₂
Class:	Element/Medical Gas
Actions:	Supplemental O ₂ added to inspired air increases the amount of oxygen in the blood, thus increasing overall tissue oxygen delivery
Indications:	Hypoxemia (Oxygen saturations below 94%) Suspected carbon monoxide poisoning Decreased myocardial work At the discretion of the EMS personnel
Contraindications:	Avoid oversaturation in suspected cardiac ischemia
Side Effects:	None for short term emergency use Prolonged use in patients with chronic respiratory diseases will decrease respiratory drive
Dosage:	<i>Titrate to patient's need</i> Adult: Nasal cannula: 1-6 lpm (provides 24%-44% oxygen) Nebulizer: 6-8 lpm (provides 35%-50% oxygen) Simple face mask: 6-12 lpm (provides 40%-60% oxygen) Non-rebreather: 10-15 lpm (provides 90%-100% oxygen) BVM w/100%O ₂ : 15-20 lpm (provides 100% oxygen with full reservoir) Pediatric: Same as indicated for adult
Notes:	Do not withhold O ₂ for COPD patients
Supplied:	Refillable cylinders
Authorization:	Standby EMT Basic EMT Advanced EMT Paramedic



Promethazine

Other names:	Phenergan
Class:	Antiemetic/Antihistamine
Actions:	<p>Competitively blocks histamine (H1) receptors. It does not block the release of histamine. The central anti-muscarinic actions of antihistamines are most likely responsible for the antiemetic and anti-vertigo effects.</p> <p>Additionally, promethazine potentiates the effects of narcotics</p> <p>Onset: 3-5 minutes</p> <p>Duration: 4-12 hours</p> <p>Half-life: 9-16 hours</p>
Indications:	Nausea/vomiting
Contraindications:	<p>Hypersensitivity</p> <p>Altered Mental Status</p> <p>Hypotension</p> <p>Large ingestion of sedatives</p> <p>Use with caution in asthma patients</p> <p>Use with caution in epileptic patients</p>
Side Effects:	<p>Drowsiness</p> <p>Dry mouth</p> <p>Dizziness</p> <p>Dystonia</p> <p>Hypotension or hypertension</p>
Dosage:	<p>Adult:</p> <p>12.5 mg IV/IO/IM or slow IV drip</p> <ul style="list-style-type: none">- Add 12.5 mg to 20 ml NS for slow IVP over 2 minutes- Add 12.5 mg to 50 ml NS for IV drip over 10 minutes <p>Pedi:</p> <p>There are no pediatric indications for this medication</p>
Notes:	<p>Consider dose reduction in elderly patients.</p> <p>Dilute prior to administration</p>
Supplied:	25 mg Vial
Authorization:	<p>Advanced EMT</p> <p>Paramedic</p>



Rocuronium Bromide

Other names:	Zemuron
Class:	Non-depolarizing paralytic
Actions:	Competitively inhibits cholinergic receptors at the nerve motor end plate causing neuromuscular paralysis Onset: 1-3 minutes Duration: 60-90 minutes Half-life: 1.5-2.5 hours
Indications:	Provide muscle relaxation to facilitate tracheal intubation and to provide skeletal muscle relaxation during mechanical ventilation.
Contraindications:	Hypersensitivity Patient who is not intubated
Side Effects:	Apnea Hypoventilation
Dosage:	Adult: 1 mg/kg IV/IO Pediatric: 1 mg/kg IV/IO
Notes:	Must be refrigerated End-tidal CO ₂ and SpO ₂ monitoring is mandatory Does NOT induce sedation, therefore continued sedation is required to reduce the instance of wakeful paralysis.
Supplied:	Vial
Authorization:	<u>In-Charge Paramedic only</u>



Sodium Bicarbonate

Class:	Systemic alkalizer
Actions:	<p>Reacts with hydrogen ions to form water and carbon dioxide and thereby can act to buffer metabolic acidosis. Corrects metabolic acidosis by neutralizing excess acid in the blood, helping to return the blood towards a physiologic pH in which metabolic processes and sympathomimetic agents work more efficiently.</p> <p>In TCA overdose, alkalization of serum pH increases protein binding of TCAs. This significantly lessens the potential for toxicity.</p>
Indications:	<p>Cardiac arrest with a down time of > 10 minutes</p> <p>Tricyclic Antidepressant (TCA) overdose</p> <p>Known preexisting bicarbonate-responsive acidosis</p> <p>Crush injury</p> <p>Chlorine, Nitrogen Dioxide, or Phosgene gas exposure</p> <p>Ethylene Glycol ingestion</p>
Contraindications:	<p>Cardiac arrest without suspected cause</p> <p>Metabolic and respiratory alkalosis</p>
Side Effects:	<p>Metabolic alkalosis, hypernatremia, hyperkalemia, and hyperosmolarity</p> <p>Electrolyte imbalance</p> <p>Seizures</p> <p>Renal Calculi</p>
Dosage:	<p>Adult:</p> <p>Initial: 8.4% solution 1 mEq/kg IV/IO</p> <p>Subsequent: 8.4% solution 0.5 mEq/kg IV/IO</p> <p>Ethylene Glycol ingestion: 8.4% solution 1 mEq/kg SLOW IV/IO if patient appears very ill</p> <p>Chlorine, Nitrogen Dioxide, or Phosgene gas exposure:</p> <ul style="list-style-type: none">• Wheezing present: nebulized 8.4% solution (2 ml in 2ml NS) <u>with DuoNeb</u> treatment• No Wheezing: nebulized 8.4% solution (2 ml in 2ml NS)• May repeat once after 20 minutes <p>Pediatric:</p> <p>Same as indicated for adult</p> <p>For Ethylene Glycol ingestion:</p> <ul style="list-style-type: none">• 8.4% solution 0.5 mEq/kg SLOW IV/IO if patient appears very ill• Infant < 1 year receive 4.2% Sodium Bicarb
Notes:	<p>Treatment of choice for acidosis is oxygenation and ventilation</p> <p>DO NOT mix in the same line with Calcium Chloride</p>
Supplied:	Prefilled syringe or Vial
Authorization:	Paramedic



Tetracaine Ophthalmic Solution

Other names:	Tetracaine
Class:	Anesthetic
Actions:	Tetracaine prevents initiation and transmission of nerve impulses thereby effecting local anesthesia. Onset of anesthesia usually begins within 30 seconds and last a relatively short period.
Indications:	Topical pain relief for the eye
Contraindications:	Hypersensitivity Open or disrupted globe
Side Effects:	Stinging Burning Conjunctival redness
Dosage:	Adult: 1-2 drops PRN to the injured eye(s) Pediatric: Same as indicated for adult
Notes:	Prolonged use results in diminished duration of anesthesia Patients should be advised not to touch or rub the eye(s) until the effect of the anesthetic has worn off On very rare occasions, a severe, and immediate allergic corneal reaction may occur characterized by acute diffuse epithelial keratitis with filament formation and/or sloughing of large areas of necrotic epithelium
Supplied:	Multi-use dropper
Authorization:	Standby EMT Basic EMT Advanced EMT Paramedic



Thiamine

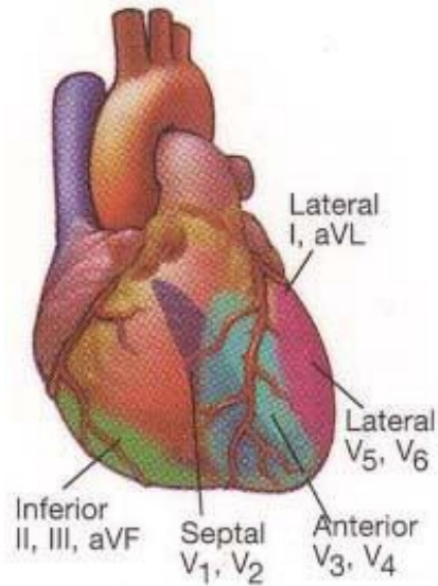
Other names:	Thiamilate, Vitamin B1
Class:	Vitamin
Actions:	Thiamine is essential for the normal metabolism of carbohydrates and fats. Thiamine combines with ATP to form thiamine pyrophosphate coenzyme, a necessary component for carbohydrate metabolism.
Indications:	Patients presenting with S/S of alcohol toxicity, Wernicke's syndrome, or Koraskoff's psychosis. Unconscious patient of unknown etiology. Thiamine should be administered prior to D50 and Naloxone
Contraindications:	Hypersensitivity
Side Effects:	Hypotension Diaphoresis Nausea/Vomiting Weakness Tingling
Dosage:	Adult: 100 mg IV/IO/IM Pediatric: 10-25 mg IV/IO/IM
Notes:	In alcoholics, thiamine deficiency causes Wernicke's syndrome, an acute and reversible encephalopathy (brain dysfunction characterized by: <ul style="list-style-type: none">• Ataxia (defective muscular coordination)• Eye muscle weakness• Mental derangements
Supplied:	25 mg Vial
Authorization:	Advanced EMT Paramedic



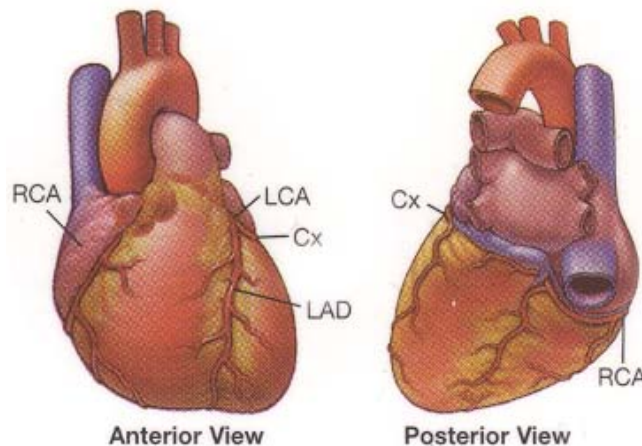
Tranexamic Acid

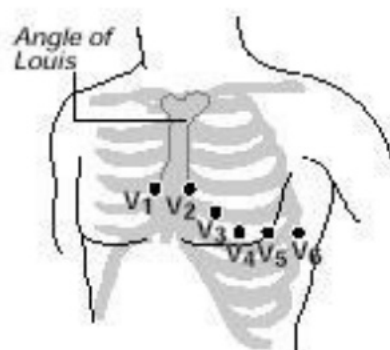
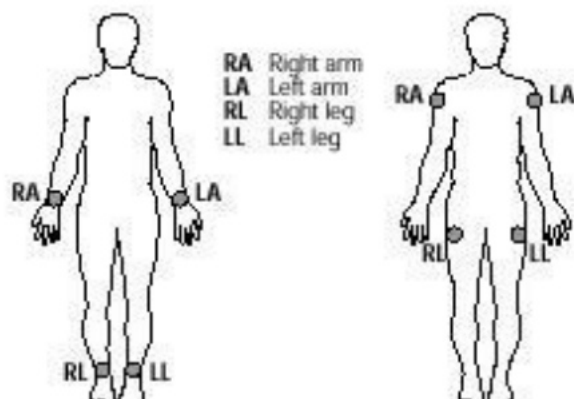
Other names:	TXA
Class:	Antifibrinolytic
Actions:	Interferes with clotting cascade by inhibiting plasminogen activation Onset: 5-15 minutes Duration: 3 hours Half-life: 2 hours
Indications:	Hemorrhagic shock, traumatic mechanism with evidence of hemorrhage
Contraindications:	Hypersensitivity Injury > 3 hours Isolated head injury
Side Effects:	Vision changes Seizures Renal impairment Ureteral obstruction
Dosage:	Adult: 1 Gram in 100 mL NS infused IV/IO over 10 minutes Pedi: There are no pediatric indications for this medication
Notes:	Use with caution in patients with history of DVT, pulmonary embolism, potentially active MI, or severe renal failure
Supplied:	Vial
Authorization:	Paramedic

12-Lead ECG in Relation to Anatomy of the Heart:



I lateral	aVR	V ₁ septal	V ₄ anterior
II inferior	aVL lateral	V ₂ septal	V ₅ lateral
III inferior	aVF inferior	V ₃ anterior	V ₆ lateral





Precordial lead electrode placement

Lead	Location
V1	Fourth intercostal space to the right of the sternum.
V2	Fourth intercostal space to the left of the sternum.
V3	Directly between leads V2 and V4.
V4	Fifth intercostal space at midclavicular line.
V5	Level with V4 at left anterior axillary line.
V6	Level with V5 at left midaxillary line (directly under the midpoint of the armpit).

Ambulance Acceptable Abbreviations

Below is a list of acceptable abbreviations that may be used for filing Medicare claims. Please contact the clinical department if additional abbreviations become common in the industry so that we may update the list.

Abd	Abdomen, abdominal
ABG	Arterial blood gases
A-fib	Atrial fibrillation
ALS	Advanced life support
ASA	Aspirin
BBB	Bundle branch block
bilat.	Bilateral
BLS	Basic life support
BP, B/P	Blood pressure
c/c	Chief complaint
CHF	Congestive heart failure
CNS	Central nervous system
COPD	Chronic obstructive pulmonary disease
CPR	Cardiopulmonary resuscitation
C-spine	Cervical spine
CVA	Cerebrovascular accident
DM	Diabetes mellitus
DOA	Dead on arrival
EKG	Electrocardiogram
ER	Emergency room
ETOH	Ethanol alcohol
fx	Fracture

GEN	General
Hx	History
IM	Intramuscular
inj, injs	Injuries
IV	Intravenous
LOC	Loss of consciousness
MVA	Motor vehicle accident
NTG	Nitroglycerine
O ₂	Oxygen
OBS	Organic brain syndrome
PVS, PVCs	Premature ventricular contractions
RBBB	Right bundle branch block
resp.	Respiration
SOB	Shortness of breath
SMR	Spinal Motion Restriction
ST	Street
THPY	Therapy
TIA	Transient ischemic attack
TKO	To keep open
Tx	Treatment
Vfib, V-fib	Ventricular fibrillation
VS, V/S	Vital Signs
Vtach/V-tach	Ventricular tachycardia

APGAR Score

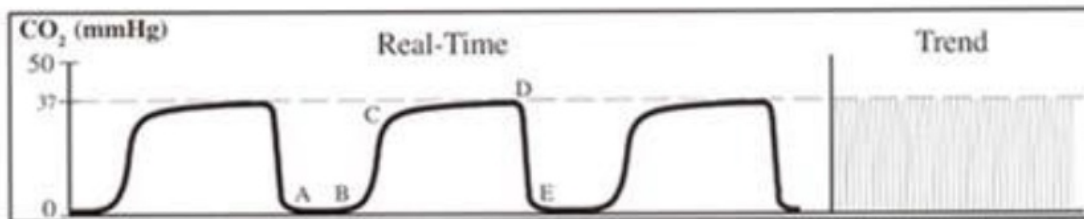
SIGN	0	1	2
Heart Rate	Absent	Below 100	Over 100
Respiration (Effort)	Absent	Slow and irregular	Normal crying
Muscle Tone	Limp	Some flexion-extremities	Active; good motion in extremities
Irritability	No response	Crying; some motion	Crying; vigorous
Skin Color	Bluish or paleness	Pink or typical newborn color; hands and feet are blue	Pink or typical newborn color; entire body

Normal Pediatric Vital Signs

Age	Weight (kg)	Heart Rate	Systolic BP	Respirations
Newborn	3	100 – 160	50 – 70	30 – 60
1 – 6 weeks	4	100 – 160	70 – 95	30 – 60
6 months	7	90 – 120	80 – 100	25 – 40
1 year	10	90 – 120	80 – 100	20 – 30
3 years	15	80 – 120	80 – 100	20 – 30
6 years	20	70 – 100	80 – 100	18 – 25
10 years	30	60 - 90	90 - 120	15 - 20

***Neonate is less than 1 month of age**

Normal Capnogram

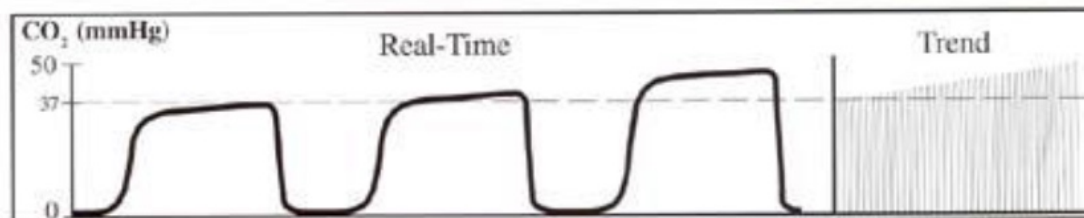
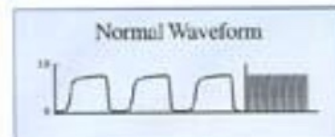


The "normal" capnogram is a waveform which represents the varying CO_2 level throughout the breath cycle.

Waveform Characteristics:

- A-B Baseline
- B-C Expiratory Upstroke
- C-D Expiratory Plateau
- D End Tidal Concentration
- D-E Inspiration Begins

Increasing $ETCO_2$ Level

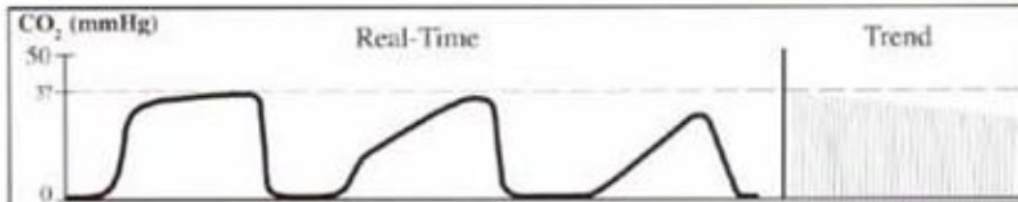
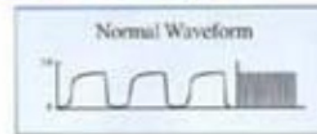


An increase in the level of $ETCO_2$ from previous levels.

Possible Causes:

- Decrease in respiratory rate (hypoventilation)
- Decrease in tidal volume (hypoventilation)
- Increase in metabolic rate
- Rapid rise in body temperature (malignant hyperthermia)

Obstruction in Breathing Circuit or Airway

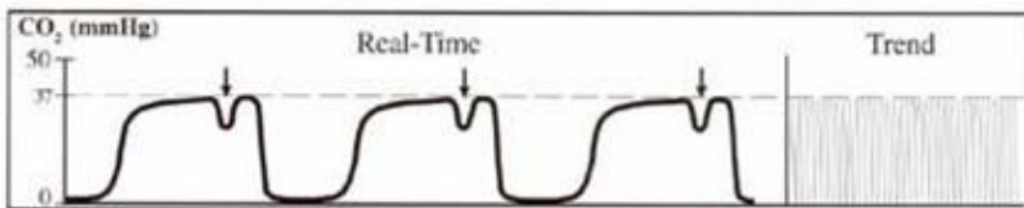
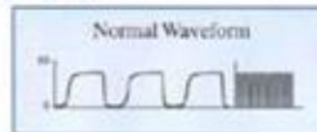


Obstructed expiratory gas flow is noted as a change in the slope of the ascending limb of the capnogram (the expiratory plateau may be absent).

Possible Causes:

- Obstruction in the expiratory limb of the breathing circuit
- Presence of a foreign body in the upper airway
- Partially kinked or occluded artificial airway
- Bronchospasm

Muscle Relaxants (curare cleft)

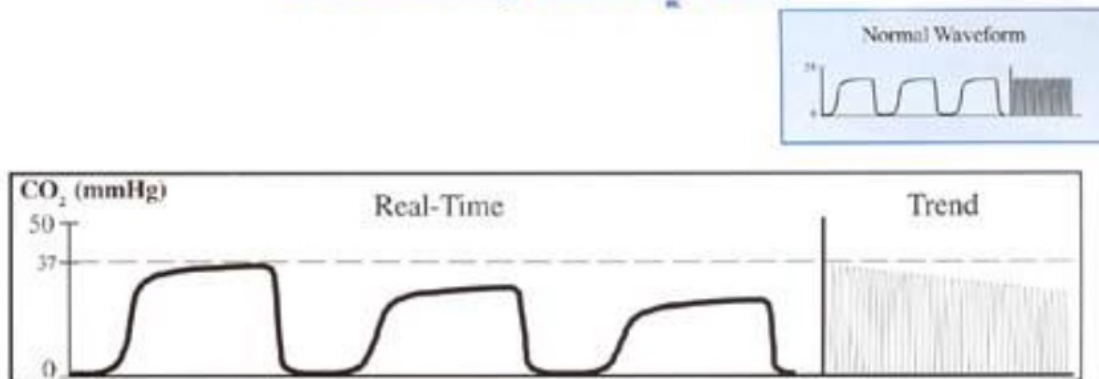


Clefts are seen in the plateau portion of the capnogram. They appear when the action of the muscle relaxant begins to subside and spontaneous ventilation returns.

Characteristics:

- Depth of the cleft is inversely proportional to the degree of drug activity
- Position is fairly constant on the same patient but not necessarily present with every breath

Decreasing $ETCO_2$ Level

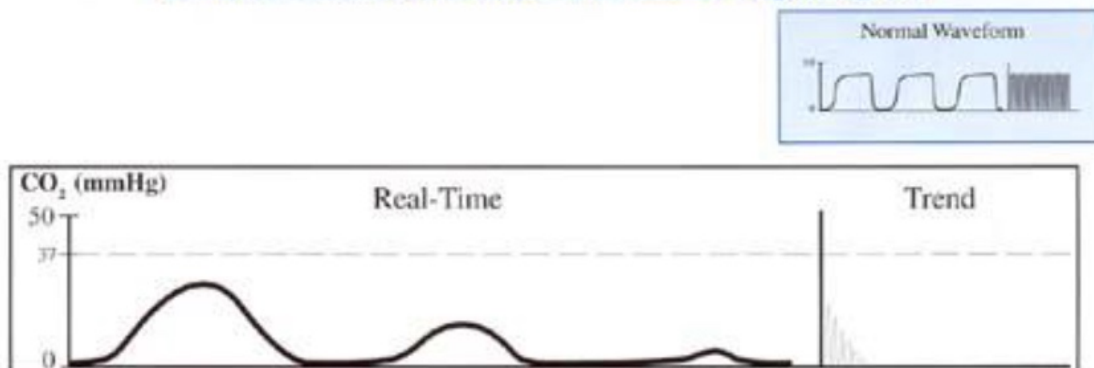


A decrease in the level of $ETCO_2$ from previous levels.

Possible Causes:

- Increase in respiratory rate (hyperventilation)
- Increase in tidal volume (hyperventilation)
- Decrease in metabolic rate
- Fall in body temperature

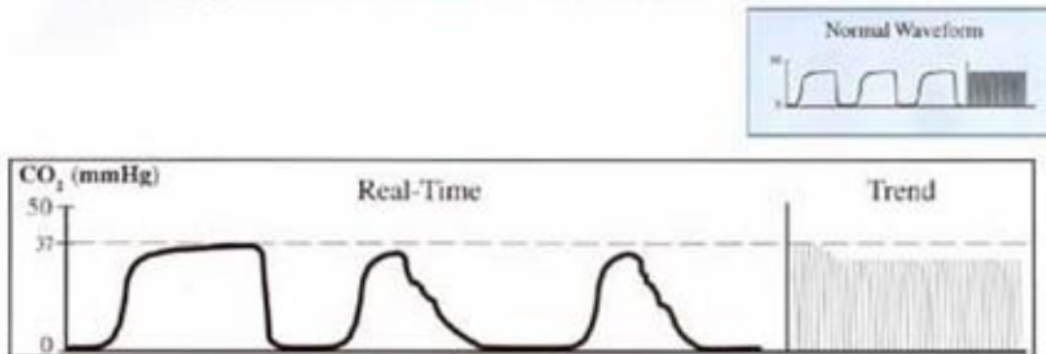
Endotracheal Tube in the Esophagus



Waveform Evaluation:

A normal capnogram is the best available evidence that the ET tube is correctly positioned and that proper ventilation is occurring. When the ET tube is placed in the esophagus, either no CO_2 is sensed or only small transient waveforms are present.

Inadequate Seal Around Endotracheal Tube

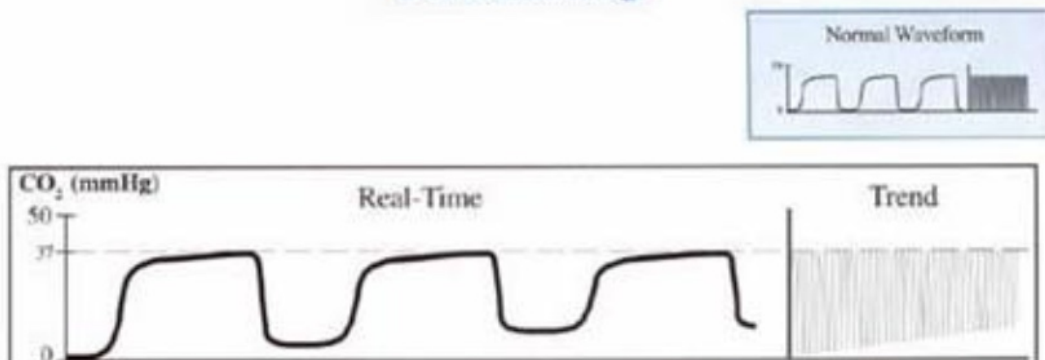


The downward slope of the plateau blends in with the descending limb.

Possible Causes:

- A leaky or deflated endotracheal or tracheostomy cuff
- An artificial airway that is too small for the patient

Rebreathing

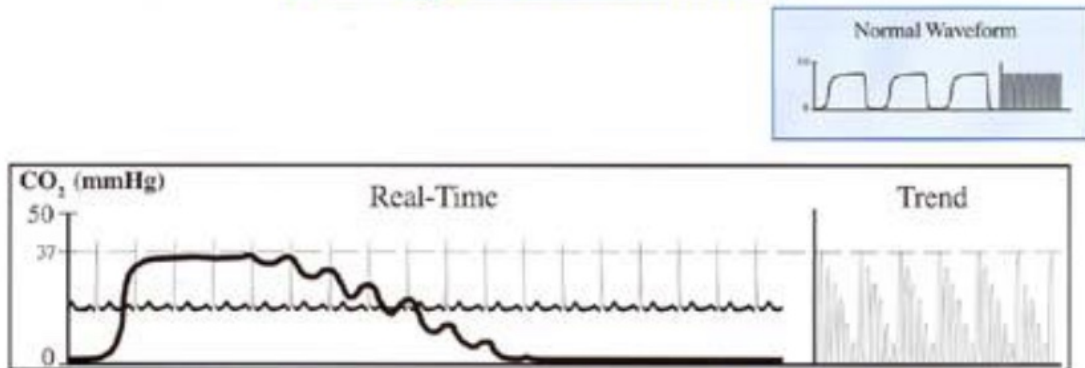


Elevation of the baseline indicates rebreathing (may also show a corresponding increase in ETCO_2).

Possible Causes:

- Faulty expiratory valve
- Inadequate inspiratory flow
- Malfunction of a CO₂ absorber system
- Partial rebreathing circuits
- Insufficient expiratory time

Cardiogenic Oscillations



Cardiogenic oscillations appear during the final phase of the alveolar plateau and during the descending limb. They are caused by the heart beating against the lungs.

Characteristics:

- Rhythmic and synchronized to heart rate
- May be observed in pediatric patients who are mechanically ventilated at low respiratory rates with prolonged expiratory times



Glasgow Coma Scale (GCS)

Glasgow Coma Scale (GCS): Adult and Pediatric Combined GCS

*Note: Modifications for age appropriate response for **infant/young children** are typed in **bold print**.*

EYE OPENING RESPONSE	BEST VERBAL RESPONSE	BEST MOTOR RESPONSE
4 pts = Open spontaneously	5 pts = Oriented & converses Appropriate words and phrases Cries appropriately, coos, babbles	6 pts = Obeys commands Normal spontaneous movement
3 pts = To verbal stimuli To speech, to shout	4 pts = Disoriented & converses Irritable cry	5 pts = Localizes pain Withdraws to touch
2 pts = To painful stimuli	3 pts = Inappropriate words Inappropriate crying/screaming	4 pts = Flexion withdrawal Withdraws to pain
1 pt = No response	2 pts = Incomprehensible sounds / words Grunts	3 pts = Flexion abnormal (decorticate)
	1 pt = No response	2 pts = Extension (decerebrate)
		1 pt = No response
Risk of injury is high with GCS < 14. COMA is defined by GCS = 8		
Any patient with a GCS < 9, consider intubation and hyperventilate at 12 to 20 breaths per minute to reduce cerebral swelling.		



Infusion Calculations

Drip Rates for IV Tubing

	Macro Drip IV Tubing 10 gtts/ml	Mini Drip IV Tubing 60 gtts/ml
mL/hr	gtts/min	gtts/min
30 This is TKO	5	30
45	8	45
60	10	60
75	13	75
100	17	100
125	21	-
150	25	-
175	29	-
200	33	-
225	38	-
250	42	-
300	50	-

Dopamine Drip Rate (60 gtt set)

400 mg of Dopamine in 250 cc Solution

	5 mcg	10 mcg	15 mcg	20 mcg
Weight (kg)	gtts/min	gtts/min	gtts/min	gtts/min
40	8	16	24	36
50	10	20	30	40
60	12	24	36	48
70	14	28	42	56
80	16	32	48	64
90	18	36	54	72
100	20	40	60	80
110	22	44	66	88
120	24	48	72	96
130	26	52	78	104
140	28	56	84	112
150	30	60	90	120
160	32	64	96	128
170	34	68	102	136
180	36	72	108	144
190	38	76	114	152
200	40	80	120	160



Infusion Calculations

Lidocaine Drip Rate

For pre-mixed bag of 2 g / 500 ml (4 mg/ml)

Lidocaine Drip Rate (mg/min dose)	
mg/min	ml/hr
1	15
2	30
3	45
4	60

Amiodarone Drip

Dose: 1 mg/minute	Preparation: 100 mg in 100 ml NS	Administration: 60 gtt set @ 60 drops/minute
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Amiodarone Infusion

Dose: 150 mg over 10 minutes	Preparation: 150 mg in 100 ml NS	Administration: 100 gtt set @ 100 drops/minute
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Pediatric Lidocaine Infusion

Dose: 20 – 50 µg/kg/min	Preparation: 100 mg lidocaine in 100 mL NS	Dosage: 20 µg/kg/min 6 drops/min per 5 kg 30 µg/kg/min 9 drops/min per 5 kg 40 µg/kg/min 12 drops/min per 5 kg 50 µg/kg/min 15 drops/min per 5 kg
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Mallampati Signs as Indicators of Difficult Intubation



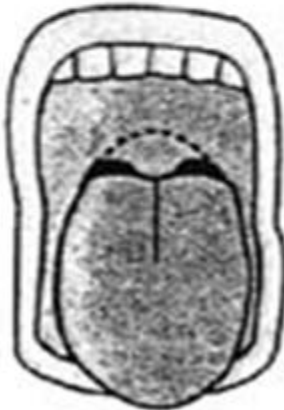
Class I: soft palate, uvula, fauces, pillars visible

No difficulty



Class II: soft palate, uvula, fauces visible

No difficulty



Class III: soft palate, base of uvula visible



Class IV: hard palate only visible



Oxygen Duration

Formula for Calculating Oxygen Duration

Gage Pressure – 200 psi x Cylinder Constant = Duration in min					
<i>Cylinder Endurance</i>					
Cylinder Size	D	E	G	M	H/k
Cylinder Constants	0.16	0.28	2.41	1.56	3.15
Capacity (liters)	300	600	1000	3450	6500
Flow Rate (liters/min)					
2	2:30	5:00	8:20	28:45	54:00
4	1:15	2:30	4:10	14:20	27:00
6	0:50	1:40	2:45	9:35	18:00
8	0:35	1:10	2:05	7:10	13:30
10	0:30	1:00	1:40	5:45	11:00
15	0:20	0:40	1:05	3:50	7:15

* Endurance times in hours and minutes are approximations based on full tank pressures

Oxygen Flow Rates and %

Oxygen Device	Flow Rate	Oxygen %
Nasal Cannula	2 – 6 LPM	25 – 40%
Simple Face Mask	6 – 12 LPM	40 – 60%
NRB Mask	10 – 12 LPM	90 – 100%
BVM	10 – 15 LPM	100% with Reservoir

Assessing Pain

Onset/Origin – What were you doing when the pain began? Did your stomach begin to hurt immediately after you were kicked by the horse (somatic) or several hours later after you vomited (visceral)? Somatic pain usually comes on abruptly while visceral pain more gradually.

Provocation – What makes the pain worse or better? Does your chest hurt each time you take a breath and move your intercostal muscles (somatic) or is it made worse with exertion and anxiety (visceral)?

Quality – What does the pain feel like? Is it sharp like a stabbing pain (somatic) or dull like a throbbing ache or pressure (visceral)?

Referred/Region/Radiation – Where does it hurt? Is your pain only in your shoulder you injured (somatic), or does the pain radiate from your abdomen into your back (visceral)?

Severity – Can you rate your pain on a scale of 1 to 10?

Time – How long have you had this pain? Has it been there only since the injury (somatic) or for many months (neuropathic)?

The Wong-Baker Faces Pain Rating Scale



Designed for children aged 3 years and older, the Wong-Baker Faces Pain Rating Scale is also helpful for elderly patients who may be cognitively impaired. It offers a visual description for those who don't have the verbal skills to explain how their symptoms make them feel.

To use this scale, you should explain that each face shows how a person in pain is feeling. That is, a person may feel happy because he or she has no pain (hurt), or a person may feel sad because he or she has some or a lot of pain.

Face 0 is very happy because he or she doesn't hurt at all.

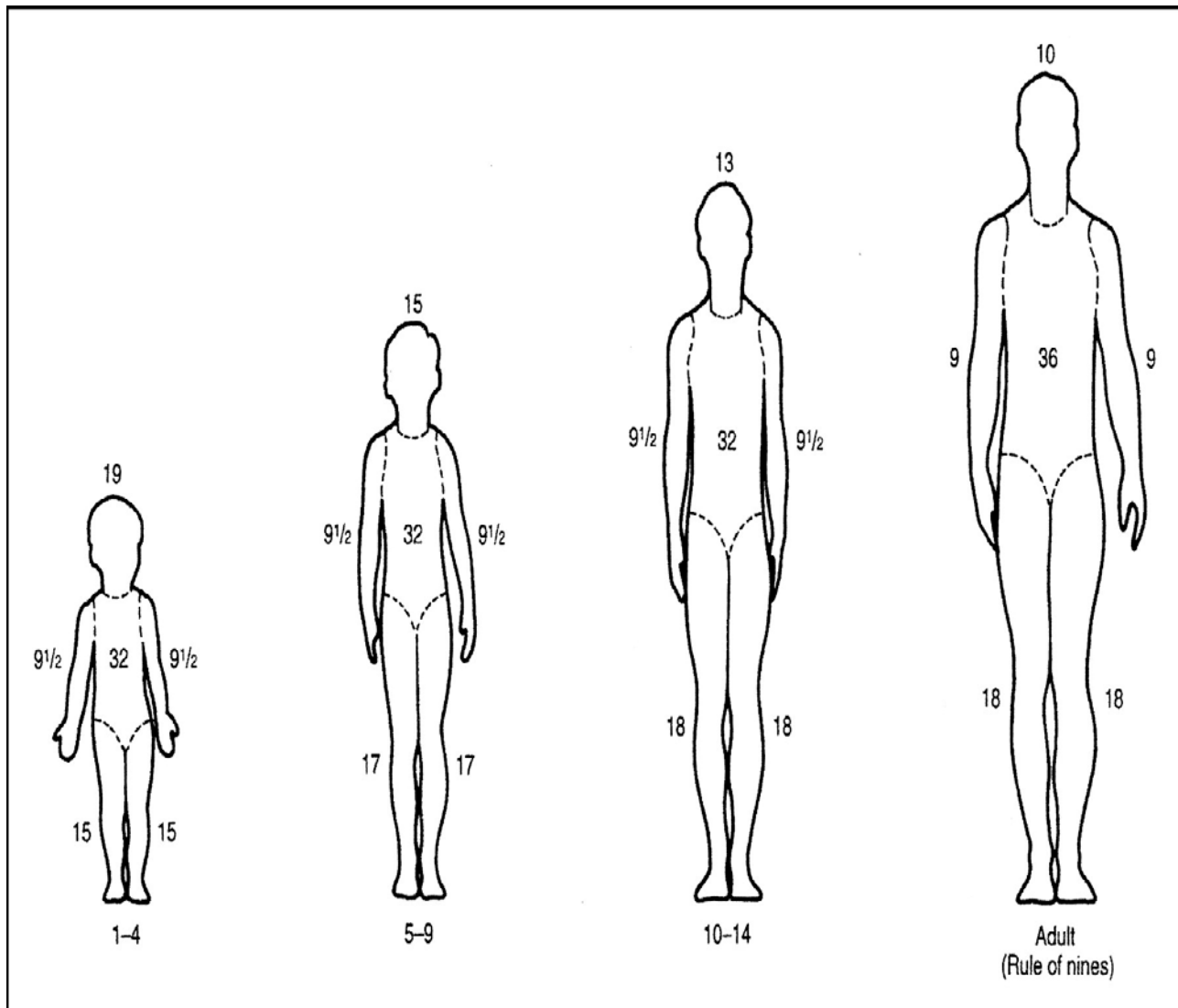
Face 1 hurts just a little bit.

Face 3 hurts even more.

Face 4 hurts a whole lot.

Face 5 hurts as much as you can imagine, although you don't have to be crying to feel this bad.

You should point to each face using the words to describe the pain intensity. The patient should then choose the face that best describes how they feel.



Pediatric Trauma Score

ASSESSMENT SCORE	+2	+1	-1	SCORE
WEIGHT	Child/Adolescent > 20 kg	Toddler 11 – 20 kg	Infant < 10 kg	_____
LEVEL OF CONSCIOUSNESS	Awake	Obtunded or loss of consciousness	Unconscious or Unresponsive	_____
AIRWAY	Normal	Assisted O2, cannula or NRB	Intubated or Tracheostomy	_____
SYSTOLIC BLOOD PRESSURE	>90 mmHG, Good peripheral pulses and perfusion, palpable radial or brachial pulse	51 – 90 mmHg, Palpable femoral or carotid pulse	< 50 mmHg, Weak or pulseless	_____
FRACTURE	None seen or suspected	Single closed fracture	Open or multiple fractures	_____
CUTANEOUS	No visible injury	Contusions, abrasion, laceration < 7 cm not through fascia	Tissue loss, GSW or puncture through fascia	_____
				Total Points

Adult Revised Trauma Score

GCS	14 – 15	5
	11 – 13	4
	8 – 10	3
	5 – 7	2
	3 – 4	1
Respiratory Rate	10 – 24 /Min	4
	25 – 35 /Min	3
	>35 /Min	2
	1 – 9 /Min	1
	None	0
Respiratory Expansion	Normal	1
	Retractive/None	0
Systolic Blood Pressure	>90 mmHG	4
	70 – 89 mmHg	3
	50 – 69 mmHg	2
	0 – 49 mmHg	1
	No Pulse	0
Capillary Refill	Normal	2
	Delayed	1
	None	0
Total Trauma Score	Total Points	



Zoll X Series Transmission

Indications:

- Facilitate delivery of a 12-lead to a receiving hospital or agency

Contraindications:

- None

Procedure

1. Following 12-lead acquisition, the Transmit quick access key (open envelope image)
2. Then press the Patient Info Quick Access Key
3. Press the 12-lead review next quick access key
 - i. A list of snapshots appears
 - ii. Select the desired snapshot
4. Press the “12 inside envelope” button. A list of preconfigured distribution lists appears
5. Use the navigation keys to highlight and select the desired list
 - i. A green check box indicates the selected list
 - ii. When a destination has been selected, the “Transmit” button is enabled
6. Press “Transmit” to initiate the 12-lead process. While the transmission is in process, the green LED on top of the unit is illuminated

Critical Points:

- Internet connectivity is necessary
- Because there is no delivery confirmation, remember to call the receiving agency for transmission confirmation