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Required ALS Equipment / Drug List

The following is a minimum standard of supplies to be carried on all WCVEMS ambulances while operating at ALS level or above. It is encouraged that all units consider increased supplies based on need and call volume.

In some circumstances, the fluid and drugs on this page may be supplied in concentrations or amounts other than those listed. It is the ALS providers responsibility to ensure all equivalent total amounts are present and that correct dosages are administered to patients.

Medications may be supplied in generic or brand name, and are considered interchangeable.

ITEM	QTY	ITEM	QTY
All BLS Equipment Requirements	As Listed	Pedi IV Arm Board	2
BAAM	1	PEEP Valve	1
Blood Y	2	Pre-Filled Saline Flush	4
Cardiac Monitor with AED capabilities	1	Saline Lock	4
Batteries (spare)	1	Sterile Water for Injection	1 bottle
EKG Paper	2	Syringes (1cc, 3cc, 5cc)	4 each
EKG Electrodes	1 bag	20 cc Syringe	2
Auto BP Cuff (XL , L, youth)	1 each	Adenosine (6mg / ml)	5 vials
Razor or equivalent	1	Amiodorone (50mg / ml)	3 vials
Pulse Oximeter or equivalent	1	Ativan (2mg / ml) (Carpject)	2
CPAP Regulator and O2 hoses	1	Atropine (0.1mg / ml) (Abboject)	3
CPAP Hose and Mask	2	Atrovent (0.5mg / 2.5ml)	4 bullets
Cricothyrotomy Kit or equivalent	1	Benadryl (50mg / ml)	2 vials
Defibrillator Pads (Pedi/Adult)	2 each	Calcium Chl (100mg / ml) (Abboject)	1
Endotracheal Tube Inducer	1	Cardizem (5mg / ml)	3 vials
ET Tubes or equivalent (2.5 - 8.5)	2 each	Dextrose 50% (0.5G / ml) (Abboject)	2
EZ-IO Kit: or equivalent	1	Dopamine Premixed (1600mcg / ml)	1 bag
1 1/8-15g Needle	1	Epi 1:10,000 (0.1mg / ml) (Abboject)	6
Drill	1	Epinephrine 1:1000 (1mg / ml)	2 ampules
Needles (Pedi / Adult)	2 each	Etomidate (2mg / ml)	2 vials
Pressure Cuff	1	Fentanyl (50mg / ml)	2 vials
Extension Set or equivalent	2	Glucagon (1 mg/ml reconstituted)	1
Hurricane Spray or equivalent	1	Labetalol (5mg / ml) (Carpjects)	3
Injection Needles (18g, 25g)	4 each	Lasix (10mg / ml)	2 vials
IV Catheters:		Lidocaine (100mg / 5ml) (Bristoject)	3
14g x 1.25"	6	Lidocaine Premix Drip (4mg / ml)	1 bag
14g x 2"	4	Magnesium Sulfate (0.5G / ml)	4 vials
16g, 18g, 20g, 22g, 24g	6 each	Morphine (10mg / ml) (Carpject)	2
IV Start Kits	4	Narcan(1mg / ml) (Bristoject)	2
Laryngoscope Batteries (spare)	2 each	Nitroglycerine Paste (15mg / inch)	1 tube
Laryngoscope Blades:		Phenergan (25mg / ml)	1 vial
Miller & Macintosh(1, 2, 3, 4)	1 each	Sodium Bicarb 4.2% (0.5mEq / ml)	1 Abboject
Laryngoscope Handle (pedi, adult)	1 each	Sodium Bicarb 8.4% (1mEq / ml)	2 Abboject
Maxi Drip (when no Multi present)	6	Solumedrol (125mg /2ml) (Actovial)	2
Mini Drip (when no Multi present)	6	Solumedrol (1G / vial) (Actovial)	3
Mucosal Atomization Device	2	Succinylcholine (20mg / ml)	2 vials
Multi Drip (replaces Mini/Maxi)	6	Thiamine (100mg / ml)	1 vial
Nasogastric Tube (14fr, 16fr)	2 each	Vecuronium (1mg /ml reconstituted)	1 bottle
Normal Saline Bags:		Versed (5mg / ml)	2 vials
100cc, 250cc	2 each	Zofran (4mg / 2ml)	2 vial
500cc	6		

Required BLS Equipment / Drug List

The following is a minimum standard of supplies to be carried on all WCVEMS ambulances while operating at BLS level or above. It is encouraged that all units consider increased supplies based on need and call volume.

In some circumstances, the fluid and drugs on this page may be supplied in concentrations or amounts other than those listed. It is the BLS providers responsibility to ensure all equivalent total amounts are present and that correct dosages are administered to patients.

Medications may be supplied in generic or brand name, and are considered interchangeable.

ITEM	QTY	ITEM	QTY
10cc Syringe	4	No Smoking Signs (cab and box)	1 each
2 Way Communication	1	Non-Adhesive Non-Sterile Bandage	2 loafs
60cc Syringe	2	Non-Adhesive Sterile Bandage	2 boxes
Adhesive Bandages	1 box	OB Kit + accessories	1
Adjustable C-Collars (adult / pedi)	4 each	Occlusive dressing	4
Adult / Pedi NRB	4 each	OPA (40, 60, 80, 90, 100, 110mm)	1 each
Adult / Pedi Traction Splint	1 each	Pedi / Neonate BVM (or combination)	1 each
Adult BVM	2	Pedi SPO2 Probe or equivalent	1
Alcohol Preps or equivalent	20	Penlight	1
Ammonia Inhalants or equivalent	4	Personal Skin Cleanser	1 box
Backboards	3	Portable O2 Bottle	2
Bandaging Roll or equivalent	10	Portable O2 Regulator	1
Biohazard Bags	1 roll	Protective Eyewear	2
Bite Block or equivalent	1	Protective Gowns	2
BP Cuff (infant, pedi, adult, lg adult)	1 each	Protective Masks	2
Broslow Tape	1	Rectal Thermometer Attachment	1
Burn Dressing or equivalent	2	Reflective Road Triangles	3
Burn Sheet or equivalent	6	ResQPod or equivalent	1
Cardboard Splint (sm, med, lg)	2 each	Rigid Suction Device w/ Tubing	2
Child Car Seat	1	Saline for Irrigation	4 bottles
Colormetric Device or equivalent	2	Scoop Stretcher	1
Commercial Tourniquet	1	Sharps Container	2
Commercial Tube Securing Device	2	Sharps Shuttle	1
Convenience Bag or equivalent	2	Small Volume Nebulizer	4
Disinfectant Spray or equivalent	1	Soft Suction Catheter (8fr, 12fr, 14fr)	2 each
Emergency Blanket or equivalent	2	Stairchair	1
Emergency Response Guide	1	Sterile Water for Irrigation	2 bottles
EpiPen* / EpiPen Jr*	1 each	Stethoscope	2
Fire Extinguisher	1	Stretcher	1
Flashlight	1	Suction Canister	2 each
Gloves (sm, med, lg, xl)	1 box each	Tape (1" and 2") or equivalent	2 each
Glucometer	1	Thermometer	1
Glucometer Strips	5	Thermometer Probes	1 box
Head Blocks	4	Trauma Shears	1
Hot / Cold Pack	4 each	Trauma Tape or equivalent	2
Hydrogen Peroxide	1 bottle	Triangular Bandage	6
KED	1	Webbing or equivalent	4
King Tube(2.5, 3, 4, 5) or equivalent	1 each	Wire Splint or equivalent	2
Lancets or equivalent	5	Acetaminophen (160mg / 5ml)	1 bottle
Lubrication Gel or equivalent	2	Activated Charcoal (25G)	2 bottles
Map Book (Waller Co. / Harris Co.)	1 each	Albuterol UD Bullets (2.5mg / 3ml)	4 UD
Mounted / Portable Suction	1 each	Aspirin (81mg / tablet)	1 bottle
Mounted Onboard O2 Cylinder	1	Ibuprofen (100mg / 5ml)	1 bottle
Multi-Trauma Pad or equivalent	4	Nitroglycerin Spray (0.4mg MD)	1 bottle
Nasal Canula	4	Oral Glucose (15G)	2 tubes

PREAMBLE

This is a guide to the emergency pre-hospital assessment and management of clearly manifested medical and traumatic emergencies. Only Texas State certified, or licensed, EMS personnel who are members or employees of Waller County EMS may utilize these orders. Each member must be successfully evaluated in practical and written formats prior to functioning under these standing orders.

Standing orders will be followed while in the confines of WCEMS primary jurisdiction. Additionally when a WCEMS ambulance happens upon any emergency outside of our primary jurisdiction, they will stop and provide care as outlined in these protocols when there is no patient on board. In the event that any off duty EMS personnel happen upon an emergency, whether in or out of WCEMS primary jurisdiction, the personnel have full authorization to follow these protocols.

Standing orders may be extended to EMS students under the direct supervision of the WCEMS provider in-charge. Students will perform skills and assessments only to their level of certification or training.

Effective Date: September 30, 2010
Expiration Date: March 31, 2013

Kenneth G. Ro, M.D.
Medical Director
Waller County EMS

Randy Tingler
Clinical Supervisor
Waller County EMS

The previous drugs / supplies are required to be on all WCEMS ambulances as listed. This list is mandated by medical direction.

Submitted By:
Randy Tingler
Clinical Supervisor

Approved By:
Kenneth G. Ro, M.D.
Medical Director

STANDING ORDERS

GUIDELINES FOR UTILIZING STANDING ORDERS

The following standing orders are meant to serve as guidelines for patient care. It is impossible to outline treatment sequences for every situation you will encounter. Each patient should be treated individually and appropriately, utilizing sound clinical judgment and these protocols as guidelines. The receiving hospital should be notified as soon as practical; however, this practice is a courtesy and should never interfere with patient care. If the clinical picture is clouded or complicated, on-line consultation with the receiving emergency department physician, on duty supervisor, clinical director, or Dr. Ro should be utilized.

Therapies are to be utilized at WCEMS protocol level, not state certification level. The following is a brief summary of skills allowed at each level.

APPROVED ECA PROVIDERS can:

- Scene survey and requesting additional resources
- Triage
- Basic airway management including O2 administration, suctioning, King Tube airway placement, bag valve mask assisted breathing and ResQPOD.
- CPR and AED use
- Basic patient assessment
- Assess vital signs, blood glucose levels and pulse oximetry
- Assist in delivery of the newborn
- Basic intervention in bleeding control/burn management
- Musculoskeletal movement restriction
- Vehicle rescue
- Documentation of patient care
- Verbal patient care reports to receiving hospital staff
- Rehabilitation of ambulance/infection control.
- Apply MAT tourniquet
- Assist advanced provider with skills as requested (within basic scope of practice).

APPROVED EMT-BASIC PROVIDERS can:

- Perform all of the functions listed above for ECA providers.
- Administer Aspirin, Albuterol, Nitroglycerine, and Oral Glucose, assist patient with self-administration of an Epi-pen or metered dose inhaler.
- Administer Tylenol PO and Motrin PO for adult and pediatric fevers.
- Administer CPAP.

APPROVED EMT-INTERMEDIATE PROVIDERS can:

- Perform all of the functions listed above for EMT-Basic providers.
- Administer Tylenol PR and Motrin PR for adult and pediatric fevers.
- Intravenous cannulation and fluid administration including adult and pediatric IO.
- Administration of Dextrose IV/IO/PR in hypoglycemic patients after assessing BGL.
- Administration of Glucagon IM/SQ in hypoglycemic patients after assessing BGL.
- Administration of Epinephrine IV/IO in pulseless patients.
- Endotracheal / Nasotracheal intubation.
- Administration of Narcan IV/IO/IM/IN in patients suspected to be under the influence of narcotics.
- Administration of Thiamin IV/IO/IM to patients exhibiting signs of alcohol toxicity or malnutrition.
- Insertion of Nasogastric Tube.

APPROVED EMT-PARAMEDIC PROVIDERS can:

- ❑ Perform all of the functions listed above for EMT-Intermediate providers.
- ❑ Apply and interpret electrocardiographic assessment (3, 4, 12, and 15-lead)
- ❑ Administer appropriate pharmacological therapy for assessed conditions in symptomatic patients.
- ❑ Intramuscular administration of all approved medications.
- ❑ Intranasal administration of all approved medications.
- ❑ Perform chest Needle Decompression.
- ❑ Perform pain and sedation management with Fentanyl, Morphine, Versed, Ativan, and Etomidate.

APPROVED SENIOR PARAMEDICS / SUPERVISORS can:

- ❑ Perform all of the functions listed above for EMT-Paramedic providers.
- ❑ Perform Pharmacologically Assisted Intubations
- ❑ Perform Field Termination of resuscitation
- ❑ Perform Surgical Cricothyrotomy
- ❑ Authorize extended transport destinations.

TRANSPORT DESTINATION CRITERIA

- ❑ All Patients requesting ambulance transport will be transported by ambulance.
- ❑ The medical and/or surgical needs of the critically ill or injured patient are always the primary consideration in determining transport destination.
- ❑ In general, critically ill medical and trauma patients should be transported to the closest appropriate facility unless the patient's condition can be best treated at another facility and the patient's condition is stable enough for the longer transport distance.
- ❑ Critically injured patients require rapid transport to the closest hospital capable of handling the multiple trauma patient. Determination of appropriate transport destination should be based upon the patient's immediate condition, location of the call, possible traffic delays and the needs of the patient in the critical first hour of trauma. When in doubt, refer to TSAQ guidelines.
- ❑ Transport of the urgent and/or non-urgent patient shall be to the hospital of the patient's choice with regards to current system status and the capabilities of the hospital. If the patient insists on being transported to a facility that is not capable of treating their injury/illness, they must sign a waiver stating they understand the risks of their decision. Should the system be stressed at the time of the transport, or the requested destination is outside of the normal transport area, consult the on-duty supervisor for further guidance.
- ❑ See next page for **Hospital Capabilities**.

CAPABILITIES

HOSPITAL ER	Trauma Level	STEMI	ROSC Hypo-thermia	Stroke	NICU Labor / Delivery	Adult ICU	Ortho-Pedics	CPAP Capable	CT	Sexual Assault	Dialysis	Hyper-Barics
Air Medical	1	N/A	N/A	PHI / LF	PHI / LF	N/A	PHI / LF	N/A	N/A	N/A	N/A	N/A
Bellville General	N/A	NO	NO	NO	NO	NO	NO	YES	YES	NO	NO	NO
Brenham-Scott & White	3	NO	NO	NO	YES	YES	NO	YES	YES	NO	NO	NO
CyFair	N/A	YES	YES	NO	YES	YES	YES	YES	YES	NO	YES	YES
Katy-Memorial Hermann	N/A	NO	YES	YES	YES	YES	YES	YES	YES	YES	YES	NO
Katy-Christus St. Catherine	N/A	YES	YES	NO	YES	YES	YES	YES	YES	NO	YES	NO
College Station Medical	3	YES	YES	NO	YES	YES	YES	YES	YES	YES	YES	YES
Navasota-St. Joseph	N/A	NO	NO	NO	NO	NO	NO	YES	YES	NO	NO	NO
North Cypress	N/A	YES	YES	YES	NO	YES	YES	YES	YES	NO	YES	NO
Bryan-St. Joseph	3	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
College Station-St. Joseph	N/A	NO	NO	NO	NO	NO	NO	YES	YES	YES	NO	NO
Tomball	N/A	YES	YES	YES	YES	YES	YES	YES	YES	NO	YES	YES

These are the Hospitals that WCEMS staff are allowed to transport to without advance approval. Transport to an ER not on this list must be pre-approved by the on-duty Supervisor. Also keep System Status in mind when transferring to a listed hospital that is outside your present district. If in doubt, contact Supervisor.

If you are transporting to a hospital not listed, or for reasons not listed, it is the crew's responsibility to contact that ER prior to initiating transport to verify their capabilities.

TSA-Q

FACILITY DIVERSION GUIDELINES

SUBJECT: Diversion of Emergency Medical Services (EMS) traffic from emergency facilities.

PURPOSE: To define uniform system guidelines for a hospital requesting diversion of EMS traffic to an alternate hospital.

ACKNOWLEDGMENTS:

- ❑ System hospital facilities, both Trauma Centers and non-Trauma Centers, should request diversion activation only when the resources and capabilities of that facility have been exhausted to the point that further ambulance traffic would jeopardize the care and treatment of patients at that facility as well as any subsequent patient transported to that facility by an ambulance.
- ❑ It is recognized in advance that no diversion strategy can guarantee total compliance with these guidelines and it is likely that ambulances will deliver patients to hospitals which have requested diversion activation. It is further understood that a request for diversion activation is honored as a courtesy by the local EMS system.
- ❑ Each facility is responsible for defining facility-specific policies and procedures for implementation of these guidelines.
- ❑ Diversion activation by a facility is understood to be a request applicable to all ambulance traffic regardless of a patient's injury or illness and regardless of the diversion activation rationale. It is understood that EMS personnel will not attempt to screen patients transported to a facility based upon the diversion categories identified hereunder.

DEFINITIONS:

Transfer: Movement of a patient from one hospital to another based upon the patient's need (inter-hospital transport)

Bypass: Intentional movement of a patient from the scene to a specific hospital, **not necessarily the nearest hospital**, based upon the patient's medical need.

Diversion: Intentional movement of a patient from the scene to an alternate hospital capable of providing appropriate care at the request of the nearest hospital due to lack of available resource or capability.

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

DIVERSION ACTIVATION CATEGORIES;

- ❑ ED saturation
- ❑ ICU saturation
- ❑ OR saturation
- ❑ Internal disaster

AUTHORIZATION FOR DIVERSION STATUS IMPLEMENTATION AND DEACTIVATION:

- ❑ Hospital administrator or designee; and
- ❑ Trauma Director or designee

TSA-Q FACILITY DIVERSION GUIDELINES Con't

COMMUNICATION OF DIVERSION STATUS

- ❑ A hospital must notify the local EMS system dispatch and on-line medical direction source of a request for diversion activation and deactivation
- ❑ A hospital must provide the local EMS system with the applicable diversion activation category identified previously
- ❑ A hospital must provide the local EMS system dispatch and on-line medical direction source the names of the administrator or designee and Trauma Director or designee authorizing diversion implementation and deactivation.

TIME PERIOD FOR DIVERSION STATUS;

- ❑ Diversion request will be in allotment up to eight (8) hours. A hospital may deactivate a diversion request at any time.
- ❑ A hospital must notify the local EMS system dispatch and on-line medical direction source to request an extension beyond each eight (8) hour allotment.
- ❑ Neglect or failure of a hospital to notify the local EMS system dispatch and on-line medical direction source at the end of the requested eight (8) hour allotment will result in automatic deactivation of that hospital's diversion request.

AUTHORIZATION FOR OVER-RIDE OF DIVERSION STATUS:

The on-line medical direction source may over-ride a diversion status after consideration of the following:

- ❑ Severity of the patient
- ❑ Distance and estimated time to an alternate appropriate facility
- ❑ Inclement weather conditions
- ❑ Resource availability and capability of the transporting pre-hospital provider
- ❑ All potential receiving facilities within a 15 minute radius of the patient location have requested diversion consideration
- ❑ Patient refuses transport to another designated facility.

SYSTEM MONITORING AND QI

- ❑ Each hospital will be requested to document and report diversion activities to the SETTRAC QI Committee on a quarterly basis.
- ❑ Each EMS system will be requested to document and report to the SETTRAC QI Committee those situations where a diversion request has not been honored or has been over-ridden by the on-line medical direction source.

MEDICAL / LEGAL CONSIDERATIONS

DUTY TO ACT

Waller County Emergency Medical Services (WCEMS) has a duty to respond to all calls for medical aid within the geographical boundaries of our service area and, when resources are available, to recognized mutual aid agencies. Once treatment is rendered, WCEMS personnel have a duty to care for that patient until there is a transfer of care to someone of appropriate medical training according to patient condition.

PATIENT CONSENT / REFUSAL OF TREATMENT

1. If a patient (or legal patient representative) requests evaluation and treatment from WCEMS, they will be actively encouraged to seek evaluation by a physician. If they consent, they will be transported to the appropriate acute care facility. Under no circumstances will WCEMS refuse or deny treatment to any patient who requests medical assistance.
2. Minor patients (under the age of 18 years old) shall not be permitted to decline/refuse medical care or EMS transport without obtaining an informed refusal from the parent, legal guardian, or other authorized family members or caregivers. If the parent or legal guardian refuses needed medical care for their child, and EMS feels the child is in danger of losing life or limb, contact law enforcement and the on-duty supervisor.
3. Any patient, who appears to be impaired or have altered mental status, cannot be permitted to decline or refuse medical care or transportation. When orientation is questionable, opt for treatment and transport.
4. Patients who present with the following will be strongly discouraged from declining/refusing EMS transport:
 - Chest pain or symptoms of ischemic heart disease.
 - Dyspnea/respiratory distress
 - Hypertension
 - Abdominal pain with significant findings (orthostatic changes, guarding, rigidity, hematemesis, melena, rebound tenderness, abdominal surgery within last year).
 - Overdoses / Poisonings – accidental or intentional.
 - Seizures
 - Any complaint or abnormal finding possibly related to a known or suspected pregnancy including abdominal pain of unknown etiology in a female of childbearing potential.
 - Any evidence of injury to the head, spine, chest, abdomen or pelvis.
 - Known or suspected abuse victims – child or adult. Contact CPS / APS, and law enforcement if care is refused.
 - Any patient that receives advanced and/or invasive treatment then refuses further care or transport. This includes medications of any type.
5. Any patient refusing treatment or transport against medical advice will be informed of EMS findings and that further harm could result without appropriate treatment. This will constitute an “informed refusal”, will be considered “Against medical Advice” (AMA) and will be documented as such. The on-scene EMS providers have the option to request the on-duty supervisor to review a potential AMA refusal. All AMA refusals will be documented and completed thoroughly by the on-scene Paramedic in-charge.

DOCUMENTATION

In all cases where an ambulance is dispatched, whether patient contact is established or not, a report will be completed detailing response to incident, patient contact, assessment, treatment, response to therapy and any events at the receiving facility. Records will include:

- Dispatched complaint
- Actual C/C and reason EMS called.
- Level of consciousness including GCS (minimum of baseline and ending)
- Physical exam findings.
- Complete set of vital signs upon arrival on scene, during care, and upon discharge. (at least 2 sets),
- Any diagnostic findings (ECG, blood glucose, SpO2, etc).
- Any attempts and number of attempts offering EMS transport including any outside assistance.
- Condition of patient at presentation and discharge.
- Reason patient is refusing and patient understands the risks of such a refusal.
- Patient's plans for seeking physician evaluation.
- Names of people present who witnessed patient's refusal and your attempt to encourage the patient to seek follow-up care.
- All EKG tracings and Vital signs trending page.
- Pain scale if applicable (minimum of baseline and ending and after each pain management attempt)
- All applicable signatures.
- Hospital Face Sheet.
- Demographics and insurance information.

PHYSICIAN ASSISTANCE

- **PHYSICIAN ON SCENE**

Occasionally a physician will attempt to provide assistance at the pre-hospital scene. When this occurs, if this physician is an emergency physician or a physician adequately trained in emergency medical care, every attempt should be made to utilize the physician appropriately. The following provides guidelines for a physician at the pre-hospital emergency scene.

- **THE GOOD SAMARITAN PHYSICIAN**

This physician has no previous connection or relationship with the patient. The doctor should be courteously informed that you are functioning under delegated practice of a licensed physician Medical Director. To take control of the scene, the physician must:

1. Submit verification of physician status by proving proof of medical licensure or verifiable personal identification by personnel on scene. If this status cannot be verified, assistance should be courteously declined.
2. The physician must be willing to assume responsibility for the patient at the scene, in transport and until relieved by another physician in the emergency department. This physician must accompany the crew and patient to the hospital and sign the patient care report as the "in charge" health care provider.
3. WCEMS personnel will not perform any treatments or procedures that are not in their scope of practice.

- **PHYSICIAN IN HIS/HER OFFICE OR OTHER MEDICAL FACILITY:**

1. The physician in his/her office may elect to take charge and supervise the EMS management of the patient provided they will be physically present in the transporting ambulance.
2. If the physician is not willing to be present during transport, EMS crews will revert to WCEMS protocols for appropriate therapy.

INDIVIDUALS ON SCENE

• CERTIFIED/LICENSED INDIVIDUALS ON SCENE

Individuals that possess a valid EMS certification and/or other healthcare license but are not members of WCEMS may be allowed to assist Waller County EMS personnel in rendering patient care under the following conditions:

1. The individual may only provide basic care under the direct supervision of a Waller County EMS In-charge or Supervisor on scene
2. The individual may not administer any advanced or invasive treatment even if they possess an advanced certification.

• BYSTANDERS ON SCENE

- Non-Certified bystanders may not render patient care.
- Bystanders whom are approved First Responders for Waller County EMS may render patient care within their approved level and/or as deemed necessary by the on-scene WCEMS in-charge personnel.

• LAW ENFORCEMENT PERSONNEL ON SCENE

- Medically certified/licensed law enforcement personnel may assist WCEMS with basic care as deemed necessary by the on-scene WCEMS in-charge personnel.
- Law Enforcement personnel whom are approved First Responders for Waller County EMS may render patient care within their approved level and/or as deemed necessary by the on-scene WCEMS in-charge personnel.

• FIRE DEPARTMENT PERSONNEL ON SCENE

- Medically certified/licensed fire department personnel may assist WCEMS with basic care as deemed necessary by the on-scene WCEMS in-charge personnel.
- Fire department personnel whom are approved First Responders for Waller County EMS may render patient care within their approved level and/or as deemed necessary by the on scene WCEMS in-charge personnel.

PATIENT RESTRAINT (See Behavioral Emergency protocol for use of chemical restraints)

Indication:

Any patient presenting with altered mental status that represents a danger to themselves or others and is refusing needed treatment may be physically restrained and transported to a medical facility.

Precautions:

- Any attempt at physical restraint involves risk to the patient and the EMS personnel. Do not attempt to restrain a patient without assistance. The rescuer's safety is primary.
- Physical restraints are to be used as a last resort. Initially, all possible means of verbal persuasion must be used and documented.
- Do not restrain a patient in supine position that is at risk for vomiting (i.e. intoxicated, head injury, etc.).
- Written and verbal reports must accurately document the necessity for physical restraints. Record the patient's limb condition before applying the restraints. Monitor ABC's every 2 – 5 minutes throughout transport and document. Recheck distal circulation and record patient's condition on arrival at the hospital.

CONFIDENTIALITY

All information regarding patient information is protected under the Health Insurance Portability and Accountability Act (HIPAA). The exception to this is in the event that a criminal act has been committed or is confessed to the crew. In this case, law enforcement officials will be notified. Do not release a patient report to anyone except for the receiving ER. All others need to request a copy from the Executive Director in person. Ensure all reports are completed, synced from laptop, proofread for accuracy, locked, and faxed with all documents attached upon return to station.

OUT-OF-HOSPITAL DO-NOT-RESUSCITATE ORDERS (OOH DNR)

IDENTIFYING OOH DNR FORM AND ID DEVICES

There are two devices approved by Texas Department of Health to identify that a patient has an advanced directive in the form of a Do-Not-Resuscitate order:

Texas OOH-DNR Form

An original Texas OOH DNR form can be identified by a red symbol in the shape of the State of Texas in the upper left hand corner with the word "STOP" imposed over it and the words "DO NOT RESUSCITATE" beside it. A copy of this form is included in these protocols.

An original or photocopy of this form shall be honored by all WCEMS personnel. Photocopies of this form are to include page 2 (instructions) either copied onto the back of page 1 or attached to page 1. Page 2 does not have to be included for photocopy to be valid as long as page 1 appears to be properly completed.

Texas OOH DNR ID Necklace or Bracelet

The following shall be honored by WCEMS personnel in lieu of the original or copy of OOH DNR form:

An intact, unaltered, easily identifiable **plastic** identification OOH DNR bracelet, with the word "Texas" (or a representation of the geographical shape of Texas and the word "STOP" imposed over the shape) and the words "Do Not Resuscitate".

OR

An intact, unaltered, easily identifiable **metal** bracelet or necklace inscribed with the words, "Texas Do Not Resuscitate - OOH".

PROPERLY COMPLETED TEXAS OOH DNR

The following sections must be completed in order for a Texas OOH DNR to be valid:

- Section 1: Patient's name and date of birth
- Section 2: Signatures, dates and appropriate boxes marked in either box A, B, or C (one only).
- Section 3: Witnesses signatures and dates signed. Witnesses signatures are not required if form is signed by two physicians (Section 2, Box C completed).
- Section 4: Physician's signature, printed or typed name, license number, date
- Section 5: Signatures of all persons who have signed the Texas OOH DNR in the above sections and the date the order was issued.

DOCUMENTATION OF OOH DNR ORDERS BY WCEMS PERSONNEL

In the event of an OOH DNR order or identification device is encountered or if any other situations as noted above occur, the following information will be documented in addition to the standard demographic information:

1. History and assessment of the patient's physical condition.
2. Name of the patient's attending physician or physician on scene
3. Full name, address, telephone number, and relationship to patient of any witness used to identify the patient.
4. Unique identification number on the DNR form or identification device.
5. Situations or conflict at scene and the resolution.

HONORING AN OOH DNR

When presented with a patient who has Out of Hospital Do Not Resuscitate order, the protocol outlined below shall be followed.

Honoring an OOH-DNR in the presence of a pulseless, apneic patient:

1. Verify that the patient is the person named on the OOH-DNR form. If the patient is wearing an OOH-DNR ID device, it shall be honored with or without the form being present.
2. Cease all resuscitation efforts.
3. Notify law enforcement of the patient's death.
4. Attach a copy of the OOH-DNR to the call report.

Treatment to be withheld in the presence of an OOH-DNR form:

- Cardiopulmonary resuscitation
- Advanced airway management
- Artificial ventilation
- Defibrillation
- Transcutaneous cardiac pacing

Palliative Care

If the patient is not in cardiac arrest, requires care, and has a properly completed OOH DNR form or ID device, provide care needed and transport both the patient and the OOH DNR form to the hospital.

Out of state OOH DNR

If an OOH DNR order is presented from another state, territory, or possession of the United States, WCEMS will honor only the original DNR form if there is no reason to question the authenticity of the order or device.

Do not honor an OOH-DNR if:

1. There is a suspicion of suicide, homicide or other non-natural cause of death.
2. The patient is known to be pregnant.
3. The OOH-DNR or ID device has been destroyed or revoked according to Texas Health and Safety Code Sec. 166.092:
 - a. A declarant may revoke and out-of-hospital DNR order at any time without regard to the declarant's mental state or competency. An order may be revoked by:
 1. The declarant or someone in the declarant's presence and at the declarant's direction destroying the order form and removing the DNR identification device, if any;
 2. a person who identifies himself or herself as the legal guardian, as a qualified relative, or as the agent of the declarant having a medical power of attorney who executed the out-of-hospital DNR order or another person in the person's presence and at the person's direction destroying the order form and removing the DNR identification device, if any;
 3. the declarant communicating the declarant's intent to revoke the order, or;
 4. a person who identifies himself or herself as the legal guardian, relative, or the agent of the declarant having a medial power of attorney who executed the out-of-hospital DNR order orally stating the person' intent to revoke the order.

CONFLICT RESOLUTION PROCEDURE

In the event the scene situation is unclear or conflict at the scene occurs, personnel will:

1. Initiate Basic Life Support procedures during the resolution process.
2. Consult with the family members to resolve the conflict.
3. WCEMS will transport with CPR in progress and full ALS skills if the conflict cannot be resolved

PATIENT ASSESSMENT

SCENE SURVEY

The rescuer's first priority is the safety and security of themselves and their crew. Do not become a victim yourself. When approaching a scene:

- Assess the scene for hazards.
- Is the ambulance parked in a safe place?
- Is it safe to approach the patient?
- Is special equipment needed?
- Note the number of patients. Are they all accounted for?
- Does the patient require extrication? Note the mechanism of injury.
- If needed, call for additional resources immediately. Call for additional ambulances, fire department personnel, air medical assistance and/ or supervisory staff.
- Triage patients if more than one.
- Make a plan for further triage, treatment and transport.

INITIAL EXAM

A complete initial assessment is performed on every patient. Initially, establish the presence or absence of life-sustaining bodily functions. Perform appropriate interventions when abnormalities and/or potential problems are found.

AIRWAY

EVALUATION:	Open or Obstructed
ASSESSMENT:	Inspect
TREATMENT:	Suction, Reposition, Remove foreign body.

BREATHING

EVALUATION:	Quality, Regularity, Rate
ASSESSMENT:	Inspection, Auscultation
TREATMENT:	Oxygen, Airway Management

CIRCULATION

EVALUATION:	Pulse Rate, Regularity & Quality, Hemorrhage
ASSESSMENT:	Palpation, Auscultation
TREATMENT:	CPR, Control Bleeding, Shock Management

DISABILITY

EVALUATION:	Mental Status, Paresthesia, Paralysis
ASSESSMENT:	LOC, Glasgow Coma Scale, Inspection, Palpation
TREATMENT:	Oxygen, Hyperventilation, Immobilization

EXPOSE AND EXAMINE

EVALUATION:	Examine for specific injuries easily visible.
ASSESSMENT:	Assess by inspection, palpation, removal of clothing
TREATMENT:	Inspect and palpate the back and spine for injury or deformity.

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 evaluates 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 and pertinent negatives 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 run record. 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 - Events that lead up to calling EMS

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-BTLSIC.

- | | | | | | |
|---|------------------------|---|-------------|---|-------------|
| D | Deformity | B | Burns | I | Instability |
| C | Contusions | T | Tenderness | C | Crepitus |
| A | Abrasions | L | Lacerations | | |
| P | Punctures/Penetrations | S | Swelling | | |

TRAUMA HEAD-TO-TOE SURVEY

Head, Face, Eyes

- | | |
|--|---|
| <input type="checkbox"/> Deformities | <input type="checkbox"/> Foreign Bodies |
| <input type="checkbox"/> Depressions | <input type="checkbox"/> Penetrations |
| <input type="checkbox"/> Contusions | <input type="checkbox"/> Burns |
| <input type="checkbox"/> Hematomas/Battle's Signs | <input type="checkbox"/> Facial Symmetry |
| <input type="checkbox"/> Lacerations | <input type="checkbox"/> Fractures |
| <input type="checkbox"/> Pupil size, equality, reaction to light | <input type="checkbox"/> Discharge from ears, nose |
| <input type="checkbox"/> Extraocular motions | <input type="checkbox"/> Loose teeth, Dentures |
| <input type="checkbox"/> Raccoon's eyes | <input type="checkbox"/> Oral Secretions, vomitus or bleeding |
| <input type="checkbox"/> Blink reflex | <input type="checkbox"/> Contacts or Glasses |

Neck

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

Chest

- Paradoxical Motion
- Breath/Heart Sounds
- Sternal Inspection
- Crepitus
- Retractions with Respirations
- Contusions, Abrasions, Hematomas
- Sucking Chest Wounds

HEAD-TO-TOE TRAUMA SURVEY CON'T

Abdomen

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

Pelvis

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

Extremities

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

Back

- Pain
- Deformities
- Contusions, Abrasions

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 form 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

Chest

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

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 / Tugor
- Cyanosis, Clubbing, Edema

GLASGOW COMA SCALE

Eye Opening		Verbal Response		Motor Response	
4	Spontaneously	5	Oriented	6	Obeys Commands
3	To Command	4	Confused	5	Localizes Pain
2	To Pain	3	Inappropriate Words	4	Withdraws from Pain
1	No Response	2	Incomprehensible	3	Flexion (Decorticate)
		1	No Response	2	Extension (Decerebrate)
				1	No Response

INFANT GLASGOW COMA SCALE

Eye Opening		Verbal Response		Motor Response	
4	Spontaneously	5	Coos, Babbles	6	Spontaneous
3	To Command	4	Irritable Cries	5	Localizes Pain
2	To Pain	3	Cries to Pain	4	Withdraws from Pain
1	No Response	2	Moans, Grunts	3	Flexion (Decorticate)
		1	No Response	2	Extension (Decerebrate)
				1	No Response

APGAR SCALE

(1 and 5 minutes post-birth)

Score	0 Points	1 Point	2 Points
Heart Rate	Absent	< 100	> 100
Respiratory Effort	Absent	Slow, Irregular	Strong Cry
Muscle Tone	Flaccid	Some Flexion	Active Motion
Reflex Irritability	No Response	Some Motion	Vigorous Cry
Color	Blue/Pale	Body Pink/Extr Blue	Fully Pink

Adult Cardiac Emergencies Patient Care Guidelines

ACUTE CORONARY SYNDROMES (Non-Traumatic Chest Pain)

BASIC THERAPY	SPECIAL CONSIDERATIONS								
<ul style="list-style-type: none"> <input type="checkbox"/> Scene Survey <input type="checkbox"/> Assess Airway, Breathing, Circulation, and Disability. <input type="checkbox"/> Airway management with high-flow oxygen via NRB mask or assist ventilations with BVM at 10-12 bpm if needed. <input type="checkbox"/> Vital Signs [1] <input type="checkbox"/> SAMPLE History and Physical Exam including OPQRST questions. [2] Also include history of Viagra use and time of last dose. <input type="checkbox"/> Give 4 chewable Aspirins at 81 mg each. [3] <input type="checkbox"/> Give 1 metered dose Nitroglycerin spray SL q 5 minutes up to max of 3 doses. <u>DO NOT</u> give Nitroglycerin to patients who have taken Erectile Dysfunction medications within the last 24 hours. [4] <input type="checkbox"/> Recheck vital signs q 5 minutes after each Nitroglycerin administration. 	<p>[1] Use pulse oximeter. Note SPO₂ before and after oxygen administration.</p> <p>[2] If patient has recurring symptoms, the time of onset is considered to be when symptoms became constant.</p> <p>[3] Administer Aspirin regardless of daily Aspirin use or oral anticoagulation therapy.</p> <p>[4] Nitroglycerin:</p> <ul style="list-style-type: none"> ▪ Systolic BP must be > 100 mmHg for administration. ▪ Avoid in suspected Right Ventricular infarctions. ▪ Remove patch and wipe area clean if any adverse reaction occurs (i.e. hypotension). 								
ADVANCED THERAPY									
<ol style="list-style-type: none"> 1. 12 Lead EKG [5]. 2. IV/IO Access. 3. Apply Nitroglycerin ointment ½ to 2 inches (see below). May give Nitroglycerin (1) metered dose SL prn for pain prior to onset of ointment. [4] <u>DO NOT</u> give Nitroglycerin SL or ointment to patients who have taken Erectile Dysfunction medications within the last 24 hours. 4. Morphine Sulfate 2 - 5 mg prn for relief of chest pain and anxiety to max dose of 10 mg IV/IO. [6] 5. For nausea and / or vomiting, give Zofran 4 mg IV/IO over 2-5 minutes. If unable to establish IV/IO give Zofran 4 mg IM. If Zofran ineffective, give Phenergan 12.5 mg – 25 mg IM. [7] 6. If patient hypotensive and right ventricular infarct is suspected, consider giving fluid challenge NS Bolus (not > 500 ml per bolus) to max of 20 ml/kg to maintain systolic BP > 90 mmHg. Reassess patient's ABC's and lung sounds between each bolus. 7. Consider Dopamine Infusion to maintain systolic BP > 90 mmHg [8] 8. If patient is hypertensive, refer to the HYPERTENSION protocol. 9. If ST Elevation is present, refer to STEMI protocol. [9] <p><u>Nitroglycerin Ointment Dosage General Guidelines</u></p> <p style="padding-left: 40px;">½ to 2 inches (1 inch equals to approximately 15 mg) according to Systolic BP:</p> <table style="margin-left: 40px; border: none;"> <tr> <td style="padding-right: 20px;">110 – 140</td> <td style="padding-right: 20px;">½ inch</td> <td style="padding-right: 20px;">181 – 200</td> <td>1 ½ inch</td> </tr> <tr> <td>141 – 180</td> <td>1 inch</td> <td>> 200</td> <td>2 inches</td> </tr> </table>	110 – 140	½ inch	181 – 200	1 ½ inch	141 – 180	1 inch	> 200	2 inches	<p>[5] If inferior AMI identified, perform right sided 12 Lead EKG to rule out possible right ventricle involvement.</p> <p>[6] Morphine Sulfate:</p> <ul style="list-style-type: none"> ▪ Systolic BP must be > 100 mmHg for administration. Use cautiously in patients with RV infarction. ▪ Give Narcan 0.4 – 2 mg IV/IO if respiratory depression occurs. ▪ Give Benadryl 25 - 50 mg IV/IO if allergic reaction or hypotension occurs due to Morphine administration. <p>[7] Phenergan:</p> <ul style="list-style-type: none"> ▪ Can cause AMS in some patients. ▪ Concurrent administration of Phenergan and Morphine Sulfate could produce respiratory arrest. ▪ IM only. <p>[8] See INFUSION RATE CHART page.</p> <p>[9] Minimum 1mm ST Segment Elevation in 2 or more contiguous leads or new onset LBBB.</p>
110 – 140	½ inch	181 – 200	1 ½ inch						
141 – 180	1 inch	> 200	2 inches						

ACUTE CORONARY SYNDROME (Non-Traumatic Chest Pain)

ATRIAL FIBRILLATION WITH RAPID VENTRICULAR RESPONSE

BASIC THERAPY

- ❑ Scene Survey.
- ❑ Assess Airway, Breathing, Circulation, and Disability.
- ❑ Airway management with high-flow oxygen via NRB mask or assist ventilations with BVM at 8-10 bpm if needed.
- ❑ Vital Signs [1].
- ❑ SAMPLE History and Physical Exam.

SPECIAL CONSIDERATIONS

[1] Use pulse oximeter. Note SPO₂ before and after oxygen administration.

[2] End Tidal CO₂ Detector must be used whenever ventilating intubated patients.

[3] Cardizem:

- Do not give if systolic BP < 90 mmHg.
- Contraindicated in presence of 2nd and 3rd Degree AV Blocks, wide QRS of uncertain origin, cardiogenic shock, Sick Sinus Syndrome without functioning ventricular pacemaker, and recent IV beta blockers.
- To obtain slow IV/IO, may consider injecting desired dose into 100 cc bag of NS. Run at 50 ml/min with 60 gtts administration set.

ADVANCED THERAPY

NON-SYMPTOMATIC A-FIB WITH RVR

Rate > 120/min

SYMPTOMATIC A-FIB WITH RVR

Rate > 120/min

1. EKG/12 Lead EKG.
2. IV Access.

1. Advanced airway prn [2].
2. EKG/12 Lead EKG.
3. IV/IO Access.
4. Give Cardizem 0.25 mg/kg Slow IV/IO (over 2 minutes). 20 mg is an acceptable dose for the average patient. [3]
5. If no change, give Cardizem 0.35 mg/kg Slow IV/IO (over 2 minutes). 25 mg is an acceptable dose for the average patient. [3]
6. If patient is unstable, perform synchronized cardioversion at 100 J (Biphasic). Repeat prn at 120 J, 150 J and 200 J (Biphasic). [4] [5]
7. If patient is in Atrial Flutter or refractory Atrial Fibrillation, Give Amiodarone 150 mg IV/IO over 10 minutes. [6] If patient is unstable, perform synchronized cardioversion at 100 J (Biphasic). Repeat prn at 120J, 150 J, and 200 J (Biphasic). [4] [5]

[4] Cardioversion:

- Only perform if patient is symptomatic and hemodynamically unstable (chest pain, SOB, AMS, hypotension, shock, pulmonary congestion, CHF, or AMI).
- Cardioversion is contraindicated in patients with suspected Digitalis toxicity.
- If cardioversion is successful, but A-Fib with RVR reoccurs, further cardioversion is not indicated.

[5] Provide sedation prior to cardioversion:

- Ativan 0.5 – 4 mg IV/IO/IM
OR
- Versed 2 – 5 mg Slow IV/IO/IN to max of 20 mg
OR
- Fentanyl to max of 200 mcg IV/IO/IN.

[6] Amiodarone:

Inject 150mg into 100cc Normal Saline and administer over 10 minutes

ATRIAL FIBRILLATION WITH RAPID VENTRICULAR RESPONSE

BRADYCARDIA

BASIC THERAPY

- Scene Survey.
- Assess Airway, Breathing, Circulation, and Disability.
- Airway management with high-flow oxygen via NRB mask or assist ventilations with BVM at 10-12 bpm if needed.
- Vital Signs [1].
- SAMPLE History and Physical Exam.

SPECIAL CONSIDERATIONS

- [1] Use pulse oximeter. Note SPO₂ before and after oxygen administration.
- [2] Includes Signs/Symptoms:
- Ventricular rate of 60 or less with hypotension, PVC's, episodes of non-sustained V-Tach, chest pain, AMS, disorientation, syncope, seizures, dizziness.

ADVANCED THERAPY

[3] Use End Tidal CO₂ Detector whenever ventilating intubated patients.

BRADYCARDIA WITH ADEQUATE PERFUSION

BRADYCARDIA WITH POOR PERFUSION [2]

1. EKG/12 Lead EKG.
2. IV Access.
3. Consider fluid challenge(s):
NS bolus (not > 500 ml per bolus) to max of 20 ml/kg. Reassess patient's ABC's and lung sounds between each bolus.
4. If Mobitz Type II or 3rd Degree AV Block present, place pacing pads on patient as precaution. Provide constant EKG monitoring during transport.

1. Advanced airway prn. [3]
2. EKG/12 Lead EKG.
3. IV/IO Access.
4. If patient is severely unstable, or if Mobitz Type II or 3rd Degree AVB present, immediately go to transcutaneous pacing (TCP). [5]
5. If patient stable or 1st Degree or Mobitz Type I AVB present give Atropine 0.5 mg IV/IO q 3 – 5 mins to max of 3 mg. [4]
6. If unresponsive to Atropine, go to TCP. [5]
7. Epinephrine infusion or Dopamine Infusion to maintain systolic BP >90 mmHg and heart rate > 60. [6]

- [4] Atropine:
- Not indicated in patients with wide-complex ventricular escape beats. Go directly to TCP in symptomatic patients.
 - May exacerbate ischemia and/or induce V-Fib/ V-Tach in the presence of an AMI.

- [5] Provide sedation prior to TransCutaneous Pacing:
- Ativan 0.5 – 4 mg IV/IO/IM
OR
 - Versed 2–5 mg Slow IV/IO/IN to max of 20 mg
OR
 - Fentanyl to max of 200 mcg IV/IO/IN

[6] See **INFUSION RATE CHART** page.

****Treat Rate before Rhythm****

BRADYCARDIA

CARDIAC ARREST

BASIC THERAPY

- ❑ Scene Survey
- ❑ Assess Airway, Breathing, and Circulation. Confirm patient is pulseless and apneic.
- ❑ Witnessed Arrest: Immediately deliver one shock if indicated by AED. Resume CPR immediately for 2 minutes. Reanalyze and shock if indicated. If no AED available, start CPR until AED is available. Apply LUCAS Device if available.
- ❑ Unwitnessed Arrest: Provide 2 minutes of CPR prior to defibrillation. Deliver shock as prompted by AED. If no shock advised, continue CPR. Apply LUCAS Device if available.
- ❑ Airway management including OPA or King Tube and high-flow oxygen via BVM with ResQPOD in place at 10-12 bpm.

SPECIAL CONSIDERATIONS

[1] Use End Tidal CO₂ Detector whenever ventilating intubated patients.

[2] Antiarrhythmic:

- If converted with Amiodarone:
See **INFUSION RATE CHART** page.
- If converted with Lidocaine:
See **INFUSION RATE CHART** page.

ADVANCED THERAPY

ASYSTOLE	PULSELESS ELECTRICAL ACTIVITY (PEA)	VENTRICULAR FIBRILLATION OR PULSELESS VENTRICULAR TACHYCARDIA															
<ol style="list-style-type: none"> 1. Reassess ABC's 2. EKG Monitor – Confirm in 2 leads. Confirm pulseless. 3. Intubate and confirm tube placement. [1] 4. IV/IO access. 5. Consider fluid challenge(s): NS Bolus (not > 500 ml per bolus) to max of 20 ml/kg. 6. Epinephrine 1mg IV/IO/ETT 1:10,000 q 3 - 5 mins. [6] 7. Atropine 1 mg IV/IO/ETT q 3 – 5 mins to max of 3 mg. [6] 8. Sodium Bicarbonate 1.0 mEq/kg of 8.4% solution IV/IO. Repeat q 10 minutes at 0.5 mEq/kg. [3] 9. Consider possible causes for asystole. [4] [5] 10. Consider field termination if patient meets criteria. See PROCEDURES: DISCONTINUATION of RESUSCITATION page. 11. If pulse returns after arrest, refer to POST ARREST HYPOTHERMIA protocol. 	<ol style="list-style-type: none"> 1. Reassess ABC's 2. EKG Monitor. Confirm pulseless. 3. Intubate and confirm tube placement. [1] 4. IV/IO access. 5. Consider fluid challenge(s): NS Bolus (not > 500 ml per bolus) to max of 20 ml/kg. 6. Epinephrine 1mg IV/IO/ETT 1:10,000 q 3 - 5 mins. [6] 7. Atropine 1 mg IV/IO/ETT q 3 – 5 mins to max of 3 mg. [6] 8. Sodium Bicarbonate 1.0 mEq/kg of 8.4% solution IV/IO. Repeat q 10 minutes at 0.5 mEq/kg. [3] 9. Consider possible causes for PEA. [4] [5] 10. If pulse returns after arrest, refer to POST ARREST HYPOTHERMIA protocol. 	<ol style="list-style-type: none"> 1. Reassess ABC's 2. EKG Monitor – Confirm V-Fib / Pulseless V-Tach. Confirm pulseless. 3. Defibrillate at 200 J (Biphasic) or 360 J (Monophasic) continue CPR 2 minutes. 4. Intubate and confirm tube placement. [1] 5. IV/IO Access. 6. Epinephrine 1mg IV/IO/ETT 1:10,000 q 3 - 5 mins [6] 7. Defibrillate at 200 J (Biphasic) or 360 J (Monophasic). 8. In refractory V-Fib / Pulseless V-Tach, consider Antiarrhythmics: [2] <ul style="list-style-type: none"> ▪ Amiodarone 300 mg IV/IO x 1 dose then 2nd dose at 150 mg IV/IO. Or Lidocaine 1 mg/kg IV/IO q 5 min. to maximum of 3 mg/kg. ▪ Magnesium Sulfate 2 Gram Slow IV/IO if known hypomagnesemia or torsades. May repeat once. 9. Sodium Bicarbonate 1.0 mEq/kg of 8.4% solution IV/IO. Repeat q 10 minutes at 0.5 mEq/kg. [3] 10. If pulse returns after arrest, refer to POST ARREST HYPOTHERMIA protocol. 	<p>[3] Sodium Bicarbonate:</p> <ul style="list-style-type: none"> ▪ Ensure ETT patent and effective ventilations/compressions are being performed prior to administration. ▪ Effective for known preexisting hyperkalemia, DKA or tricyclic overdose. ▪ Do not administer in the same IV/IO line as Amiodarone without adequate flushing. <p>[4] Possible causes of Asystole and PEA:</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">▪ Hyperkalemia</td> <td style="width: 50%;">▪ Acidosis</td> </tr> <tr> <td>▪ Hypokalemia</td> <td>▪ Toxins</td> </tr> <tr> <td>▪ Hypoxia</td> <td>▪ Tamponade</td> </tr> <tr> <td>▪ Hypoglycemia</td> <td>▪ Tension Pneumothorax</td> </tr> <tr> <td>▪ Hypovolemia</td> <td>▪ Trauma</td> </tr> <tr> <td>▪ Hypothermia</td> <td></td> </tr> <tr> <td>▪ Thrombosis</td> <td></td> </tr> </table> <p>[5] Consider Calcium Chloride for renal patients and suspected calcium channel blocker overdose.</p> <p>[6] ETT dose: ACLS recommends 2.5 times IV/IO dose with 10 cc flush.</p>	▪ Hyperkalemia	▪ Acidosis	▪ Hypokalemia	▪ Toxins	▪ Hypoxia	▪ Tamponade	▪ Hypoglycemia	▪ Tension Pneumothorax	▪ Hypovolemia	▪ Trauma	▪ Hypothermia		▪ Thrombosis	
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▪ Hypoglycemia	▪ Tension Pneumothorax																
▪ Hypovolemia	▪ Trauma																
▪ Hypothermia																	
▪ Thrombosis																	

CARDIAC ARREST

CONGESTIVE HEART FAILURE

BASIC THERAPY

- Scene Survey
- Assess Airway, Breathing, Circulation, and Disability.
- Airway management with high-flow oxygen via NRB mask or assist ventilations with BVM at 8-10 bpm if needed.
- Vital Signs – Carefully assess breath sounds, both inspiratory and expiratory. [1]
- SAMPLE History and Physical Exam
- Albuterol 1 unit dose prn for wheezing/dyspnea. [2]
- Consider CPAP early if patient is in respiratory distress and / or Rales are present [3]
- Transport patient in an upright position.

SPECIAL CONSIDERATIONS

[1] Use pulse oximeter. Note SPO₂ before and after oxygen administration.

[2] Note pulse rate before, during, and after treatment.

[3] Use of the CPAP is intended to provide ventilation to patients where there is a potential need for ET intubation. If the patient is unstable (hypotensive, decreased LOC) or if there is no improvement in patient status with CPAP, proceed to ET intubation.

ADVANCED THERAPY

1. Advanced airway prn. [3] [4]
2. IV/IO Access
3. EKG/12-Lead EKG
4. If pulmonary edema present and patient is not hypotensive, give Nitroglycerin 1 metered dose spray SL prn x3. [5]
Consider appropriate amount of Nitroglycerin paste also. [5]
5. Give Lasix 40 mg Slow IV/IO.
6. Give Albuterol 2.5mg via HHNB q 15 minutes. Reassess lung sounds often. [2]
7. Morphine Sulfate 2 - 5 mg Slow IV/IO q 5 minutes up to max of 10 mg. [6]
8. Dopamine infusion to maintain systolic BP of 90 mmHg and heart rate of 60. [7]
9. If using BVM and patient is exhibiting signs/symptoms of pulmonary edema, consider PEEP (usually at 5 – 10 mmHg).

[4] End Tidal CO₂ Detector must be used whenever ventilating intubated patients.

- [5] Nitroglycerin:
- Systolic BP must be > 100 mmHg for administration.
 - Avoid in suspected Right Ventricular infarctions.
 - Remove patch and wipe area clean if any adverse reaction occurs (i.e. hypotension).

- [6] Morphine Sulfate:
- Systolic BP must be > 100 mmHg for administration.
 - Give Narcan 0.4 – 2 mg IV/IO if respiratory depression occurs.
 - Give Benadryl 25 - 50 mg IV/IO if allergic reaction or hypotension occurs due to Morphine administration.

[7] See **INFUSION RATE CHART** page.

CONGESTIVE HEART FAILURE

POST ARREST HYPOTHERMIA

BASIC THERAPY

- Scene Survey
- Remove ResQPOD if in use.
- Assess Airway, Breathing, Circulation, and Disability.
- Airway management with high-flow oxygen via BVM at 10-12 bpm if needed.
- Vital Signs [1]
- Apply ice packs to Axilla, Neck and Groin area.

ADVANCED THERAPY

1. Verify **SPECIAL CONSIDERATIONS: Inclusion Criteria** and **Exclusion Criteria**. If patient is excluded, refer to **POST-ARREST MANAGEMENT** protocol, and do not initiate cooling measures.
1. **EARLY NOTIFICATION IS KEY!!** Contact receiving hospital as soon as cooling begins and inform them you are enroute with a ROSC patient. You can call them back enroute with further patient details if possible.
2. IV/IO Access (2 Large Bore IV).
3. 12 Lead EKG.
4. Maintain Advanced Airway. Patient must be intubated. Maintain ETCO₂ at 35 – 45 mmHG. [2] Patient may develop Metabolic Alkalosis with cooling, so do not hyperventilate.
5. Initiate transport to ER facility that supports ROSC Hypothermia. [3] [4] [6]
6. Rectal temperature must be documented every 15 minutes after initiation of cooling measures.
7. Cold NS bolus of 20ml/kg to maximum of 2 liters. Reassess patient's ABC's and lung sounds between each 500 cc bolus.
8. Dopamine Infusion to maintain MAP = 90 - 100. [7] [8]
9. If patient begins to shiver, use Etomidate 0.3 mg/kg IV/IO (20 mg is acceptable) or Versed 2 - 5mg IV/IO prn as blood pressure allows.
10. Senior Paramedics (P3) may administer / approve administration of Vecuronium 0.1 mg/kg for reoccurring shivering. Do NOT administer paralytic without ensuring proper sedation. Refer to **PHARMACOLOGICAL ASSISTED INTUBATION (PAI)** procedure.
11. If rectal temperature <33c at any time, discontinue all cooling measures and refer to **POST-ARREST MANAGEMENT** protocol.

SPECIAL CONSIDERATIONS

Inclusion Criteria

- ROSC of a viable patient after cardiac arrest NOT related to trauma or hemorrhage.
- Minimum 18 years old.
- Intubated and remains unresponsive.
- Initial Rectal Temperature > 34c

Exclusion Criteria

- Less than 18 years old.
- DOS
- Traumatic Arrest
- Non- Viable
- Non-Intubated
- Pregnancy

[1] Use pulse oximeter. Note SPO₂ before and after oxygen administration.

[2] End Tidal CO₂ Detector must be used whenever ventilating intubated patients.

[3] Do not delay transport to initiate cooling.

[4] See **HOSPITAL CAPABILITIES** page.

[5] Versed:

- Monitor respiratory effort continuously and provide ventilatory support when necessary.
- Watch for hypotensive effects of Versed. Be prepared to treat appropriately.

[6] If patient re-arrests, immediately discontinue cooling and refer to appropriate protocol.

[7] MAP = 2x diastolic + systolic / 3

[8] See **INFUSION RATE CHART** page.

POST ARREST HYPOTHERMIA

POST ARREST MANAGEMENT

BASIC THERAPY

- Scene Survey.
- Remove ResQPOD if in use.
- Continually assess Airway, Breathing, Circulation, and Disability.
- Airway management including OPA or King Tube and high-flow oxygen via BVM in place at 10-12 bpm.
- Vital Signs [1].
- Monitor and manage BGL as needed. If <60 mg/dl, refer to **DIABETIC COMPLICATIONS** protocol.

SPECIAL CONSIDERATIONS

- [1] Use pulse oximeter. Note SPO₂ before and after oxygen administration.
- [2] End Tidal CO₂ Detector must be used whenever ventilating intubated patients.
- [3] Usually, there is no need to manage post arrest Tachycardia unless Ventricular in nature due to residual Epinephrine / Atropine administration.

ADVANCED THERAPY

1. Refer to **POST ARREST HYPOTHERMIA** protocol.
2. Maintain advanced airway prn. [2]
3. Maintain IV/IO Access.
4. 12 Lead EKG. [3]
5. If patient hypotensive, consider NS Bolus (not > 500 ml per bolus) to max of 20 ml/kg to maintain systolic BP > 90 mmHg. Reassess patient's ABC's and lung sounds between each bolus. If fluid challenge unsuccessful, consider Dopamine Infusion or Epinephrine Infusion to maintain systolic of >90 mmHg. [4]
6. If Antidysrhythmic was used to convert Ventricular rhythm, use appropriate Medication for continued Infusion. [4]
7. If patient becomes combative or "fights" airway post arrest, consider continued sedation via Etomidate, Versed [5], and / or Fentanyl [6] IV/IO prn.
8. Senior Paramedics (P3) may administer / approve administration of Vecuronium 0.1 mg/kg for continued paralysis. Do NOT administer paralytic without ensuring proper sedation. Refer to **PHARMACOLOGICAL ASSISTED INTUBATION (PAI)** procedure.
9. Based on Post Arrest assessment, refer to appropriate protocols for management.

- [4] See **INFUSION RATE CHART** page.
- [5] Versed:
- Monitor respiratory effort continuously and provide ventilatory support when necessary.
 - Watch for hypotensive effects of Versed. Be prepared to treat appropriately.
- [6] Fentanyl:
- Contraindicated in presence of bradycardia
 - Beware of oversedation. Be prepared to ventilate patient with BVM.
 - Give Narcan 0.4 – 2 mg IV/IO/IM/IN if respiratory depression occurs.
 - IN dosage is ½ total dose per nare.

POST ARREST MANAGEMENT

PREMATURE VENTRICULAR CONTRACTIONS / NON-SUSTAINED VENTRICULAR TACHYCARDIA

BASIC THERAPY

- Scene Survey
- Assess Airway, Breathing, Circulation, and Disability.
- Airway management with high-flow oxygen via NRB mask or assist ventilations with BVM at 10-12 bpm if needed.
- Vital Signs [1]
- SAMPLE History and Physical Exam

SPECIAL CONSIDERATIONS

[1] Use pulse oximeter. Note SPO₂ before and after oxygen administration.

[2] If patient's heart rate < 60 bpm, treat rate first then give Lidocaine if PVC's persist.

[3] Reduce to half-dose in elderly patients > 70 years old and in patients presenting with CHF, shock or those with liver disease.

[4] See **INFUSION RATE CHART** page.

ADVANCED THERAPY

1. IV/IO Access
2. EKG/12-Lead EKG
3. Consider treatment for the following: [2]

<ul style="list-style-type: none"> ▪ Couplets ▪ V-Tach (3 PVC's in a row) ▪ Multi-form PVC's ▪ R on T Phenomenon ▪ PVC's rate > 6 per minute 	AND/OR	<ul style="list-style-type: none"> ▪ PVC's with chest pain ▪ Patient on Digitalis ▪ Patient with any cardiac history
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4. Give Lidocaine 1 – 1.5 mg/kg IV/IO [3]
5. Additional Lidocaine prn at 0.5 – 0.75 mg/kg q 5 min to total dose max of 3 mg/kg IV/IO. [3]
6. If converted, start Lidocaine infusion 2 – 4 mg/min as needed. [4]

****Treat Rate before Rhythm****

PREMATURE VENTRICULAR CONTRACTIONS / NON-SUSTAINED VENTRICULAR TACHYCARDIA

STEMI (ST ELEVATION MYOCARDIAL INFARCT)

BASIC THERAPY

- Scene Survey
- Assess Airway, Breathing, Circulation, and Disability.
- Airway management with high-flow oxygen via NRB mask or assist ventilations with BVM at 10-12 bpm if needed.
- Vital Signs [1]
- SAMPLE History and Physical Exam including OPQRST questions [2]. Also include history of Viagra use and time of last dose. [2]
- Give 4 chewable Aspirins at 81 mg each PO. [3]
- Give 1 metered dose Nitroglycerin spray SL q 5 minutes up to max of 3 doses. DO NOT give Nitroglycerin to patients who have taken Erectile Dysfunction medications within the last 24 hours. [4]
- Recheck vital signs q 5 minutes after each Nitroglycerin administration.

SPECIAL CONSIDERATIONS

- [1] Use pulse oximeter. Note SPO₂ before and after oxygen administration.
- [2] If patient has recurring symptoms, the time of onset is considered to be when symptoms became constant.
- [3] Administer Aspirin regardless of daily Aspirin use or oral anticoagulation therapy.
- [4] Nitroglycerin:
- Systolic BP must be > 100 mmHg for administration.
 - Avoid in suspected Right Ventricular infarctions.
- [5] Serial 12 leads required. Minimum of 3. One prior to medications, one during transport, and one at ER.

ADVANCED THERAPY

STEMI activation requires minimum 1mm ST Segment Elevation in 2 or more contiguous leads or new onset LBBB.

1. Treat according to **ACUTE CORONARY SYNDROMES (Non-Traumatic Chest Pain)** protocol.
2. Transmit / Transport 12 Lead EKG to appropriate Hospital for confirmation of STEMI by physician if capable.
3. Obtain Right Side 12 lead on all suspected Inferior MIs. Have all EKG strips available upon arrival to ER. [5]
4. **EARLY NOTIFICATION IS KEY!!** Contact receiving hospital as soon as STEMI is identified and inform them you are enroute with a STEMI patient. You can call them back enroute with further patient details if possible.
5. IV/IO Access. Bilateral IVs preferable.
6. Remove all clothing and place into gown as time allows.
7. Transport emergency traffic to appropriate facility. [6]

- [6] See **HOSPITAL CAPABILITIES** page.

STEMI
(ST ELEVATION MYOCARDIAL INFARCT)

TACHYCARDIA

BASIC THERAPY

- ❑ Scene Survey
- ❑ Assess Airway, Breathing, Circulation, and Disability.
- ❑ Airway management with high-flow oxygen via NRB mask or assist ventilations with BVM at 10-12 bpm if needed.
- ❑ Vital Signs [1]
- ❑ SAMPLE History and Physical Exam

SPECIAL CONSIDERATIONS

- [1] Use pulse oximeter. Note SPO₂ before and after oxygen administration.
- [2] Use End Tidal CO₂ Detector whenever ventilating intubated patients.
- [3] Only attempt on patients < 50 years old with no history of neurologic or vascular disease and if no bruits are present.

ADVANCED THERAPY

NARROW COMPLEX (QRS < 0.10 sec)

SINUS TACHYCARDIA Rate 100 - 150/min

SVT Rate > 150/min

WIDE COMPLEX (QRS > 0.12 sec)

VENTRICULAR TACHYCARDIA

1. Advanced airway prn [2].
2. EKG/12 Lead EKG.
3. IV/IO Access.
4. Consider fluid challenge(s): NS Bolus (not > 500 ml per bolus) to max of 20 ml/kg. Reassess patient's ABC's and lung sounds between each bolus.
5. Consider fever, volume loss, hypoxia, injury, anxiety, medication or physical exertion.
6. If patient becomes unstable, perform synchronized cardioversion at 50 J. Repeat prn at 100 J, 120 J, 150 J then 200 J. (biphasic) [6] [7]

1. Advanced airway prn [2].
2. EKG/12 Lead EKG.
3. IV/IO Access.
4. If patient is symptomatic but stable:
 - Attempt Valsalva maneuver x 1.
 - If no change, may attempt carotid sinus massage x 1. [3]
 - If unsuccessful, give Adenosine 6 mg Rapid IV/IO. If no change, give 12 mg Rapid IV/IO. May repeat once to max of 30 mg. [4]
5. If stable, give Amiodarone 150 mg IV/IO over 10 minutes [5]. Repeat x1 prn. If converted, initiate Amiodarone drip. [8]
6. If not converted or patient unstable, perform synchronized cardioversion at 50 J. Repeat prn at 100 J, 120 J, 150 J then 200 J. (biphasic) [6] [7]

1. Advanced airway prn [2].
2. EKG/12 Lead EKG.
3. IV/IO Access.
4. If stable, give Amiodarone 150 mg IV/IO over 10 minutes. [5] Repeat x1 prn. If converted, initiate Amiodarone drip. [8]
5. If not converted, or patient unstable, perform synchronized cardioversion at 100 J. Repeat prn at 120 J, 150 J then 200 J. (biphasic) [6] [7].
6. May consider Adenosine 6 mg Rapid IV/IO to rule out SVT with aberrant conduction. [4]

- [4] Adenosine:
- Do not administer if patient is wheezing or in the presence of 2nd or 3rd Degree AV Blocks.
 - Smaller doses may be effective in patients taking Dipyridamole.
- [5] Amiodarone:
Inject 150mg into 100cc Normal Saline and administer over 10 minutes.
- [6] Cardioversion:
- Only perform if patient is symptomatic and hemodynamically unstable. (chest pain, SOB, AMS, hypotension, shock, pulmonary congestion, CHF, or AMI)
 - Contraindicated in patients with suspected Digitalis toxicity.
 - If cardioversion is successful, but SVT reoccurs, further cardioversion is not indicated.
- [7] Provide sedation prior to cardioversion:
- Ativan 0.5 – 4 mg IV/IO/IM
 - OR
 - Versed 2– 5 mg IV/IO/IN to max of 20 mg
 - OR
 - Fentanyl to max of 200 mcg IV/IO/IN
- [8] See **INFUSION RATE CHART** page.

****Treat Rate before Rhythm****

TACHYCARDIA

Adult Medical Emergencies Patient Care Guidelines

ACUTE ABDOMINAL PAIN

BASIC THERAPY

- Scene Survey.
- Assess Airway, Breathing, Circulation, and Disability.
- Airway management including oxygen pm with appropriate delivery device.
- Vital Signs. [1]
- SAMPLE History and Physical Exam including OPQRST questions. [2] [3]
- Transport patient in position of comfort.

ADVANCED THERAPY

1. EKG/12 Lead EKG
2. IV/IO access.
3. For nausea and/or vomiting, give Zofran 4 mg IV/IO over 2-5 minutes. If unable to establish IV/IO give Zofran 4 mg IM. If Zofran ineffective, give Phenergan 12.5 mg – 25 mg IM. [4]
4. Use pain medications cautiously.

SPECIAL CONSIDERATIONS

[1] Use pulse oximeter. Note SPO₂ before and after oxygen administration.

[2] Palpate abdomen starting at furthest point away from pain and gently move towards site of pain.

[3] Consider the following causes of acute abdominal pain in females of child bearing age:

- Incomplete abortion
- PID or other sexually transmitted disease
- Ectopic pregnancy
- Uterine rupture
- Abruptio placenta
- Ovarian cyst
- Mittelschmerz

[4] Phenergan:

- Do not give to patients with CHI or CNS pathology.
- Can cause AMS in some patients.
- IM only.

ACUTE ABDOMINAL PAIN

ALLERGIC REACTION

BASIC THERAPY

- Scene Survey
- Assess Airway, Breathing, Circulation, Disability, Expose and Examine.
- Airway management including oxygen prn with appropriate delivery device.
- Vital Signs - Carefully assess breath sounds, both inspiratory and expiratory [1]
- SAMPLE History and Physical Exam
- Albuterol Sulfate 2.5 mg dose HHNB prn for wheezing/dyspnea. [2]
- For localized reaction, apply cold packs directly to site and elevate.
- For generalized reaction (hives and anxiety but stable vital signs) due to an insect bite, apply ice pack proximal to the site.
- Monitor carefully for signs of developing anaphylactic reaction.
- Attempt to remove any obvious irritant.
- If patient is exhibiting signs/symptoms of anaphylaxis, administer EpiPen.

SPECIAL CONSIDERATIONS

- [1] Use pulse oximeter. Note SPO₂ before and after oxygen administration.
- [2] Note pulse rate before, during, and after treatment.
- [3] Give Epinephrine IV/IO if IM dose ineffective or if perfusion severely diminished. The effect of Epinephrine IV/IO is faster but IM administration is safer.
- [4] Use End Tidal CO₂ Detector whenever ventilating intubated patients.
- [5] Respiratory status must be reassessed after each Albuterol dose to determine need for additional dosing.
- [6] See **INFUSION RATE CHART** page.

ADVANCED THERAPY

NONE TO MILD RESPIRATORY DISTRESS WITH ADEQUATE PERFUSION

1. EKG/12 Lead EKG.
2. IV/IO Access.
3. Albuterol 2.5 mg prn via HHNB for bronchospasm or wheezing until symptoms subside [5].
4. Benadryl 25 - 50 mg IV/IO or Deep IM.

SEVERE RESPIRATORY DISTRESS OR DIMINISHED PERFUSION

1. Advanced airway prn [4].
2. EKG/12 Lead EKG.
3. IV/IO Access.
4. Albuterol Sulfate 2.5 mg prn via HHNB for bronchospasm or wheezing until symptoms subside [5].
5. If patient hypotensive, give NS bolus (not > 500 ml per bolus) to max of 20 ml/kg. Reassess patient's ABC's and lung sounds between each bolus.
6. Epinephrine 0.3 mg (0.3 ml of 1:1000) IM for patient in extremis or anaphylaxis. May repeat every 20 minutes to a total of 1.2 mg. [3]
7. Benadryl 25 -50 mg IV/IO or Deep IM.
8. Solu-Medrol 125 mg IV/IO.
9. Anaphylaxis refractory to Epinephrine and Benadryl consider Epinephrine infusion and titrate to maintain adequate blood pressure. [6]

ALLERGIC REACTION

ALTERED MENTAL STATUS

BASIC THERAPY

- Scene Survey [1].
- Assess Airway, Breathing, Circulation, and Disability.
- If patient is unresponsive, consider ammonia inhalants to assess LOC.
- Airway management with high-flow oxygen via NRB mask or assist ventilations with BVM at 10-12 bpm if needed.
- Vital Signs including blood glucose level and temperature. [2]
- SAMPLE History and Physical Exam
- Consider etiology and appropriate protocols. [3]

ADVANCED THERAPY

1. EKG/12 Lead EKG.
2. IV/IO access.
3. If blood glucose level < 60 mg/dl, refer to **DIABETIC COMPLICATIONS** protocol.
4. If mental status and respiratory effort are depressed administer Narcan 0.4 – 2.0 mg IV/IO/ETT, titrate to respirations. Give Narcan 1 -2 mg IM/IN if unable / unsafe to establish IV/IO access. If there is a partial response to initial dose or there is a strong suspicion of opiate overdose, repeat Narcan q 5 minutes up to max of 10 mg. [4]
5. If patient becomes combative, refer to **BEHAVIORAL EMERGENCIES** protocol.

SPECIAL CONSIDERATIONS

- [1] Scene safety is an important consideration with AMS patients.
- [2] Use pulse oximeter. Note SPO₂ before and after oxygen administration.
- [3] Use Mnemonic "AEIOU-TIPS" for possible causes of AMS.

- A** Alcohol
- E** Epilepsy, Endocrine
- I** Insulin complications
- O** Opiates, O₂
- U** Uremia

- T** Trauma
- I** Infection
- P** Poisons
- S** Shock, Stroke

- [4]] Narcan:
- Titration of Narcan can lessen the possibility of an unconscious patient becoming combative.
 - IN dosage is ½ total dose per nare.

ALTERED MENTAL STATUS

BEHAVIORAL EMERGENCIES

BASIC THERAPY	SPECIAL CONSIDERATIONS
<ul style="list-style-type: none"> <input type="checkbox"/> Scene Survey. [1] <input type="checkbox"/> Assess Airway, Breathing, Circulation, and Disability. <input type="checkbox"/> Airway management including oxygen prn with appropriate delivery device. <input type="checkbox"/> Vital Signs including blood glucose level. [2] <input type="checkbox"/> SAMPLE History and Physical Exam. <input type="checkbox"/> Assess patient for medical and / or traumatic causes of behavioral problems and refer to appropriate protocol. 	<p>[1] Scene safety is of special consideration with AMS patients. Your safety comes FIRST!</p> <p>[2] Use pulse oximeter. Note SPO₂ before and after oxygen administration.</p> <p>[3] Versed:</p> <ul style="list-style-type: none"> ▪ Monitor respiratory effort continuously and provide ventilatory support when necessary. ▪ Watch for hypotensive effects of Versed. Be prepared to treat appropriately. ▪ IN dosage is ½ total dose per nare.
ADVANCED THERAPY	
<ol style="list-style-type: none"> 1. IV/IO access. 2. EKG/12 Lead EKG. 3. The patient should be prevented from self-harm or injuring others by the use of soft restraints IF verbal techniques are unsuccessful. Be sure adequate personnel are available before attempting to restrain a violent patient. Law enforcement should always be called for assistance in difficult or potentially dangerous situations. 4. Continue to reassess patient for medical or traumatic causes of behavioral problems. Always consider hypoglycemia and hypoxia. The ALTERED MENTAL STATUS protocol should be considered in your treatment. 5. If blood glucose level < 60 mg/dl, refer to DIABETIC COMPLICATIONS protocol. 6. For a patient who is severely agitated or combative, sedate with Ativan 0.5 – 4 mg IV/IO/IM OR Versed 2 – 5 mg IV/IO. May repeat to max of 20 mg. Give Versed 5 mg IM/IN if unable / unsafe to establish IV/IO. [3] 7. In EXTREME situations, the use of chemical restraints may be necessary. If chemical restraints are needed, refer to the PHARMACOLOGICALLY ASSISTED INTUBATION procedure. Chemical Restraints are to be used ONLY if deemed necessary to prevent harm to patient or others, and no other procedures can ensure safety during transport. [4] 	<p>[4] Ensure Supervisor and Law Enforcement are on scene.</p>
BEHAVIORAL EMERGENCIES	

CEREBROVASCULAR ACCIDENT (CVA)

BASIC THERAPY	SPECIAL CONSIDERATIONS
<ul style="list-style-type: none"> <input type="checkbox"/> Scene Survey <input type="checkbox"/> Assess Airway, Breathing, Circulation, and Disability. <input type="checkbox"/> Airway management with high-flow oxygen via NRB mask or assist ventilations with BVM at 10 - 12 bpm if needed. <input type="checkbox"/> Vital Signs including blood glucose level [1] <input type="checkbox"/> SAMPLE History and Physical Exam including Cincinnati Prehospital Stroke Scale. (SPECIAL CONSIDERATIONS) <input type="checkbox"/> Obtain information regarding best known time of onset and anticoagulant use. [2] <input type="checkbox"/> Transport Emergency traffic by ambulance to appropriate facility or by Air Medical to St. Luke's downtown, as necessary. [5] <input type="checkbox"/> EARLY NOTIFICATION IS KEY!! Contact receiving hospital as soon as Stroke is identified and inform them you are enroute with a Stroke patient. You can call them back enroute with further patient details if possible. [6] 	<p>[1] Use pulse oximeter. Note SPO₂ before and after oxygen administration.</p> <p>[2] If patient has recurring symptoms, the time of onset is considered to be when symptoms became constant, or last time seen normal.</p> <p>[3] Laryngoscopy increases intracranial pressure (ICP). If intubation is necessary, PAI is definitive method of airway control. See PHARMACOLOGICAL ASSISTED INTUBATION procedure.</p> <p>[4] <u>Cincinnati Prehospital Stroke Scale</u></p> <p>Facial Droop (Have patient show teeth or smile) Normal – Both sides of face move equally. Abnormal – One side of face does not move as well as the other side.</p> <p>Arm Drift (Patient closes eyes and hold both arms straight out for 10 seconds) Normal – Both arms move the same or both arms do not move at all. Abnormal – One arm does not move or one arm drifts down compared with the other.</p> <p>Abnormal Speech (Have the patient say “you can’t teach an old dog new tricks”) Normal – Patient uses correct words with no slurring. Abnormal – Patient slurs words, uses the wrong words, or is unable to speak,</p> <p>Per ACLS, if any one of these three signs is abnormal, the probability of a stroke is 72%.</p> <p>[5] See HOSPITAL CAPABILITIES page.</p> <p>[6] If time allows, begin NIH Stroke Scale assessment and report outcome upon arrival at ER.</p> <p>[7] MAP = 2xdiastolic + systolic / 3</p>
ADVANCED THERAPY	
<ol style="list-style-type: none"> 1. Advanced airway prn. [3] 2. 12 Lead EKG. 3. IV/IO access. 4. If blood glucose level < 60 mg/dl, refer to DIABETIC COMPLICATIONS protocol. 5. Fentanyl 1 – 2 mcg/kg prn for pain. 6. If patient is hypertensive and showing no signs and symptoms of stroke, refer to the HYPERTENSION protocol. 7. <u>Hypertensive with S/S of Stroke:</u> [4] The goal of BP reduction is SBP = 180 mmHg or MAP = 130 [7], and no more than a 10% reduction. BP reduction should be limited to patients who are within the first six hours of symptoms. <ul style="list-style-type: none"> ▪ SBP > 180 mmHg or MAP > 130 consider: Labetalol 10 mg Slow IV/IO; may repeat or double every 10 minutes; maximum 150 mg. NTG is not to be used if patient presents with S/S of CVA. [4] 8. GCS < 8 with signs and symptoms of tentorial herniation (Unreactive pupil(s), motor posturing, acute deterioration of neurologic status): <ul style="list-style-type: none"> ▪ Intubate and ventilate at a rate of 12 - 14 bpm or at a rate to maintain ETCO₂ 35 - 40 mmHg. [3] ▪ Avoid Post-Intubation paralytics if possible. 	

CEREBROVASCULAR ACCIDENT (CVA)

DEATH IN THE FIELD

DEATH IN THE FIELD	
BASIC THERAPY	SPECIAL CONSIDERATIONS
<ul style="list-style-type: none"> <input type="checkbox"/> Scene Survey [1] <input type="checkbox"/> Assess Airway, Breathing, Circulation, Disability, Expose and Examine <input type="checkbox"/> Obtain history <input type="checkbox"/> Pronouncement of death in the field (without initiation of resuscitation) is only to be considered in the following instances: [2] <ul style="list-style-type: none"> • Decapitation. • Decomposition. • Rigor mortis with warm air temperature. • Dependant lividity, venous pooling in dependant body parts. • Injuries to the head or cardiovascular system that is incompatible with life. • Pulseless, apneic patient in a multiple casualty situation where EMS system resources are required for the stabilization of living persons. • Pulseless and/or apneic patient with presence of a properly completed OOH-DNR or identification device that can be matched to patient. [3] [4] [5] <input type="checkbox"/> Document any / all signs listed above which apply to patient. <input type="checkbox"/> Contact supervisor and law enforcement if not already on scene. 	<p>[1] Take note of ambient temperature of environment in which patient is found.</p> <p>[2] A death cannot be judged in the hypothermic patient who may be asystolic, apneic and stiff, but who may still survive intact. BLS and ALS treatment is to be provided and patient is to be transported to closest hospital for re-warming.</p> <p>[3] If patient presents with a pulse but no spontaneous respirations, check for airway obstruction.</p> <p>[4] OOH-DNR will not be honored in the presence of the following situations:</p> <ul style="list-style-type: none"> ▪ Suspected suicide, homicide or other non-natural death ▪ Suspected pregnancy ▪ The order or device is destroyed or revoked <p>[5] If the scene situation seems unclear or if there is a conflict regarding the OOH-DNR, begin BLS treatment until the conflict can be resolved. Refer to OUT OF HOSPITAL DNR guidelines for conflict resolution.</p> <p>[6] No EKG monitoring is required to recognize death in the presence of an OOH-DNR form or identification device. OOH-DNR only requires the absence of spontaneous respirations and/or pulse. It does not require asystole.</p> <p>[7] Not required if there are injuries incompatible with life or obvious death.</p>
ADVANCED THERAPY	
<ol style="list-style-type: none"> 1. EKG [6] [7]. 2. Document time and get all pertinent information. 3. Remain on scene until released by Law Enforcement. 	<p>[6] No EKG monitoring is required to recognize death in the presence of an OOH-DNR form or identification device. OOH-DNR only requires the absence of spontaneous respirations and/or pulse. It does not require asystole.</p> <p>[7] Not required if there are injuries incompatible with life or obvious death.</p>
DEATH IN THE FIELD	

DIABETIC COMPLICATIONS

BASIC THERAPY

- Scene Survey
- Assess Airway, Breathing, Circulation, Disability, Expose and Examine
- Airway management including oxygen prn with appropriate delivery device
- Vital Signs including blood glucose level [1]
- SAMPLE History and Physical Exam
- If patient can maintain their own airway and blood glucose level < 60 mg/dl, give 1 tube (30 grams) oral Glucose PO. [2]
- Repeat blood glucose test approximately 10 minutes after Glucose administration and treat accordingly.

SPECIAL CONSIDERATIONS

[1] Use pulse oximeter. Note SPO₂ before and after oxygen administration.

[2] If available, consider giving patient juice or food following Insta-glucose to the conscious patient.

[3] D50%:

- Large, peripheral vein is preferred when administering D50% IVP.
- Ensure IV line patent to prevent necrosis.
- Refer to protocol for rectal administration of D50% as needed if Glucagon fails.
- Recommend IO administration be reserved for extreme emergencies.

[4] Signs/Symptoms of DKA are Kussmaul respirations, acetone breath, nausea, vomiting and/or signs of dehydration.

[5] Carefully monitor patient's ABC's and lung sounds for Signs/Symptoms of fluid overload.

[6] Thiamine should be administered prior to Dextrose if patient appears to have chronic alcoholism or appears malnourished.

[7] Glucagon:

- Only effective when there are sufficient stores of glycogen in the liver.
- Use with caution in patients with cardiovascular or renal disease.
- Two (2) IV attempts mandatory prior to use of Glucagon as safety permits.

ADVANCED THERAPY

HYPOGLYCEMIA

1. IV/IO Access. (IO should be for extreme emergencies only)
2. If blood glucose level < 60 mg/dl, give Thiamine 100 mg IV/IO [6], then administer D50% 25 G IV/IO [3]
3. If unable to establish IV after 2 attempts or attempts would be unsafe, give Glucagon 1mg IM/SQ. [7]
4. Consider D50% PR if Glucagon fails. [3]

HYPERGLYCEMIA OR DIABETIC KETOACIDOSIS

1. IV/IO access.
2. EKG/12 Lead EKG.
3. If patient showing signs and symptoms of DKA, give 500cc NS bolus. Repeat as needed up to max of 20 ml/kg [4] [5]

DIABETIC COMPLICATIONS

GENERAL RESPIRATORY DISTRESS

BASIC THERAPY

- Scene Survey
- Assess Airway, Breathing, Circulation, and Disability.
- Airway management with high-flow oxygen via NRB mask or assist ventilations with BVM at 10-12 bpm if needed. [1] [2]
- Vital Signs – Carefully assess breath sounds, both inspiratory and expiratory. [3]
- SAMPLE History and Physical Exam
- Albuterol Sulfate 2.5 mg dose prn via HHNB for wheezing / dyspnea. [4] [5]
- Transport in an upright position or position of comfort.

SPECIAL CONSIDERATIONS

- [1] Humidified oxygen is optimum.
- [2] If basic airway cannot be established, consider foreign body obstruction and proceed with appropriate airway clearance maneuvers, based on patient age.
- [3] Use pulse oximeter. Note SPO₂ before and after oxygen administration.
- [4] Note pulse rate before, during, and after treatment.
- [5] Respiratory status must be reassessed after each Albuterol dose to determine need for additional dosing.

ADVANCED THERAPY

Determine lung sounds:

- If “Wet” lung sounds, refer to **CONGESTIVE HEART FAILURE** protocol
- If wheezing or diminished breath sounds due to obstructive airway, refer to **REACTIVE AIRWAY DISEASE** protocol.

If lungs are congested and/or patient has productive cough, fever and other signs/symptoms of pneumonia then:

1. IV/IO access
2. EKG/12-Lead EKG
3. If patient dehydrated, give NS bolus (not > 500 ml per bolus) to max of 20 ml/kg. Reassess patient’s ABC’s and lung sounds between each bolus.
4. Give Albuterol Sulfate 2.5mg via HHNB for bronchospasm / wheezing until symptoms subside. [4] [5]

GENERAL RESPIRATORY DISTRESS

HYPEREMESIS

BASIC THERAPY

- Scene Survey.
- Assess Airway, Breathing, Circulation, and Disability.
- Airway management including oxygen prn with appropriate delivery device.
- Vital Signs [1].
- SAMPLE History and Physical Exam.

SPECIAL CONSIDERATIONS

[1] Use pulse oximeter. Note SPO₂ before and after oxygen administration.

- [2] Phenergan:
- Do not give to patients with CHI or CNS pathology.
 - Can cause AMS in some patients.
 - IM only.

ADVANCED THERAPY

1. IV/IO access.
2. 12 lead EKG.
3. For nausea and/or vomiting, give Zofran 4 mg IV/IO over 2-5 minutes. If unable to establish IV/IO give Zofran 4 mg IM. If Zofran ineffective, give Phenergan 12.5 mg – 25 mg IM. [2]
4. If patient dehydrated, give NS bolus (not > 500 ml per bolus) to max of 20 ml/kg. Reassess patient's ABC's and lung sounds between each bolus.

HYPEREMESIS

HYPERTENSIVE CRISIS

BASIC THERAPY

- Scene Survey
- Assess Airway, Breathing, Circulation, and Disability.
- Airway management including oxygen prn with appropriate delivery device.
- Vital Signs [1]
- SAMPLE History and Physical Exam

ADVANCED THERAPY

1. IV/IO access
2. EKG/12 Lead EKG
3. Administer Labetalol 10 mg Slow IV/IO over 2 minutes. May repeat or double dose every 10 minutes to a maximum of 150 mg. [3]
4. If Labetalol is contraindicated, give Nitroglycerine Paste ½ - 2 inch transdermal patch (see below). DO NOT give Nitroglycerin to patients who have taken any erectile dysfunction medication within the last 24 hours. [2]
5. For nausea and/or vomiting, give Zofran 4 mg IV/IO over 2-5 minutes. If unable to establish IV/IO give Zofran 4 mg IM. If Zofran ineffective, give Phenergan IM 12.5 mg – 25 mg. [4]
6. If patient is exhibiting signs and symptoms of Stroke, refer to the **CEREBROVASCULAR ACCIDENT (CVA)** protocol for BP reduction parameters. Do NOT give Nitroglycerin.

Parameters of Blood Pressure Treatment

- Treat systolic blood pressure >180 mmHg or diastolic blood pressure > 110 mmHg and is accompanied by the following signs and symptoms: [5] [6]

Chest Pain
Dyspnea
Headache
Dizziness

Blurred Vision
Aphasia
Facial Weakness
CHF

Nausea/Vomiting
Altered Level of Consciousness

Treat Pregnancy Induced Hypertension (PIH) with a persistent DBP \geq 110 or MAP > 125 mmHg with Labetalol 10 mg Slow IV/IO over 2 minutes. [7] May repeat or double dose every 10 minutes to a maximum of 150 mg [3] If seizures develop, refer to **OBSTETRICAL EMERGENCIES: TOXEMIA OF PREGNANCY** protocol.

Nitroglycerin Ointment Dosage General Guidelines

½ to 2 inches (1 inch equals to approximately 15 mg) according to Systolic BP:

110 – 140	½ inch	181 – 200	1 ½ inch
141 – 180	1 inch	> 200	2 inches

SPECIAL CONSIDERATIONS

[1] Use pulse oximeter. Note SPO₂ before and after oxygen administration.

[2] Nitroglycerin:

- Systolic BP must be > 100 mmHg for administration.

[3] Labetalol:

- Contraindicated in asthma, CHF, 2nd or 3rd Degree AV Blocks, bradycardia, cardiogenic shock and patients who have received IV beta blockers within the last 24 hours.
- Watch for Signs/Symptoms of CHF, heart blocks, bradycardia and cardiogenic shock during administration.

[4] Phenergan:

- Do not give to patients with CHI or CNS pathology.
- Can cause AMS in some patients.
- IM only

[5] The goal in treating HTN is a 25% reduction in blood pressure.

[6] Non-symptomatic HTN can be treated if it is deemed detrimental to the patient.

[7] MAP = 2Xdiastolic + systolic / 3

HYPERTENSIVE CRISIS

HYPERTHERMIA

BASIC THERAPY

- Scene Survey [1]
- Assess Airway, Breathing, Circulation, Disability, Expose and Examine.
- Airway management with high-flow oxygen via NRB mask or assist ventilations with BVM at 10-12 bpm if needed. Vital Signs including temperature and skin condition [2].
- SAMPLE History and Physical Exam.
- Remove patient from hot environment to cooler environment.
- Remove clothing.
- Pour fluids over patient if needed (do not pour over the top of the head).
- Fan to promote convection.
- Apply ice packs to groin, neck and axilla if needed.
- Oral fluids may be given if no altered mental status or complaint of nausea/vomiting.

SPECIAL CONSIDERATIONS

- [1] Take note of ambient temperature. (Hot, warm, cool, cold)
- [2] Use pulse oximeter. Note SPO₂ before and after oxygen administration.
- [3] Carefully monitor patient's ABC's and lung sounds for Signs/Symptoms of fluid overload.
- [4] Phenergan:
- Do not give to patients with CHI or CNS pathology.
 - Can cause AMS in some patients.
 - IM only.

ADVANCED THERAPY

1. IV/IO access with bolus of NS 1 liter to rehydrate patient, then run at 200 ml/hr to total max of 20 ml/kg. [3]
2. For nausea and / or vomiting, give Zofran 4 mg IV/IO over 2-5 minutes. If unable to establish IV/IO give Zofran 4 mg IM. If Zofran ineffective, give Phenergan 12.5 mg – 25 mg IM. [4]
3. If shivering occurs during cooling, give Ativan 0.5 - 4 mg IV/IO/IM. Titrate to effect if SBP is > 100 mmHg.

	HEAT CRAMPS	HEAT EXHAUSTION	HEAT STROKE
Skin	Pale, excessive perspiration	Pale, cool, clammy	Hot, dry. First red, later gray
Body Temperature	Normal or slightly elevated	Usually normal, subnormal or elevated	Rapidly rising to 39° C (102.2° F)
Pulse	Rapid, strong	Rapid, weak	Rapid, full at first; then weak, thready
Blood Pressure	Normal	Decreased	Increased, then decreased
Pupils	Normal	Dilated	Dilated
Body Odor	Normal perspiration	Normal	Offensive
Muscle Cramps	Severe	None	None
Convulsions	Generalized twitching	Rare	Epileptic form in early stages
Nausea and Vomiting	Mild nausea, vomiting rare	May be prolonged	Usually does not occur
Level of Consciousness	Normal	Stupor, coma in severe cases	Early loss of consciousness
Pain	Severe from muscle cramping	Headaches in mild cases	Only at onset

HYPERTHERMIA

HYPOTHERMIA

BASIC THERAPY

- Scene Survey. [1]
- Assess Airway, Breathing, Circulation, and Disability.
- If patient is pulseless and apneic, begin CPR.
- Airway management including warm, humidified oxygen prn using appropriate delivery device.
- Vital Signs including rectal temperature and skin condition. [2]
- SAMPLE History and Physical Exam.
- Basic care of the hypothermic patient should include the following:
 - Handle patient very carefully. Avoid rough movement and excess activity. Hypothermia causes extreme cardiac irritability.
 - Keep patient horizontal.
 - Protect patient against heat loss and wind chill. Cover patient with blankets and move to warm, draft free environment.
 - Remove any wet clothing, gently dry patient and cover with blankets. Do not rub frostbitten areas.
 - In moderate to severe hypothermia, apply heat packs to groin and armpits. [3]

SPECIAL CONSIDERATIONS

Signs/Symptoms of mild to moderate hypothermia include lack of coordination, mental confusion, slowed reactions, shivering and sleepiness.

[1] Take note of ambient temperature. (Hot, warm, cool, cold)

[2] Use pulse oximeter. Note SPO₂ before and after oxygen administration.

[3] The stages of hypothermia are:

- Mild Core body temp 94° – 97° F
- Moderate Core body temp 86° – 94° F
- Severe Core body temp < 86° F

[4] Core body temperature may need to be restored prior to myocardium becoming receptive to drug therapy and/or defibrillation.

[5] Use End Tidal CO₂ Detector whenever ventilating intubated patients.

[6] Carefully monitor patient's ABC's and lung sounds for Signs/Symptoms of fluid overload.

ADVANCED THERAPY

1. Advanced airway prn. [5]
2. EKG/12 Lead EKG.
3. IV/IO access. Warm all fluids prior to administration. [6]
4. If patient is in V-Fib / Pulseless V-Tach, give initial unsynchronized shock at 200 joules (Biphasic) , then treat according to severity of hypothermia: [3] [4]

Moderate Hypothermia

- Continue CPR
- Continue active external warming of patient including warm IV fluids
- Give medications as indicated but at longer than standard intervals
- Repeat defibrillation for V-Fib/V-Tach as core body temperature increases
- Transport to hospital

Severe Hypothermia

- Continue CPR
- Consider active internal warming of patient with gastric lavage
- Withhold medications
- Limit defibrillation for V-Fib/V-Tach to initial shock
- Transport to hospital
- Consider further advanced therapy as core body temperature increases.

HYPOTHERMIA

OBSTETRICAL EMERGENCIES

BASIC THERAPY

- Scene Survey
- Assess Airway, Breathing, Circulation, Disability, Expose and Examine
- Airway management with high flow O₂ via NRB mask
- Vital Signs [1]
- SAMPLE History and Physical Exam including OPQRST questions [2]
- If patient pregnant, transport patient tilted to left side at least 20° to prevent Supine Hypotension Syndrome
- If delivery is imminent, remain on scene and deliver newborn [3]

SPECIAL CONSIDERATIONS

[1] Use pulse oximeter. Note SPO₂ before and after oxygen administration.

[2] SAMPLE History should include the following information with women of childbearing age:

- Is patient pregnant?
- Is there a possibility of being pregnant?
- Date of last menstrual period.
- Expected delivery date.
- Has patient received prenatal care?
- Any vaginal bleeding or fluid leakage?
- If so, have patient rate severity.
- Is patient experiencing contractions? If so, how far apart are they and how long are they lasting.
- Gravid / Para / Abortions?

[3] Refer to **NEONATAL RESUSCITATION** protocol for care and assessment of newborn during and after delivery.

[4] Many breech births progress normally.

[5] Magnesium Sulfate:

- Watch for hypotension, cardiac dysrhythmias, CNS depression, flushing, sweating.
- If signs and symptoms of toxicity (respiratory depression / arrest, hypotension / tachycardia, confusion, decreased urine output), **discontinue Magnesium Sulfate and give Calcium Chloride 500 – 1000 mg IV/IO.**
- Side effects are usually from too rapid administration. Do not give faster than 1 G/min.
- Consider mixing dosage into 100cc NS with 60 gtts set ran at 10cc/min to prevent rapid administration.

ADVANCED THERAPY

1. EKG/12 Lead EKG.
2. IV/IO access.

Prolapsed Umbilical Cord

- Maintaining pulsatile cord is the objective of care
- Elevate hips, place in knee/chest position
- Insert gloved hand into vagina to alleviate pressure from presenting part on cord. Do not remove hand until C-Section delivery
- Keep cord moist with NS

Breech Presentation [4]

- Immediate transport
- Keep patient calm
- If the delivery of the body alone occurs, support the presenting part
- If newborn is attempting to breath, place a gloved hand in the vagina and form a "V" around the mouth and nose to maintain the airway

Limb Presentation

- Maintaining pulsatile cord is the objective of care
- Elevate hips, place in knee/chest position
- Insert gloved hand into vagina to alleviate pressure from presenting part on cord. Do not remove hand until C-Section delivery
- Keep cord moist with NS

Placenta Previa (no pain)

- Gestation > 20 weeks; no history of trauma.
- Transport patient left lateral recumbent
- Treat hypotension per **SHOCK** protocol

Abruption Placenta (pain)

- Gestation > 20 weeks; no history of trauma.
- Transport patient left lateral recumbent
- Treat hypotension per **SHOCK** protocol

Uterine Rupture (severe pain)

- Gestation > 20 weeks; no history of trauma.
- Transport patient left lateral recumbent
- Treat hypotension per **SHOCK** protocol

Spontaneous Abortion

- Treat hypotension per **SHOCK** protocol
- Retain tissue for hospital

Post Partum Hemorrhage

- Immediate transport
- Massage fundus
- High flow O₂
- Treat hypotension per **SHOCK** protocol

Toxemia of Pregnancy

- Immediate transport
- Magnesium Sulfate 2 grams Slow IV/IO over 10 minutes. [5]
- Seizures: Ativan 0.5 – 4 mg IV/IO/IM; titrate to effect if SBP >100 mmHg

OBSTETRICAL EMERGENCIES

OVERDOSE / TOXIC EXPOSURES

BASIC THERAPY

- ❑ Scene Survey [1] [2].
- ❑ Assess Airway, Breathing, Circulation, Disability, Expose and Examine.
- ❑ Airway management with high flow oxygen via NRB mask or assist ventilations with BVM at 10-12 bpm if needed.
- ❑ Vital Signs [3].
- ❑ SAMPLE History including history of exposure and Physical Exam.
- ❑ Gather ALL possible bottles or substances at scene and transport with patient to hospital. Do not handle or transport any materials that have the potential of exposing yourself or your crew to a hazardous material.
- ❑ The five most dangerous drugs of overdose are analgesics, antidepressants, stimulants, cardiovascular and alcohols.

SPECIAL CONSIDERATIONS

- [1] Scene safety is an important consideration with overdose patients and toxic exposures.
- [2] Consider hazardous material exposure and consult with appropriate advisory agency prior to decontamination or patient contact.
- [3] Use pulse oximeter. Note SPO₂ before and after oxygen administration.
- [4] If suspected opiate overdose, administer Narcan prior to advanced airway.

ADVANCED THERAPY

1. Advanced airway, prn [4] [5].
2. EKG/12 Lead EKG.
3. IV/IO access.
4. If mental status and respiratory effort are depressed give Narcan 0.4 – 2.0 mg IV/IO/ETT, titrate to respirations. Give Narcan 1 - 2 mg IM/IN if unable / unsafe to establish IV/IO access. If there is a partial response to initial dose or there is a strong suspicion of opiate overdose, repeat Narcan q 5 minutes up to max of 10 mg. [6]
5. Lavage with NS or water until clear.
6. Activated charcoal 1 G/kg PO or NGT [7].
7. If signs/symptoms of shock: NS bolus 500 – 1000 ml. Monitor ABCs and lung sounds for fluid overload.
8. Epinephrine infusion or Dopamine infusion to maintain adequate blood pressure. [8]
9. Benadryl 25 - 50 mg IV/IO or deep IM to max of 50 mg for treatment of dystonia associated with Antipsychotic medication ingestion. (See below).
10. For suspected organophosphate poisoning, Atropine 2 mg IV/IO/IM q 15 minutes to maintain adequate heart rate.
11. For confirmed Tricyclic antidepressant overdose, Sodium Bicarbonate 1 mEq/kg of 8.4% solution IV/IO. [10]
12. For suspected calcium channel blocker overdose, Calcium Chloride 500 – 1000 mg IV/IO over 5-10 minutes. [9]

- [5] Use End Tidal CO₂ Detector whenever ventilating intubated patients.
- [6] Narcan:
- Titration of Narcan can lessen the possibility of an unconscious patient becoming combative.
 - IN dosage is ½ total dose per nare.
- [7] Activated Charcoal:
- If given PO, mix desired dose with water for ease of administration.
 - If patient is unconscious or has ingested a substance that may result in decreased LOC, have airway secured before administration.
 - Activated Charcoal is not effective in poisoning due to methanol, cyanide, corrosive substances, iron tablets, and organophosphates.
- [8] See **INFUSION RATE CHART** page.
- [9] Epinephrine infusion also helpful in beta blockers, sodium/calcium channel blockers and cardiac glycosides overdoses if patient appears to be in shock.
- [10] Sodium Bicarbonate:
- Contraindicated in hypokalemia and patients who can not tolerate the salt load (i.e. CHF).

NOTE: Signs/Symptoms of Dystonia or Extrapyrimal effects include:

- Eye deviation
- Head deviation (to one side or the other)
- Difficulty speaking due to “thick” tongue
- Involuntary arm or leg twitching/jerking/contractures

POISON CONTROL (800) 222-1222

OVERDOSE / TOXIC EXPOSURES

REACTIVE AIRWAY DISEASE

BASIC THERAPY

- Scene Survey
- Assess Airway, Breathing, Circulation, and Disability
- Airway management with high-flow oxygen via NRB mask or assist ventilations with BVM at 10-12 bpm if needed [1] [2]
- Vital Signs – Carefully assess breath sounds, both inspiratory and expiratory [3]
- SAMPLE History and Physical Exam
- If patient wheezing give Albuterol Sulfate 2.5 mg dose prn via HHNB [4]
- Transport in an upright position or position of comfort
- Consider CPAP (with inline Albuterol Sulfate treatment prn). [10]

SPECIAL CONSIDERATIONS

- [1] Humidified oxygen is optimum.
- [2] If basic airway cannot be established, consider foreign body obstruction and continue with appropriate airway clearance maneuvers, based on patient age.
- [3] Use pulse oximeter. Note SPO₂ before and after oxygen administration..

ADVANCED THERAPY

1. Advanced airway prn [1] [6] [10]
2. EKG/12 Lead EKG.
3. IV/IO Access.
4. Albuterol Sulfate 2.5mg via HHNB for bronchospasm / wheezing until symptoms subside [8].
5. If bronchospasm/wheezing refractory to Albuterol treatment; Give Albuterol / Atrovent combination x1. [7] [8]
 - < 10 kg patient – Atrovent 0.25 mg mixed with Albuterol 2.5 mg via HHNB
 - > 10 kg patient – Atrovent 0.5 mg mixed with Albuterol 2.5 mg via HHNB
6. Epinephrine 0.3 mg (1:1000) IM for patient in extremis. May repeat every 20 minutes up to 1.2 mg total.
7. Solumedrol 125 mg IV/IO.
8. Severe bronchospasm refractory to other treatments and SBP >100 mmHg;
 - Give Magnesium Sulfate 2 G IV/IO over 10 minutes. [9]
9. If patient hypotensive, give NS bolus (not > 500 ml per bolus) to max of 20 ml/kg. Reassess patient's ABC's and lung sounds between each bolus.

- [4] Note pulse rate before, during, and after treatment.
- [5] Signs/symptoms of inadequate air passage include the following:
 - Minimal chest wall movement
 - Absent or minimal breath sounds
 - Use of accessory muscles
- [6] Use End Tidal CO₂ Detector whenever ventilating intubated patients.
- [7] If patient is using Albuterol HHNB at home without relief, the paramedic may go directly to combination treatment of Albuterol and Atrovent. **Single dose only.**
- [8] Respiratory status must be reassessed after each Albuterol dose to determine need for additional dosing.
- [9] Magnesium Sulfate
 - Side effects are usually from too rapid administration. Do not give faster than 1 G/min.
 - Consider mixing dosage into 100cc NS with 60 gtts set ran at 10cc/min to prevent rapid administration.
- [10] Use of the CPAP is intended to provide ventilation to patients where there is a potential need for ET intubation. If the patient is unstable (hypotensive, decreased LOC) or if there is no improvement in patient status with CPAP, proceed to ET intubation.

REACTIVE AIRWAY DISEASE

SEIZURES

BASIC THERAPY	SPECIAL CONSIDERATIONS
<ul style="list-style-type: none"> <input type="checkbox"/> Scene Survey [1] [2] <input type="checkbox"/> Assess Airway, Breathing, Circulation, Disability, Expose and Examine <input type="checkbox"/> Airway management with high flow oxygen via NRB or assist ventilations with BVM at 10-12 bpm if needed <input type="checkbox"/> Vital Signs including blood glucose level and temperature [3] <input type="checkbox"/> SAMPLE History and Physical Exam [4] 	<p>[1] Scene safety is an important consideration with AMS patients.</p> <p>[2] Move any furniture or objects that patient may strike while actively seizing. Do not attempt to restrain patient or place anything in their mouth.</p> <p>[3] Use pulse oximeter. Note SPO₂ before and after oxygen administration.</p> <p>[4] If patient has no history of seizure disorder or if history unknown, consider traumatic and/or medical etiology.</p>
ADVANCED THERAPY	<p>[5] Versed:</p> <ul style="list-style-type: none"> ▪ Monitor respiratory effort continuously and provide ventilatory support when necessary. ▪ Watch for hypotensive effects of Versed. Be prepared to treat appropriately. ▪ IN dosage is ½ total dose per nare. <p>[6] Use End Tidal CO₂ Detector whenever ventilating intubated patients.</p>
<ol style="list-style-type: none"> 1. IV/IO access. 2. Advanced airway prn [6]. 3. Ativan 0.5 - 4 mg IV/IO/IM. Titrate to effect if SBP >100 mmHg OR Versed 2 – 5 mg IV/IO. 5 mg IM/IN if unable / unsafe to establish IV/IO. May repeat to max of 20 mg. [5] 4. If blood glucose level < 60 mg/dl, refer to DIABETIC COMPLICATIONS protocol. 	

SEIZURES

SHOCK

BASIC THERAPY

- Scene Survey.
- Assess Airway, Breathing, Circulation, Disability, Expose and Examine. [1]
- Airway management with high flow oxygen via NRB mask or assist ventilations with BVM at 10-12 bpm if needed. Use jaw thrust maneuver to open airway in patients with suspected C-Spine injury.
- Vital Signs [2].
- SAMPLE History and Physical Exam.

SPECIAL CONSIDERATIONS

- [1] Give special consideration to spinal motion restriction when spinal trauma suspected. Apply rigid C-collar ASAP. Secure patient with appropriate immobilization device. Secure torso before securing head.
- [2] Use pulse oximeter. Note SPO₂ before and after oxygen administration.
- [3] Use End Tidal CO₂ Detector whenever ventilating intubated patients.
- [4] Atropine
- Atropine is not indicated in patients with wide-complex ventricular escape beats.
 - Use with caution in patients with suspected AMI. Atropine may exacerbate ischemia and/or induce V-Fib/V-Tach in the presence of an AMI.
- [5] See **INFUSION RATE CHART** page.

ADVANCED THERAPY

HYPOVOLEMIC / HYOPERFUSION

1. Advanced airway, prn [3]
2. EKG/12-Lead EKG.
3. IV/IO Access.
4. If patient hypotensive, give NS bolus (not > 500 ml per bolus) to max of 20 ml/kg. Reassess patient's ABC's and lung sounds between each bolus.

DISTRIBUTIVE / SEPTIC

1. Advanced airway, prn [3]
2. EKG/12-Lead EKG.
3. IV/IO Access.
4. If patient hypotensive, give NS bolus (not > 500 ml per bolus) to max of 20 ml/kg. Reassess patient's ABC's and lung sounds between each bolus.
5. If bradycardia exists, give Atropine 0.5 mg IV/IO [4].
6. Epinephrine Infusion or Dopamine Infusion to maintain adequate blood pressure [5].

CARDIOGENIC

1. Advanced airway, prn [3]
2. 12-Lead EKG.
3. IV/IO Access.
4. If patient hypotensive, give NS bolus (not > 500 ml per bolus) to max of 20 ml/kg. Reassess patient's ABC's and lung sounds between each bolus.
5. If bradycardia exists, give Atropine 0.5 mg IV/IO. [4]
6. Epinephrine Infusion or Dopamine Infusion to maintain adequate blood pressure. [5]

SHOCK

Adult Trauma Emergencies Patient Care Guidelines

ABDOMINAL TRAUMA

BASIC THERAPY

- Scene Survey.
- Assess Airway, Breathing, Circulation, Disability, Expose and Examine. [1]
- Airway management with high-flow oxygen via NRB or assist ventilations with BVM at 10-12 bpm if needed. Use jaw thrust maneuver to open airway in patients with suspected C-spine injury. [2]
- Vital Signs [3]
- SAMPLE History and Physical Exam.
- Stabilize impaled objects in place.
- Cover eviscerations with saline-soaked gauze. Do not attempt to push the organs back into the abdomen.

SPECIAL CONSIDERATIONS

- [1] Give special consideration to spinal motion restriction when spinal trauma suspected.
- [2] If unable to open airway using jaw thrust maneuver after first attempt, use head-tilt, chin-lift maneuver.
- [3] Use pulse oximeter.
- [4] Use End Tidal CO₂ Detector whenever ventilating intubated patients.

ADVANCED THERAPY

1. Advanced airway prn. [4]
2. EKG/12-Lead EKG.
3. IV/IO access (two large bore IV's).
4. If patient hypotensive, give NS bolus to maintain systolic BP > 90 mmHg (not > 500 ml per bolus) to max of 20 ml/kg. Reassess patient's ABC's and lung sounds between each bolus.

ABDOMINAL TRAUMA

AMPUTATED PARTS

BASIC THERAPY

- Scene Survey.
- Assess Airway, Breathing, Circulation, Disability, Expose and Examine. [1]
- Airway management with high-flow oxygen via NRB or assist ventilations with BVM at 10-12 bpm if needed. Use jaw thrust maneuver to open airway in patients with suspected C-spine injury. [2]
- Vital Signs [3]
- SAMPLE History and Physical Exam.
- Control hemorrhage. If unable to control, apply MAT tourniquet. (once in place, do not remove)
- Splint any associated fractures or dislocations.
- Retrieve amputated part and rinse with normal saline. DO NOT SCRUB. Place in plastic bag and keep cool. Label with patient's name, date and time. Physically release to receiving nurse.
- DO NOT:
 - Soak in water.
 - Cover with wet gauze or towels.
 - Place directly on ice.
- If partial amputation, place in anatomical position to facilitate the best vascular status and wrap in bulky dressings. If circulation to the distal part is compromised, wrap the distal part and apply ice. Consider placing the pulse oximeter probe on a finger or toe of the affected extremity to monitor the vascular status of the injured extremity.

SPECIAL CONSIDERATIONS

- [1] Give special consideration to spinal motion restriction when spinal trauma suspected.
- [2] If unable to open airway using jaw thrust maneuver after first attempt, use head-tilt, chin-lift maneuver.
- [3] Use pulse oximeter.
- [4] Fentanyl:
- Contraindicated in presence of bradycardia
 - Beware of oversedation. Be prepared to ventilate patient with BVM.
 - Give Narcan 0.4 – 2 mg IV/IO/IM/IN if respiratory depression occurs.
 - IN dosage is ½ appropriate dose per nare.
- [5] Morphine Sulfate:
- Contraindicated in patients with possible head injury.
 - Give Narcan 0.4 – 2 mg IV/IO if respiratory depression occurs.
 - Give Benadryl 50 mg IV/IO if allergic reaction or hypotension occurs due to Morphine administration.

ADVANCED THERAPY

1. EKG/12-Lead EKG
2. IV/IO Access (large bore IV)
3. If patient hypotensive, give NS bolus to maintain systolic BP > 90 mmHg (not > 500 ml per bolus) to max of 20 ml/kg. Reassess patient's ABC's and lung sounds between each bolus.
4. Fentanyl 1 - 2 mcg/kg IV/IO/IN for pain. Titrate to effect if SBP > 100. [4]
OR
 Morphine Sulfate 2 - 5 mg IV/IO to max of 10 mg. Titrate to effect if SBP > 100. [5]

AMPUTATED PARTS

BURNS / ELECTROCUTIONS

BASIC THERAPY	SPECIAL CONSIDERATIONS
<ul style="list-style-type: none"> ❑ Scene Survey. [1] ❑ Assess Airway, Breathing, Circulation, Disability, Expose and Examine [2] ❑ Airway management with high-flow oxygen via NRB or assist ventilations with BVM at 10-12 bpm if needed. Check closely for signs of inhalation injury. Use jaw thrust maneuver to open airway with suspected C-spine injury. [3] [4] ❑ Vital Signs [5] ❑ SAMPLE History and Physical Exam. Refer to Rule of Nine's to determine total body surface area involved. ❑ Treatment of Burns: [6] <ul style="list-style-type: none"> ▪ Remove any burned clothing not adhered to skin. ▪ Place patient on dry, sterile burn sheet. ▪ Remove any constricting jewelry. ▪ Apply wet dressings for closed, minor burns with total body surface area < 10%. Apply dry dressings for all other burns. ▪ Chemical Burns: Brush off dry chemicals. Flush with water or normal saline. ▪ Electrical Burn: Remove from contact with current source if equipped to do so. Note any secondary fractures, entrance, and exit wounds caused by current. ▪ If patient had prolonged exposure to carbon monoxide, consider transport to a facility with hyperbaric capability. 	<p>[1] Scene safety is of utmost importance. Be aware of the possibility of fumes, gases, downed electrical lines, potential explosions. Call for electric company as soon as possible if electrical hazard exists. Do not enter scene until it is deemed safe by appropriate personnel.</p> <p>[2] Give special consideration to spinal motion restriction when spinal trauma suspected.</p> <p>[3] Humidified O₂ is optimum.</p> <p>[4] If unable to open airway using jaw thrust maneuver after first attempt, use head-tilt, chin-lift maneuver.</p> <p>[5] Use pulse oximeter.</p> <p>[6] Severe burns should be treated at a burn center. These include: <ul style="list-style-type: none"> ▪ >25% total body surface area ▪ Burns involving hands, feet, face, abdomen ▪ Electrical burns ▪ Inhalation burns ▪ Burns in combination with other injuries ▪ Severe pre-existing medical problems </p> <p>[7] Use End Tidal CO₂ Detector whenever ventilating intubated patients.</p> <p>[8] Fentanyl: <ul style="list-style-type: none"> • Contraindicated in presence of bradycardia • Beware of oversedation. Be prepared to ventilate patient with BVM. • Give Narcan 0.4 – 2 mg IV/IO/IM/IN if respiratory depression occurs. • IN dosage is ½ appropriate dose per nare. </p> <p>[9] Morphine Sulfate: <ul style="list-style-type: none"> ▪ Contraindicated in patients with possible head injury. ▪ Give Narcan 0.4 – 2 mg IV/IO if respiratory depression occurs. ▪ Give Benadryl 50 mg IV/IO/IM if allergic reaction or hypotension occurs due to Morphine administration. </p>
ADVANCED THERAPY	
<ol style="list-style-type: none"> 1. Advanced airway prn. Consider early intubation if singed nasal hairs, carbonaceous sputum, raspy voice, or if patient was in an enclosed space. [7] 2. EKG/12-Lead EKG 3. IV/IO access (large bore IV in unburned area if possible) 4. <u>In moderate to severe burns:</u> Establish 2nd large bore IV/IO line. Give Fluid replacement NS Bolus as follows: Amount of bolus first hour post-burn = 0.5 ml x kg x % BSA burned. May repeat once. 5. High voltage electrical injury or direct lightning strike with significant tissue destruction: Sodium Bicarbonate 1 mEq / kg in 1000 ml NS run wide open (100 mEq maximum IV/IO). 6. Fentanyl 1 - 2 mcg/kg IV/IO/IN for pain. Titrate to effect if SBP > 100. [8] OR Morphine Sulfate 2 - 5 mg IV/IO to max of 10 mg. Titrate to effect if SBP > 100. [9] 	

BURNS / ELECTROCUTIONS

CHEST TRAUMA

CHEST TRAUMA	
BASIC THERAPY	SPECIAL CONSIDERATIONS
<ul style="list-style-type: none"> <input type="checkbox"/> Scene Survey <input type="checkbox"/> Assess Airway, Breathing, Circulation, Disability, Expose and Examine. [1] <input type="checkbox"/> Airway management with high-flow oxygen via NRB or assist ventilations with BVM at 10-12 bpm if needed. Use jaw thrust maneuver to open airway in patients with suspected C-spine injury. [2] <input type="checkbox"/> Vital Signs [3] <input type="checkbox"/> SAMPLE History and Physical Exam. <input type="checkbox"/> If penetrating or sucking chest wound, place occlusive dressing over wound during exhalation. Tape on three sides. <input type="checkbox"/> If flail segment is present, stabilize with large bulky dressing and tape. <input type="checkbox"/> Stabilize impaled objects in place. <input type="checkbox"/> Watch for signs/symptoms of tension pneumothorax. 	<p>[1] Give special consideration to spinal motion restriction when spinal trauma suspected.</p> <p>[2] If unable to open airway using jaw thrust maneuver after first attempt, use head-tilt, chin-lift maneuver.</p> <p>[3] Use pulse oximeter. Note SPO₂ before and after oxygen administration.</p> <p>[4] Use End Tidal CO₂ Detector whenever ventilating intubated patients.</p> <p>[5] Tracheal displacement is a very late sign of tension pneumothorax.</p> <p>[6] Fentanyl:</p> <ul style="list-style-type: none"> • Contraindicated in presence of bradycardia • Beware of oversedation. Be prepared to ventilate patient with BVM. • Give Narcan 0.4 – 2 mg IV/IO/IM/IN if respiratory depression occurs. • IN dosage is ½ total dose per nare. <p>[7] See PROCEDURES: NEEDLE DECOMPRESSION</p>
ADVANCED THERAPY	
<ol style="list-style-type: none"> 1. Advanced airway prn, Consider intubation for markedly decreased LOC or inability to maintain patent airway. [4] 2. EKG/12-Lead EKG 3. IV/IO access (two large bore IV's) 4. If patient hypotensive, give NS bolus to maintain systolic BP > 90 mmHg (not > 500 ml per bolus) to max of 20 ml/kg. Reassess patient's ABC's and lung sounds between each bolus. 5. <u>Tension Pneumothorax:</u> Perform needle decompression if increased respiratory distress with the following: [7] <ul style="list-style-type: none"> • Chest pain • Absent or depressed breath sounds on affected side(s) • Marked deterioration in patient condition • Increasing difficulty with BVM assistance • Neck vein distension or tracheal displacement toward the unaffected side. [5] 6. Fentanyl 1 - 2 mcg/kg IV/IO/IN for pain. Titrate to effect if SBP > 100. [6] 	
CHEST TRAUMA	

DIVING EMERGENCIES (DECOMPRESSION SICKNESS)

BASIC THERAPY

- Scene Survey
- Assess Airway, Breathing, Circulation, and Disability.
- Airway management with high-flow oxygen via NRB or assist ventilations with BVM at 10-12 bpm if needed.
- Place patient in a supine, head-down, left lateral decubitus position.
- Vital Signs including temperature every 10 minutes. [1]
- SAMPLE History and Physical Exam.
- Protect patient against hypothermia and hyperthermia.
- Monitor closely for complications such as pneumothorax, shock, seizures.
- Transfer patient to a hospital with hyperbaric facility. Provide hyperbaric personnel with a detailed history of the dive (depth and duration, surface interval, number of dives, timing and onset of symptoms), complications, and any treatment given. If available transport dive computer or dive tables with patient to hospital. [3]

SPECIAL CONSIDERATIONS

- [1] Use pulse oximeter.
- [2] Use End Tidal CO₂ Detector whenever ventilating intubated patients.
- [3] Contact Divers Alert Network (DAN)
919-684-9111
- Most patients with Decompression Sickness seek medical attention within 12 – 24 hours of last dive. Signs/Symptoms include:
 - Joint and Abdominal pain
 - Fatigue
 - Paresthesias
 - CNS disturbances

ADVANCED THERAPY

1. Advanced airway prn [2]
2. EKG/12-Lead EKG
3. IV/IO access (large bore IV).
4. Treat any complications according to appropriate protocols.

DIVING EMERGENCIES (DECOMPRESSION SICKNESS)

EYE TRAUMA

BASIC THERAPY

- Scene Survey
- Assess Airway, Breathing, Circulation, Disability, Expose and Examine
- Airway management with oxygen prn with appropriate delivery device.
- Vital Signs including any vision disturbances. [1]
- SAMPLE History and Physical Exam.
- Penetrating Injuries: If laceration, impaled object, or other open trauma to the eye, bandage and dress wound appropriately without applying pressure. Do not irrigate with water. Cover both eyes to prevent sympathetic movement.
- Non-Penetrating Injuries: Irrigate with copious amounts of fluid (at least 1 liter per affected eye). Do not allow irrigation runoff to enter unaffected eye.

SPECIAL CONSIDERATIONS

[1] Use pulse oximeter.

[2] Fentanyl:

- Contraindicated in presence of bradycardia
- Beware of oversedation. Be prepared to ventilate patient with BVM.
- Give Narcan 0.4 – 2 mg IV/IO/IM/IN.
- IN dosage is ½ total dose per nares.

ADVANCED THERAPY

1. IV/IO access prn.
2. Fentanyl 1 - 2 mcg/kg IV/IO/IN for pain. Titrate to effect if SBP > 100. [2]

EYE TRAUMA

NEAR-DROWNING

BASIC THERAPY

- Scene Survey.
- Assess Airway, Breathing, Circulation, Disability, Expose and Examine. [1]
- Airway management with high flow oxygen via NRB or assist ventilations with BVM at 10-12 bpm if needed. Use jaw thrust maneuver to open airway. [2]
- Vital Signs including temperature and blood glucose. [3]
- SAMPLE History and Physical Exam. Note any paralysis or weakness found.
- If patient hypothermic, move patient to warm environment, remove wet clothing and cover with blankets.
- Treat any associated injuries (fractures, head injury, etc.) according to appropriate protocols.
- If patient is exhibiting signs/symptoms of pulmonary edema, place patient on CPAP and slowly increase pressure up to 10-12 cmH₂O per patient tolerance. [6]

SPECIAL CONSIDERATIONS

- [1] Give special consideration to spinal motion restriction when spinal trauma suspected.
- [2] If unable to open airway using jaw thrust maneuver after first attempt, use head-tilt, chin-lift maneuver.
- [3] Use pulse oximeter. Note SPO₂ before and after oxygen administration.
- [4] Use End Tidal CO₂ Detector whenever ventilating intubated patients.
- [5] See **INFUSION RATE CHART** page.
- [6] Use of the CPAP is intended to provide ventilation to patients where there is a potential need for ET intubation. If the patient is unstable (hypotensive, decreased LOC) or if there is no improvement in patient status with CPAP, proceed to ET intubation.
- [7] PEEP = Positive End Expiratory Pressure.

ADVANCED THERAPY

1. Advanced airway prn. [4]
2. EKG/12-Lead EKG.
3. IV/IO access (large bore IV).
4. Give Albuterol 2.5 mg via HHNB prn for bronchial spasms and wheezing.
5. If patient hypotensive, give NS bolus to maintain systolic BP > 90 mmHg (not > 500 ml per bolus) to max of 20 ml/kg. Reassess patient's ABC's and lung sounds between each bolus.
6. If patient remains hypotensive following bolus, consider Dopamine Infusion or Epinephrine Infusion to maintain systolic BP > 90 mmHg. [5]
7. If using BVM and patient is exhibiting signs/symptoms of pulmonary edema, consider PEEP (usually at 5 – 10 mmHg) [7]

NEAR-DROWNING

SEXUAL ASSAULT

BASIC THERAPY

- Scene Survey
- Assess Airway, Breathing, Circulation, Disability
- Airway management with oxygen prn via appropriate delivery device.
- Vital Signs [1]
- SAMPLE History and Physical Exam [2]
- Reassure patient and provide emotional support.
- Treat all injuries appropriately, preferably with a relative present.
- Protect the scene and preserve evidence. Do not allow the patient to bathe, change clothes, go to the bathroom, or douche.
- Notify police if not already informed.
- Transport to facility with Sexual Assault trained nursing staff. [3]

SPECIAL CONSIDERATIONS

- [1] Use pulse oximeter.
- [2] Physical exam should be appropriate to patient's injuries caused by assault.
- [3] See **HOSPITAL CAPABILITIES** page.

ADVANCED THERAPY

1. IV/IO access prn.
2. Treat injuries and complications according to appropriate protocols.

SEXUAL ASSAULT

SKELETAL TRAUMA

BASIC THERAPY	SPECIAL CONSIDERATIONS
<ul style="list-style-type: none"> <input type="checkbox"/> Scene Survey <input type="checkbox"/> Assess Airway, Breathing, Circulation, Disability, Expose and Examine [1] <input type="checkbox"/> Airway management oxygen via appropriate delivery device. Use jaw thrust maneuver to open airway in patients with suspected C-spine injury. [2] <input type="checkbox"/> Vital Signs [3] <input type="checkbox"/> SAMPLE History and Physical Exam. <input type="checkbox"/> Immobilize extremity fractures in position found. If limb severely angulated and circulation is absent, attempt to reposition limb prior to splinting by gently pulling traction on CLOSED FRACTURES ONLY. If <u>any</u> resistance is met during repositioning, stop and splint in place. Provide rapid transport to appropriate facility. <input type="checkbox"/> Open fractures should be covered with moist, sterile gauze and padded with bulky dressing prior to bandaging. <input type="checkbox"/> Use traction splint on CLOSED femur fractures if no additional fractures in that extremity. <input type="checkbox"/> Note pulse, motor, sensation in extremities before and after splinting. Mark location of peripheral pulses with a small "X". Continue to monitor pms enroute to facility. <input type="checkbox"/> Hip fractures should be splinted in position found with pillows and/or blankets. 	<p>[1] Give special consideration to spinal motion restriction when spinal trauma suspected.</p> <p>[2] If unable to open airway using jaw thrust maneuver after first attempt, use head-tilt, chin-lift maneuver.</p> <p>[3] Use pulse oximeter.</p> <p>[4] Fentanyl:</p> <ul style="list-style-type: none"> • Contraindicated in presence of bradycardia • Beware of oversedation. Be prepared to ventilate patient with BVM. • Give Narcan 0.4 – 2 mg IV/IO/IN. • IN dosage is ½ total dose per nares.
ADVANCED THERAPY	
<ol style="list-style-type: none"> 1. IV/IO access. (Establish 2nd large bore IV/IO prn according to severity of fracture). 2. If patient hypotensive, give NS bolus to maintain systolic BP > 90 mmHg (no > 500 ml per bolus) to max of 20 ml/kg. Reassess patient's ABC's and lung sounds between each bolus. 3. Fentanyl 1 - 2 mcg/kg IV/IO/IN for pain. Titrate to effect if SBP > 100. [4] 	
SKELETAL TRAUMA	

SNAKEBITE

BASIC THERAPY

- Scene Survey.
- Assess Airway, Breathing, Circulation, Disability, Expose and Examine.
- Airway management with oxygen prn via appropriate delivery device.
- Vital Signs. [1]
- SAMPLE History and Physical Exam
- If bite on extremity, immobilize affected extremity in dependent position. Patient should remain still and in a position of comfort.
- Remove watches, rings, and jewelry from affected extremity.
- Mark borders of inflammation / swelling and document time in 10 minute intervals to allow ED to track the rate of progression.

SPECIAL CONSIDERATIONS

- [1] Use pulse oximeter.
- [2] Fentanyl:
- Contraindicated in presence of bradycardia
 - Beware of oversedation. Be prepared to ventilate patient with BVM.
 - Give Narcan 0.4 – 2 mg IV/IO/IM/IN.
 - IN dosage is ½ total dose per nare.

General Information:

Pit Vipers

Rattlesnake, water moccasin, and copperhead typically cause puncture wounds. There may be Ecchymosis at site, localized pain, swelling weakness, tachycardia, nausea, shortness of breath, dim vision, vomiting or shock.

Coral Snakes

Usually a chewed wound. There may be slight burning pain, mild swelling, blurred vision, drooping eyelids, slurred speech, drowsiness, salivation and sweating, nausea and vomiting, shock, respiratory difficulty, paralysis, convulsions, and coma.

ADVANCED THERAPY

1. IV/IO access.
2. If patient hypotensive, give NS bolus to maintain systolic BP > 90 mmHg (no > 500 ml per bolus) to max of 20 ml/kg. Reassess patient's ABC's and lung sounds between each bolus.
3. Fentanyl 1 - 2 mcg/kg IV/IO/IN for pain. Titrate to effect if SBP > 100. [2]

SNAKE BITE

SPINAL TRAUMA

BASIC THERAPY

- Scene Survey.
- Assess Airway, Breathing, Circulation, Disability, Expose and Examine [1]
- Airway management with high flow oxygen via NRB mask or assist ventilations with BVM at 10-12 bpm if needed. Use modified jaw thrust maneuver to open airway. [2]
- Vital Signs including blood glucose level [3]
- SAMPLE History and Physical Exam including pms (pulses, motor and sensory evaluation). Note any paralysis or weakness found.

ADVANCED THERAPY

1. Advanced airway prn. [4] [5]
2. IV/IO Access. (two large bore IV/IO).
3. If patient hypotensive, give NS bolus to maintain systolic BP > 90 mmHg (not > 500 ml per bolus) to max of 20 ml/kg. Reassess patient's ABC's and lung sounds between each bolus.
4. Give Solumedrol 30 mg/kg in 100 ml NS over 20 minutes in spinal cord injuries < 8 hours old. [6]
5. If bradycardic, refer to **BRADYCARDIA** protocol.
6. Consider Epinephrine infusion to maintain systolic BP >90 mmHg. [7]

SPECIAL CONSIDERATIONS

- [1] Give special consideration to spinal motion restriction when spinal trauma suspected.
- [2] If unable to open airway using jaw thrust maneuver after first attempt, use head-tilt, chin-lift maneuver.
- [3] Use pulse oximeter.
- [4] Laryngoscopy increases intracranial pressure (ICP). If head injury is suspected and intubation is necessary, PAI is the definitive method of airway control.
- Consider PAI in patients that present with the following:
- GSC less than 8
 - Signs/Symptoms of ICP including increased blood pressure, decreased heart rate, decreased respirations
 - Combativeness or altered mental status
 - Polytrauma with CHI
 - Posturing
 - See **PROCEDURES: PHARMACOLOGICAL ASSISTED INTUBATION**
- [5] Use End Tidal CO2 Detector whenever ventilating intubated patients.
- [6] Solumedrol:
- Contraindicated in patients with CHI or CVA.
- [7] See **INFUSION RATE CHART** page.

SPINAL TRAUMA

TRAUMA

BASIC THERAPY

- Scene Survey.
- Assess Airway, Breathing, Circulation, Disability, Expose and Examine.
- Airway management with high flow oxygen prn via appropriate delivery device. Use jaw thrust maneuver to open airway in patients with suspected C-Spine injury. [1]
- Vital Signs [2]
- SAMPLE History and Physical Exam

SPECIAL CONSIDERATIONS

- [1] If unable to open airway using jaw thrust maneuver after first attempt, use head-tilt, chin-lift maneuver.
- [2] Use pulse oximeter.
- [3] Use End Tidal CO2 Detector whenever ventilating intubated patients.
- [4] Fentanyl:
- Contraindicated in presence of bradycardia
 - Beware of oversedation. Be prepared to ventilate patient with BVM.
 - Give Narcan 0.4 – 2 mg IV/IO/IN if respiratory depression occurs.
 - IN dosage is ½ total dose per nare.
- [5] See **PROCEDURES: NEEDLE DECOMPRESSION**

ADVANCED THERAPY

BLUNT TRAUMA

PENETRATING TRAUMA

CRUSH INJURIES

1. Advanced airway prn. [3]
2. IV/IO Access.
3. EKG/12 Lead EKG.
4. See **Shock: Hypovolemic** protocol if signs of shock present.

1. Advanced airway prn. [3]
2. IV/IO Access.
3. Seal sucking chest wound with occlusive dressing taped on 3-sides.
4. If suspected tension pneumothorax with severe respiratory distress, consider Needle Decompression. [5]
5. See **Shock: Hypovolemic** protocol if signs of shock present.

1. Advanced airway prn. [3]
2. IV/IO Access.
3. Constant crush injuries over 4 hours: Sodium Bicarbonate infusion 1 mEq/kg in 1000 ml NS wide open (100 mEq max) IV/IO.
4. Consider Fentanyl 1 – 2 mcg/kg IV/IO/IN titrate to effect if SBP > 100Hg or peripheral pulses present. [4]

TRAUMA

TRAUMATIC BRAIN INJURY

BASIC THERAPY

- Scene Survey
- Assess Airway, Breathing, Circulation, Disability, Expose and Examine [1]
- Airway management with high flow oxygen via NRB mask or assist ventilations with BVM at 10-12 bpm if needed. Use modified jaw thrust maneuver to open airway. [2]
- Vital Signs including blood glucose level [3] [4]
- SAMPLE History and Physical Exam

SPECIAL CONSIDERATIONS

- [1] Give special consideration to spinal motion restriction when spinal trauma suspected.
- [2] If unable to open airway using jaw thrust maneuver after first attempt, use head-tilt, chin-lift maneuver.
- [3] Elevation of the head 6" – 10" may help decrease ICP.
- [4] Use pulse oximeter. Note SPO₂ before and after oxygen administration.

ADVANCED THERAPY

1. Advanced airway prn [5] [6]
2. IV/IO access (two large bore IV/IO). Titrate fluid administration to maintain a SBP of ≥ 110 mmHg.
3. Signs/Symptoms of Tentorial Herniation (unreactive pupil(s), motor posturing, and / or acute deterioration of neurological status):
 - Intubate [5] [6]
 - Ventilate at a rate of 12-14 bpm or at a rate to maintain ETCO₂ at 30-35 mmHg.

- [5] Laryngoscopy increases intracranial pressure (ICP). If intubation is necessary, PAI is the definitive method of airway control.

Consider PAI in patients presenting with the following:

- GSC less than 8
- Signs/Symptoms of ICP including increased blood pressure, decreased heart rate, decreased respirations
- Combativeness or altered mental status
- Polytrauma with CHI
- Posturing
- See **PROCEDURES: PHARMACOLOGICAL ASSISTED INTUBATION**

- [6] Use End Tidal CO₂ Detector whenever ventilating intubated patients.

TRAUMATIC BRAIN INJURY

Pediatric Protocols

Pediatric Assessment

The keys to an accurate assessment of a pediatric patient are as follows:

1. Critically evaluating and infant / child's appearance from a distance before approaching to make more detailed observations.
2. Varying assessment and communication techniques for each age group.
3. Focusing on breath sounds, respiratory efforts and peripheral circulation to determine ABC's.
4. Carefully observing the child's environment, including the behavior of caretakers.
5. Refer to Broselow Tape as soon as practical. Vital signs, dosages and joules delivered will depend on the child's size and weight more than age.

General Appearance

Alertness	How responsive and reactive is the child to its environment?
Distractibility	How readily does a person, object or sound draw the child's attention?
Consolability	Can the distressed child be comforted?
Speech/Cry	Is the speech/cry strong and spontaneous? Weak / Muffled / Hoarse?
Spontaneous Activity	Does the child appear flaccid? Do the extremities move only in response to stimuli or are there spontaneous movements?
Color	Is there pallor, a flushed appearance, cyanosis or mottling? Does the skin color of the trunk differ from that of extremities?
Respiratory Effort	Are there intercostal, supraclavicular or suprasternal retractions? Nasal flaring is also an indicator of respiratory difficulty.
Eye Contact	Does the child appear to gaze aimlessly, or does he/she maintain eye contact with objects or people? Even very small infants will prefer to fix their gaze on faces rather than objects.

Airway

Assessment of the patency of the pediatric airway is similar to that of an adult. Breath sounds provide the key. Remember that opening the airway of an unconscious pediatric patient must be modified as not to hyperextend the neck and close off the airway. Appropriately sized adjuncts must be available.

Breathing

The work of breathing is the single best means of assessing ventilatory status in pediatric patients. Labored breathing is characterized by retractions. On inspiration, flaring of the nares may also be present. Careful auscultation of the chest, measurement of respiratory rate and skin color are also very important diagnostic tools.

Interpretation of Breath Sounds

<u>Sound</u>	<u>Cause</u>
Stridor	Upper Airway Obstruction
Wheezing	Lower Airway Obstruction
Rales / Rhonchi	Fluid without associated major airway obstruction
Absent	Complete Obstruction

Circulation

Use peripheral circulation, radial pulse strength, temperature of the extremities and capillary refill to provide the most useful assessment tools for pediatric circulatory status. Blood pressure may be unreliable in cases of compensated shock. Also assess systemic hydration by observing the moistness of mucus membranes, presence or absence of tears, wet diapers, skin turgor and capillary refill.

Normal Blood Pressure and Heart Rate by Age

<u>Age Group</u>	<u>Heart Rate</u>	<u>Blood Pressure (Min. Systolic)</u>
Newborn	100 – 160	60
Infant (< 1yr)	100 – 160	70
Toddler (1 – 3 yrs)	100 – 160	80
Child (3 – 8 yrs)	70 – 170	80
Older Child (8 – 12 yrs)	55 – 110	90

Pediatric Medical Emergencies Patient Care Guidelines

NEONATAL RESUSCITATION

BASIC THERAPY	SPECIAL CONSIDERATIONS
<ul style="list-style-type: none"> <input type="checkbox"/> Position the airway if applicable. <input type="checkbox"/> Suction the mouth then nose aggressively. If amniotic fluid is meconium stained, have mother stop pushing as soon as the head delivers and suction mouth and nose. [3] <input type="checkbox"/> Stimulate by drying vigorously including the head and back. <input type="checkbox"/> Keep warm with stocking cap and thermal blanket or dry towel. <input type="checkbox"/> Clamp and cut the cord. <input type="checkbox"/> Assess respirations. <input type="checkbox"/> Assisted bag-valve-mask ventilation 40 – 60 breaths/minute with 100% oxygen for severe respiratory depression. Use blow by or mask with 100% oxygen for mild distress. [2] <input type="checkbox"/> Vital signs including heart rate, rectal temperature and skin color. [4] Perform heel stick for blood glucose if patient is listless or lethargic. <input type="checkbox"/> If blood glucose < 60 mg/dL, refer to PEDIATRIC DIABETIC COMPLICATIONS protocol. <input type="checkbox"/> Document Apgar assessment at 1 minute and 5 minutes after delivery. 	<p>[1] Refer to Broselow Tape for respiration rate, OP Airway size, ET tube size, etc.</p> <p>[2] Use pulse oximeter.</p> <p>[3] Advanced Therapy: Perform laryngoscopy and suction below the vocal cords prior to any efforts that may stimulate breathing.</p> <p>[4] Pulse rate may be determined by palpation at the base of the umbilical cord or by auscultating apical pulse.</p> <p>[5] Use End Tidal CO2 Detector whenever ventilating intubated patients.</p>

ADVANCED THERAPY

HEART RATE		
< 80 per minute	80 – 100 per minute and rising	> 100 per minute
<ol style="list-style-type: none"> 1. Continue assisted ventilation. 2. Begin chest compressions at 120/min. 3. Intubate and confirm tube placement. [1] [5] 4. If no improvement, establish vascular access and give Epinephrine 0.01 mg/kg (1:10,000 IV/IO or 0.1 mg/kg (1:1000) ETT. 5. If persistent bradycardia, give Atropine 0.02 mg/kg IV/IO (min dose 0.1 mg). 6. Reassess heart rate and respirations en route. 	<ol style="list-style-type: none"> 1. Give oxygen by mask or blow by. 2. Stimulate. 3. Reassess heart rate and respirations after 15 – 30 seconds. If heart rate < 100 begin assisted BVM ventilation with 100% oxygen. 4. Reassess heart rate after 15 – 30 seconds. 5. Reassess heart rate and respirations en route. 	<ol style="list-style-type: none"> 1. Check skin color. If peripheral cyanosis present, give oxygen by mask or blow by. 2. Reassess heart rate and respirations en route.

NEONATAL RESUSCITATION

PEDIATRIC ACUTE ABDOMINAL PAIN

BASIC THERAPY

- Scene Survey.
- Assess Airway, Breathing, Circulation, and Disability.
- Airway management including oxygen pm with appropriate delivery device. [1]
- Vital Signs. [2]
- SAMPLE History and Physical Exam including OPQRST questions. [2] [5]
- Transport patient in position of comfort.

ADVANCED THERAPY

1. EKG/12 Lead EKG.
2. IV/IO access.
3. For nausea and / or vomiting, give Zofran: ≤ 40 kg give 0.1 mg/kg IV/IO over 2 – 5 minutes. In patients over 40 kg, give Zofran 4 mg IV/IO over 2 – 5 minutes. [4] If Zofran is ineffective, give Phenergan 12.5 – 25 mg IM. [3]

SPECIAL CONSIDERATIONS

- [1] Refer to Broselow Tape for respiration rate, OP Airway size, ET tube size, etc.
- [2] Use pulse oximeter. Note SPO₂ before and after oxygen administration.
- [3] Phenergan:
- Do not give to patients with CHI or CNS pathology.
 - Can cause AMS in some patients.
 - IM only
 - Must be > 2 years old.
- [4] Zofran:
Do not give pediatric patients Zofran IM.
May cause extreme musculoskeletal pain.
- [5] Palpate abdomen starting at furthest point away from pain and gently move towards site of pain.

PEDIATRIC ACUTE ABDOMINAL PAIN

PEDIATRIC ALLERGIC REACTION

BASIC THERAPY

- Scene Survey.
- Assess Airway, Breathing, Circulation, and Disability.
- Airway management with high flow oxygen via Pedi mask or assist ventilations with BVM at age appropriate rate. [4]
- Vital Signs [1]
- Measure patient with Broselow Tape, if applicable.
- SAMPLE History and Physical Exam.
- For localized reaction, apply cold packs directly to site and elevate.
- For generalized reaction (hives and anxiety but stable vital signs), monitor carefully for signs of developing anaphylactic reaction.
- Attempt to remove any obvious irritant.
- If patient is exhibiting signs/symptoms of anaphylaxis, Administer EpiPen Jr.© (> 1 month old and < 30 kg) or EpiPen© (if > 30 kg).
- If wheezing, Albuterol Sulfate 2.5 mg via HHNB. Repeat prn. [2]

SPECIAL CONSIDERATIONS

- [1] Use pulse oximeter.
- [2] Note pulse rate before, during, and after Albuterol treatment.
- [3] See **INFUSION RATE CHART** page.
- [4] Refer to Broselow Tape for respiration rate, OP Airway size, ET tube size, etc.

ADVANCED THERAPY

MILD RESPIRATORY DISTRESS

SEVERE RESPIRATORY DISTRESS OR DIMINISHED PERFUSION

1. EKG
2. IV/IO Access.
3. If wheezing, Albuterol Sulfate 2.5 mg HHNB repeat prn. [2]
4. Benadryl 1 mg/kg (max single dose 50 mg) IV/IO preferred or IM if unable to establish IV/IO.
5. If perfusion is normal with bronchoconstriction, administer Epinephrine 0.01 mg/kg SQ (1:1,000).

1. EKG
2. IV/IO Access.
3. If wheezing, Albuterol Sulfate 2.5 HHNB repeat prn. [2]
4. Epinephrine 0.01 mg/kg (1:1,000) IM for patients in extremis or anaphylaxis. May repeat q 20 minutes up to total dose of 1.2 mg.
5. Benadryl 1 mg/kg (max single dose 50 mg) IV/IO preferred or IM if unable to establish IV/IO.
6. Solu-Medrol 2 mg/kg IV/IO. Max single dose 125 mg.
7. Consider Epinephrine Infusion for Anaphylaxis refractory to above treatments. [3]

PEDIATRIC ALLERGIC REACTION

PEDIATRIC ALTERED LEVEL OF CONSCIOUSNESS

BASIC THERAPY

- Scene Survey. Safety is of special consideration with AMS patients. [1]
- Assess Airway, Breathing, Circulation, Disability, Expose and Examine.
- Airway management with high flow oxygen via Pedi mask or assist ventilations with BVM at age appropriate rate. [2]
- Vital Signs including blood glucose level and temperature. [3]
- SAMPLE History and Physical Exam.

SPECIAL CONSIDERATIONS

- [1] Consider etiology and appropriate protocols:
- Shock
 - Toxic Exposure
 - Head Trauma (r/o intentional injury)
 - Seizure
 - Blood Glucose Level

[2] Refer to Broselow Tape for respiration rate, OP Airway size, ET tube size, etc.

[3] Use pulse oximeter.

[4] Use End Tidal CO2 Detector whenever ventilating intubated patients.

- [5] Narcan
- Avoid Narcan in newborns. See **NEONATAL RESUSCITATION** protocol for treatment of AMS.
 - IN dosage is ½ total dose per nare.

ADVANCED THERAPY

1. Advanced airway prn. [2] [4]
2. EKG/12 Lead EKG.
3. IV/IO access.
4. If blood glucose < 60 mg/dL, refer to **PEDIATRIC DIABETIC COMPLICATIONS** protocol.
5. If mental status and respiratory effort are depressed, administer Narcan 0.01 mg/kg IV/IO/IM/IN, titrate to effect. May repeat every 5 minutes with strong suspicion of opiate overdose, or if partial response is noted.

PEDIATRIC ALTERED LEVEL OF CONSCIOUSNESS

PEDIATRIC BRADYCARDIA

BASIC THERAPY

- Scene Survey.
- Assess Airway, Breathing, Circulation, and Disability.
- Airway management with high flow oxygen via Pedi mask or assist ventilations with BVM at age appropriate rate. [1] [2] [3]
- Vital Signs. [4]
- SAMPLE History and Physical Exam.

SPECIAL CONSIDERATIONS

- [1] Refer to Broselow Tape for respiration rate, OP Airway size, ET tube size, etc.
- [2] Pediatric bradycardia is almost exclusively the result of hypoxia; therefore, aggressive airway management with 100% oxygen is the standard of care.
- [3] Very high flow oxygen causes some pedi's to "catch" their breath and could decrease respirations.

ADVANCED THERAPY

NORMAL PERFUSION

1. EKG Monitoring.
2. IV/IO Access.
3. Place Pacing Pads on chest as precaution in case patient deteriorates prn.

PERSISTENT / SYMPTOMATIC BRADYCARDIA

1. Advanced airway prn. [1] [2]
2. EKG Monitoring.
3. IV/IO access. [5]
4. Start CPR if: Infant heart rate < 80 beats per minute
Child heart rate < 60 beats per minute
5. Epinephrine 0.01 mg/kg (1:10,000) IV/IO **OR** Epinephrine 0.1 mg/kg ETT (1:1,000). Infuse Slowly.
6. Atropine 0.02 mg/kg IV/IO, may repeat x1.
Minimum single dose = 0.1 mg
Maximum single dose = 0.5 mg for child
1.0 mg for adolescent
Maximum total dose = 1.0 mg for child
2.0 mg for adolescent
Atropine ETT Dose = 0.03 mg/kg
7. If refractory to Atropine, or if patient unstable, go to TransCutaneous Pacing (TCP). [6]

- [4] Use pulse oximeter.
- [5] Intraosseous lines are the preferred method for rapid vascular access in infants. May also consider umbilical or scalp vein.
- Identify and treat possible causes:
 - Hypoxemia
 - Hypothermia
 - Head Injury
 - Heart Block
 - Heart Transplant
 - Toxins/Poisons/Drugs
- [6] Provide sedation prior to TCP: Ativan 0.1 - 0.2 mg/kg IV/IO/IM if SBP is > 70 mmHg or peripheral pulses presents

PEDIATRIC BRADYCARDIA

PEDIATRIC CARDIAC ARREST

BASIC THERAPY

- Scene Survey.
- Assess Airway, Breathing, Circulation, Disability, Expose and Examine.
- Confirm patient is pulseless and apneic. Begin CPR. Place ResQPOD and maintain tight seal on BVM mask or ETT.
- Airway management including oralpharangeal airway and high-flow oxygen via BVM at age appropriate rate. [1]
- Sample History and Physical Exam.

SPECIAL CONSIDERATIONS

- [1] Refer to Broselow Tape for ventilation rate, OP Airway size, ET tube size, etc.
- [2] Use End Tidal CO2 Detector whenever ventilating intubated patients.
- [3] Epinephrine:
- ETT: Epinephrine 0.1 mg/kg (1:1000) ETT q 3-5 min until IV/IO established.

ADVANCED THERAPY

ASYSTOLE	PULSELESS ELECTRICAL ACTIVITY (PEA)	VENTRICULAR FIBRILLATION OR PULSELESS VENTRICULAR TACHYCARDIA	
<ol style="list-style-type: none"> 1. Reassess ABC's. 2. EKG Monitor – Confirm in 2 leads. 3. Intubate, confirm tube placement. [1] [2] 4. IV/IO access – Consider fluid bolus 20 ml/kg. (10 ml/kg in neonates). [6] 5. Epinephrine 0.01 mg/kg (1:10,000) IV/IO q 3-5 minutes. [3] 6. Sodium Bicarbonate: [5] <u>In patients < 1 year old:</u> 1 mEq/kg of 4.2% solution IV/IO. Repeat q 10 minutes at 0.5 mEq/kg IV/IO. 7. If pulse detected after arrest, refer to PEDIATRIC POST ARREST MANAGEMENT protocol. 	<ol style="list-style-type: none"> 1. Reassess ABC's. 2. EKG Monitor – Confirm in 2 leads. 3. Intubate, confirm tube placement. [1] [2] 4. IV/IO access – Consider fluid bolus 20 ml/kg. (10 ml/kg in neonates). [6] 5. Epinephrine 0.01 mg/kg (1:10,000) IV/IO q 3-5 minutes. [3] 6. Sodium Bicarbonate: [5] <u>In patients < 1 year old:</u> 1 mEq/kg of 4.2% solution IV/IO. Repeat q 10 minutes at 0.5 mEq/kg IV/IO. 7. If pulse detected after arrest, refer to PEDIATRIC POST ARREST MANAGEMENT protocol. 	<ol style="list-style-type: none"> 1. Reassess ABC's. 2. EKG Monitor–Confirm Vfib / Vtach. 3. Defibrillation 2 J/kg. Increase to 4 J/kg in subsequent shocks. Continue CPR immediately after each shock. 4. Intubate, confirm tube placement. [1] [2] 5. IV/IO Access. 6. Epinephrine 0.01 mg/kg (1:10,000) IV/IO q 3 - 5 minutes. [3] Amiodarone 5 mg/kg IV/IO x 1. Consider additional dose 5 mg/kg IV/IO max 15 mg/kg IV/IO every 24 hours: Max single dose 300 mg. [4] OR Lidocaine 1.0 mg/kg IV/IO. Max dose 3 mg/kg. [4] 7. If Torsades de Pointes: Magnesium Sulfate at 25 - 50 mg/kg IV/IO over 10 minutes. Max dose 2 G. 8. Sodium Bicarbonate: [5] <u>In patients < 1 year old:</u> 1 mEq/kg of 4.2% solution IV/IO. Repeat q 10 minutes at 0.5 mEq/kg IV/IO. 9. If pulse detected after arrest, refer to PEDIATRIC POST ARREST MANAGEMENT protocol. 	<p>[4] If converted, begin appropriate anti-arrhythmic infusion. See INFUSION RATE CHART page.</p> <p>[5] Sodium Bicarbonate:</p> <ul style="list-style-type: none"> ▪ In patients > 1 year old give 8.4% solution with same dosing. ▪ Ensure ETT patent and that effective ventilations/ compressions are being performed prior to administration. ▪ Effective for patients with known pre-existing hyperkalemia, DKA or tricyclic overdose. <p>[6] Carefully monitor patient's ABC's and lung sounds for Signs/Symptoms of fluid overload.</p> <p><input type="checkbox"/> Identify and treat possible causes:</p> <ul style="list-style-type: none"> ▪ Hypoxemia ▪ Hypovolemia ▪ Hypothermia ▪ Hyper/Hypokalemia and metabolic disorders ▪ Tamponade ▪ Tension Pneumothorax ▪ Toxins / Poisons / Drugs ▪ Thromboembolism

PEDIATRIC CARDIAC ARREST

PEDIATRIC DIABETIC COMPLICATIONS

BASIC THERAPY

- Scene Survey.
- Assess Airway, Breathing, Circulation, and Disability.
- Airway management with high-flow oxygen via Pedi mask or assist ventilations with BVM at age appropriate rate. [1]
- Vital Signs including blood glucose level. [2]
- SAMPLE History and Physical Exam.
- If patient can maintain their own airway, they can self-administer oral glucose or glucose containing product.

SPECIAL CONSIDERATIONS

- [1] Refer to Broselow Tape for respiration rate, OP Airway size, ET tube size, etc.
- [2] Use pulse oximeter.
- [3] Dextrose Administration:
- Large, peripheral vein is preferred when administering Dextrose IV/IO.
 - Ensure IV/IO patent to prevent necrosis.
 - If unable to establish IV/IO, refer to protocol for rectal administration of Dextrose as needed if Glucagon fails.
 - Recommend IO administration be reserved for extreme emergencies.

ADVANCED THERAPY

HYPOGLYCEMIA

HYPERGLYCEMIA OR DIABETIC KETOACIDOSIS

1. IV/IO access.
2. If blood glucose < 60 mg/dL with any AMS:
 - **For newborns up to 3 kg:**
Give Dextrose 10% 2 ml/kg IV/IO (Dilute D50 1 ml/4 ml NS) titrate to effect.
 - **For infants and children > 3 kg up to 36 kg:**
give D25% 2 ml/kg IV/IO.
 - **For children and adolescence > 36 kg:**
give D50% 12.5 – 25 Gm IV/IO titrate to effect. [3]
3. If unable to establish IV after 2 attempts or IV attempts would be unsafe, give Glucagon. [6]
 - **> 20 kg:** 1 mg IM/SQ.
 - **< 20 kg:** 0.5 mg IM/SQ.
4. Consider PR administration of Dextrose if Glucagon fails.
5. Reassess blood glucose as needed.

1. IV/IO access.
2. If blood glucose > 300 mg/dL, or patient showing signs and symptoms of DKA, give fluid bolus NS 20 ml/kg over 30 – 60 minutes. [4] [5]
3. Reassess blood glucose as needed.

[4] Signs/Symptoms of DKA are Kussmaul respirations, acetone breath, nausea, vomiting and/or signs of dehydration.

[5] Carefully monitor patient's ABC's and lung sounds for Signs/Symptoms of fluid overload.

- [6] Glucagon:
- Only effective when there are sufficient stores of glycogen in the liver.
 - Use with caution in patients with cardiovascular or renal disease.
 - Two (2) IV attempts mandatory prior to use of Glucagon as safety permits.

PEDIATRIC DIABETIC COMPLICATIONS

PEDIATRIC FEVER

BASIC THERAPY

- Scene Survey.
- Assess Airway, Breathing, Circulation, and Disability.
- Airway management prn with appropriate delivery device. [1]
- Vital Signs including temperature. [2]
- SAMPLE History and Physical Exam.
- May give Tylenol PO to reduce fever. If fever is > 102.5°, give Motrin PO in conjunction with Acetaminophen to reduce fever. [3]

SPECIAL CONSIDERATIONS

- [1] Refer to Broselow Tape for respiration rate, OP Airway size, ET tube size, etc.
- [2] Use pulse oximeter.
- [3] May be given PO by EMT, but PR administration is by EMT-I or above.
- [4] Carefully monitor patient's ABC's and lung sounds for Signs/Symptoms of fluid overload.

ADVANCED THERAPY

1. IV/IO access.
2. Consider fluid bolus 20 ml/kg IV/IO. (10 ml/kg in neonates). [4]
3. May give Tylenol PO / PR to reduce fever. If fever is > 102.5°, give Motrin PO / PR in conjunction with Acetaminophen to reduce fever. [3]

Tylenol (Acetaminophen) Concentration: 160 mg/5 ml (32 mg/ml)			Motrin (Ibuprophen) Concentration: 100 mg/5 ml (20 mg/ml)		
AGE	WEIGHT	DOSEAGE	AGE	WEIGHT	DOSEAGE
0 – 3 mo	6 – 11 lbs	40 mg (1.25 ml)	0 – 3 mo	6 – 11 lbs	25 mg (1.25 ml)
4 – 11 mo	12 – 17 lbs	80 mg (2.5 ml)	6 – 11 mo	12 – 17 lbs	50 mg (2.5 ml)
12 – 23 mo	18 – 23 lbs	120 mg (3.75 ml)	12 – 23 mo	18 – 23 lbs	75 mg (3.75 ml)
2 – 3 yrs	24 – 35 lbs	160 mg (5 ml)	2 – 3 yrs	24 – 35 lbs	100 mg (5 ml)
4 – 5 yrs	36 – 47 lbs	240 mg (7.5 ml)	4 – 5 yrs	36 – 47 lbs	150 mg (7.5 ml)
6 – 8 yrs	48 – 59 lbs	320 mg (10 ml)	6 – 8 yrs	48 – 59 lbs	200 mg (10 ml)
9 – 10 yrs	60 – 71 lbs	400 mg (12.5 ml)	9 – 10 yrs	60 – 71 lbs	250 mg (12.5 ml)
11 yrs	72 – 95 lbs	480 mg (15 ml)	11 yrs	72 – 95 lbs	300 mg (15 ml)

PEDIATRIC FEVER

PEDIATRIC HYPEREMESIS

BASIC THERAPY

- Scene Survey.
- Assess Airway, Breathing, Circulation, and Disability.
- Airway management with high-flow oxygen via Pedi mask. [1]
- Vital Signs. [2]
- SAMPLE History and Physical Exam.

SPECIAL CONSIDERATIONS

[1] Refer to Broselow Tape for respiration rate, OP Airway size, ET tube size, etc.

[2] Use pulse oximeter.

[3] Phenergan:

- Do not give to patients with CHI or CNS pathology.
- Can cause AMS in some patients.
- IM only.
- Must be > 2 years old.

[4] Zofran:

Do not give pediatric patients Zofran IM.
May cause extreme musculoskeletal pain.

[5] Carefully monitor patient's ABC's and lung sounds for Signs/Symptoms of fluid overload.

ADVANCED THERAPY

1. IV/IO access.
2. For nausea and / or vomiting, give Zofran: ≤ 40 kg give 0.1 mg/kg IV/IO over 2 – 5 minutes. In patients over 40 kg, give Zofran 4 mg IV/IO over 2 – 5 minutes. [4] If Zofran is ineffective, give Phenergan 12.5 – 25 mg IM. [3]
3. Fluid bolus at 20 ml/kg IV/IO. (10 ml/kg in neonates). [5]

PEDIATRIC HYPEREMESIS

PEDIATRIC HYPOTHERMIA

BASIC THERAPY

- ❑ Scene Survey. [1]
- ❑ Assess Airway, Breathing, Circulation, and Disability.
- ❑ If patient is pulseless and apneic, begin CPR and refer to **PEDIATRIC CARDIAC ARREST** protocol also.
- ❑ Airway management including warm, humidified oxygen prn using appropriate delivery device or assist ventilations with BVM at age appropriate rate. [7]
- ❑ Vital Signs including rectal temperature and skin condition. [2]
- ❑ SAMPLE History and Physical Exam.
- ❑ Basic care of the hypothermic patient should include the following:
 - Handle patient very carefully. Avoid rough movement and excess activity. Hypothermia causes extreme cardiac irritability.
 - Keep patient horizontal.
 - Protect patient against heat loss and wind chill. Cover patient with blankets and move to warm, draft free environment.
 - Remove any wet clothing, gently dry patient and cover with blankets. Do not rub frostbitten areas.
 - In moderate to severe hypothermia, apply heat packs to groin and armpits. [3]

SPECIAL CONSIDERATIONS

Signs/Symptoms of mild to moderate hypothermia include lack of coordination, mental confusion, slowed reactions, shivering and sleepiness.

[1] Take note of ambient temperature. (Hot, warm, cool, cold)

[2] Use pulse oximeter. Note SPO₂ before and after oxygen administration.

[3] The stages of hypothermia are:

- Mild Core body temp 94° – 97° F
- Moderate Core body temp 86° – 94° F
- Severe Core body temp < 86° F

[4] Core body temperature may need to be restored prior to myocardium becoming receptive to drug therapy and/or defibrillation.

[5] Use End Tidal CO₂ Detector whenever ventilating intubated patients.

[6] Carefully monitor patient's ABC's and lung sounds for Signs/Symptoms of fluid overload.

[7] Refer to Broselow Tape for respiration rate, OP Airway size, ET tube size, etc.

ADVANCED THERAPY

1. Advanced airway prn. [5]
2. EKG/12 Lead EKG.
3. IV/IO access. Warm all fluids prior to administration. [6]
4. If patient is in V-Fib/Pulseless V-Tach, give initial unsynchronized shock at 2 joules/kg (Biphasic) , then treat according to severity of hypothermia: [3] [4]

Moderate Hypothermia

- Continue CPR.
- Continue active external warming of patient including warm IV fluids.
- Give medications as indicated but at longer than standard intervals.
- Repeat defibrillation for V-Fib/V-Tach as core body temperature increases.
- Transport to hospital.

Severe Hypothermia

- Continue CPR.
- Consider active internal warming of patient with gastric lavage.
- Withhold medications.
- Limit defibrillation for V-Fib/V-Tach to initial shock.
- Transport to hospital.
- Consider further advanced therapy as core body temperature increases.

PEDIATRIC HYPOTHERMIA

PEDIATRIC POST ARREST MANAGEMENT

BASIC THERAPY

- Scene Survey.
- Continually assess Airway, Breathing, Circulation, and Disability.
- Remove ResQPOD if in place.
- Airway management including OPA or King Tube and high-flow oxygen via BVM at age appropriate rate. [1]
- Vital Signs. [2]
- Monitor and manage BGL as needed. If <60 dg/ml, refer to **DIABETIC COMPLICATIONS** protocol.

SPECIAL CONSIDERATIONS

[1] Refer to Broselow Tape for respiration rate, OP Airway size, ET tube size, etc.

[2] Use pulse oximeter. Note SPO₂ before and after oxygen administration..

[3] Use End Tidal CO₂ Detector whenever ventilating intubated patients.

[4] Usually, there is no need to manage post arrest Tachycardia unless Ventricular in nature.

[5] Carefully monitor patient's ABC's and lung sounds for Signs/Symptoms of fluid overload.

[6] See **INFUSION RATE CHART** page.

[7] Versed:

- Monitor respiratory effort continuously and provide ventilatory support when necessary.
- Watch for hypotensive effects of Versed. Be prepared to treat appropriately.

[8] Fentanyl:

- Contraindicated in presence of bradycardia
- Beware of oversedation. Be prepared to ventilate patient with BVM.
- Give Narcan 0.01 mg/kg IV/IO/IM/IN if respiratory depression occurs.
- IN dosage is ½ total dose per nare.

[9] Refer to appropriate protocol for rhythm disturbances.

[10] See **PEDIATRIC ASSESSMENT: CIRCULATION** page for appropriate systolic pressure.

ADVANCED THERAPY

1. Maintain advanced airway prn. [3]
2. Maintain IV/IO Access.
3. EKG. [4] [9]
4. If patient is hypotensive, consider fluid bolus to max of 20 ml/kg (10 ml/kg for neonate)to maintain adequate BP. [5] [10]
5. If fluid challenge unsuccessful, consider Dopamine Infusion or Epinephrine Infusion to maintain adequate BP. [6] [10]
6. If Antidysrhythmic was used to convert Ventricular rhythm, use appropriate Medication for continued Infusion. [6]
7. If patient becomes combative or "fights" airway post arrest, consider continued sedation via Etomidate, Versed [7], and / or Fentanyl [8] IV/IO prn.
8. Senior Paramedics (P3) may administer / approve administration of Vecuronium 0.1 mg/kg for continued paralysis. Do NOT administer paralytic without ensuring proper sedation. Refer to **PHARMACOLOGICAL ASSISTED INTUBATION (PAI)** procedure.
9. Based on Post Arrest assessment, refer to appropriate protocols for management.

PEDIATRIC POST ARREST MANAGEMENT

PEDIATRIC REACTIVE AIRWAY DISEASE

BASIC THERAPY

- Scene Survey.
- Assess Airway, Breathing, Circulation, and Disability.
- Airway management with high flow oxygen via Pedi mask or assist ventilations with BVM at age appropriate rate. [1] [2] [3] [4]
- Vital Signs – Carefully assess breath sounds, both inspiratory and expiratory.
- SAMPLE History and Physical Exam.
- Nebulized Albuterol Sulfate 2.5 mg via HHNB prn for wheezing/dyspnea. [5]
- Transport in an upright position or position of comfort.
- Epiglottitis: If patient appears toxic, is drooling, with respiratory stridor, rapid transport to the nearest hospital is mandated with as little stimulation of the patient as possible (allow parent or family member to hold child). Do not attempt any invasive procedures. Do not place anything (i.e. thermometer) in the patient's mouth. If possible administer humidified oxygen via blow-by with parent holding mask.

SPECIAL CONSIDERATIONS

- [1] Refer to Broselow Tape for respiration rate, OP Airway size, ET tube size, etc.
- [2] Use pulse oximeter.
- [3] Humidified oxygen is optimum.
- [4] If basic airway cannot be established, consider foreign body obstruction and proceed with appropriate airway clearance maneuvers, based on patient age.
- [5] Note pulse rate before, during, and after Albuterol treatment.
- [6] Use End Tidal CO2 Detector whenever ventilating intubated patients.

ADVANCED THERAPY

RESPIRATORY DISTRESS WITH ADEQUATE AIR PASSAGE

1. EKG/12 Lead EKG.
2. If wheezing, Albuterol Sulfate 2.5 mg via HHNB prn. [5]
3. If patient hypotensive, give fluid challenge at 20 cc/kg. (10 ml/kg in neonates). [8]

RESPIRATORY DISTRESS WITH INADEQUATE AIR PASSAGE

1. Advanced airway prn. [1] [7]
2. EKG/12 Lead EKG.
3. If wheezing, Albuterol Sulfate 2.5 mg via HHNB repeat prn. [5]
4. Epinephrine 0.01 mg/kg (1:1,000) IM for patients in extremis. May repeat q 20 minutes up to total dose of 1.2 mg.
5. Solu-Medrol 2 mg/kg IV/IO. Max total dose 125 mg.
6. If patient hypotensive, give fluid challenge at 20 cc/kg. (10 ml/kg in neonates). [8]

SEVERE BRONCHOSPASM REFRACTORY TO ABOVE TREATMENTS AND SBP > 100 mmHg:

- Magnesium Sulfate 25 - 50 mg/kg (max dose 2 Gm) IV/IO over 10 minutes.

- [7] Intubation and ventilation may be necessary in signs of respiratory failure.
- [8] Carefully monitor patient's ABC's and lung sounds for Signs/Symptoms of fluid overload.

PEDIATRIC REACTIVE AIRWAY DISEASE

PEDIATRIC SEIZURES

BASIC THERAPY

- Scene Survey (consider trauma as a cause).
- Assess Airway, Breathing, Circulation, and Disability.
- Airway management with high flow oxygen via Pedi mask or assist ventilations with BVM at age appropriate rate. [1]
- Vital Signs including blood glucose level and temperature. [2]
- SAMPLE History and Physical Exam.
- Measure patient with Broselow Tape, if applicable. [1]
- If patient is febrile, apply cooling measures. Avoid cooling too rapidly. Also see **PEDIATRIC FEVER** protocol.
- Due to possibility of meningitis, apply strict infection control procedures.

SPECIAL CONSIDERATIONS

[1] Refer to Broselow Tape for respiration rate, OP Airway size, ET tube size, etc.

[2] Use pulse oximeter.

[3] Versed:

- Monitor respiratory effort continuously and provide ventilatory support when necessary.
- Watch for hypotensive effects of Versed. Be prepared to treat appropriately.
- IN dosage is ½ total dose per nare.

ADVANCED THERAPY

1. IV/IO access.
2. Ativan 0.1 - 0.2 mg/kg IV/IO/IM.
OR
Versed 0.05 mg/kg IV/IO/IM/IN. May be repeated once 5 minutes after initial dose. [3]
6. If blood glucose < 60 mg/dL, refer to **PEDIATRIC DIABETIC COMPLICATIONS** protocol.

PEDIATRIC SEIZURES

PEDIATRIC SHOCK

BASIC THERAPY	SPECIAL CONSIDERATIONS
<ul style="list-style-type: none"> <input type="checkbox"/> Scene Survey. <input type="checkbox"/> Assess Airway, Breathing, Circulation, Disability, Expose and Examine. [1] <input type="checkbox"/> Airway management with high-flow oxygen via Pedi mask or assist ventilations with BVM at age appropriate rate. [2] <input type="checkbox"/> Use jaw thrust maneuver to open airway in patients with suspected C-Spine injury. [2] <input type="checkbox"/> Vital Signs including blood glucose level. [3] <input type="checkbox"/> SAMPLE History and Physical Exam. 	<p>[1] Give special consideration to spinal motion restriction when spinal trauma suspected. Apply rigid C-collar ASAP. Secure patient with appropriate immobilization device. Secure torso before securing head.</p> <p>[2] Refer to Broselow Tape for respiration rate, OP Airway size, ET tube size, etc.</p> <p>[3] Use pulse oximeter.</p> <p>[4] Use End Tidal CO2 Detector whenever ventilating intubated patients.</p> <p>[5] Refer to appropriate protocol for rhythm disturbances.</p> <p>[6] See INFUSION RATE CHART page.</p> <p>[7] Carefully monitor patient's ABC's and lung sounds for Signs/Symptoms of fluid overload.</p> <p>[8] See PEDIATRIC ASSESSMENT: CIRCULATION page for appropriate systolic pressure.</p>

ADVANCED THERAPY

HYPOVOLEMIC	DISTRIBUTIVE	CARDIOGENIC
<ol style="list-style-type: none"> 1. Advanced airway, prn. [2] [4] 2. IV/IO Access. 3. Fluid bolus of 20 ml/kg IV/IO (10 ml/kg in the neonate) [7] to maintain adequate blood pressure. [8] 	<ol style="list-style-type: none"> 1. Advanced airway, prn. [2] [4] 2. IV/IO Access. 3. Fluid bolus normal saline 20 ml/kg IV/IO (10 ml/kg in the neonate). [7] 4. If bradycardia exists give Atropine 0.02 mg/kg IV/IO. 5. Epinephrine infusion or Dopamine infusion to maintain adequate blood pressure. [6] [8] 	<ol style="list-style-type: none"> 1. Advanced airway, prn.[2] [4] 2. 12-Lead EKG. [5] 3. IV/IO Access. 4. Fluid bolus normal saline 20 ml/kg IV/IO (10 ml/kg in the neonate). [7] 5. If bradycardia exists give Atropine 0.02 mg/kg IV/IO. 6. Epinephrine infusion or Dopamine infusion to maintain adequate blood pressure. [6] [8]

PEDIATRIC SHOCK

PEDIATRIC TACHYCARDIA

BASIC THERAPY

- Scene Survey.
- Assess Airway, Breathing, Circulation, and Disability.
- Airway management with high flow oxygen via Pedi mask or assist ventilations with BVM if needed at age appropriate rate. [1]
- Vital Signs. [2]
- SAMPLE History and Physical Exam.
- Measure patient with Broselow Tape, if applicable.

SPECIAL CONSIDERATIONS

- [1] Refer to Broselow Tape for respiration rate, OP Airway size, ET tube size, etc.
- [2] Use pulse oximeter.
- [3] For infants rates ≥ 220 and child ≥ 180 with poor perfusion, prepare for immediate cardioversion.

ADVANCED THERAPY

<u>NARROW COMPLEX</u> (QRS < .08 sec)		<u>WIDE COMPLEX</u> (QRS > .08 sec)	
<u>SINUS TACHYCARDIA</u> Rate < 220/min [3]	<u>SVT</u> Rate > 220/min [3]	<u>VENTRICULAR TACHYCARDIA</u> Rate > 150/min	
1. Airway Management .[1] 2. EKG/12-Lead EKG. 3. IV/IO Access. 4. Consider fluid bolus at 20 ml/kg IV/IO. (10 ml/kg in neonates). Reassess. Repeat prn. [9] 5. Treatment is directed at the cause of the tachycardia. Consider fever, volume loss, hypoxia or injury.	1. Airway Management. [1] 2. EKG/12-Lead EKG. 3. IV/IO Access. 4. If perfusion is diminished and child is poorly responsive, administer synchronized cardioversion at 0.5 – 1 J/kg, repeat prn at 2 J/kg. [4] [5] 5. If child has diminished perfusion but is responsive, administer Adenosine 0.1 mg/kg Rapid IV/IO. Max dose 6mg. If no change, repeat once at 0.2 mg/kg Rapid IV/IO. Max dose 12 mg. [6] Total max dose 18 mg. 6. If child has normal perfusion, attempt vagal maneuvers. [7]	1. Airway Management. [1] 2. EKG/12-Lead EKG. 3. IV/IO Access. 4. Amiodarone 5 mg/kg IV/IO over 20 minutes. Max single dose 300 mg. [8] OR 5. Lidocaine 1 mg/kg IV/IO prn. Max of 3 mg/kg. [8] 6. If not converted and signs/symptoms of poor perfusion, synchronized cardioversion 0.5 – 1 J/kg, repeat prn at 2 J/kg. [4] [5]	[4] Cardioversion is the preferred treatment if there is evidence of hypoperfusion or end organ compromise. Without such evidence, cardioversion should not be performed in the pre-hospital setting. [5] Provide sedation prior to cardioversion: Ativan 0.1 - 0.2 mg/kg IV/IO/IM if SBP is > 70 mmHg or peripheral pulses presents. [6] Adenosine: Do not administer to patients who are wheezing. [7] Vagal maneuver in infants and preschool children is ice cold compress to face. In older children, use Valsalva. [8] If converted, begin appropriate anti-arrhythmic infusion. See INFUSION RATE CHART page. [9] Carefully monitor patient's ABC's and lung sounds for Signs/Symptoms of fluid overload. <input type="checkbox"/> Identify and treat possible causes: <ul style="list-style-type: none"> ▪ Hypoxemia ▪ Hypovolemia ▪ Hyperthermia ▪ Hyper/Hypokalemia and metabolic disorders ▪ Tamponade ▪ Tension Pneumothorax ▪ Toxins/Poisons/Drugs ▪ Trauma ▪ Thromboembolism ▪ Pain

PEDIATRIC TACHYCARDIA

PEDIATRIC TOXIC EXPOSURES

BASIC THERAPY

- Scene Survey. [1]
- Assess Airway, Breathing, Circulation, Disability, Expose and Examine.
- Airway management with high-flow oxygen via Pedi mask or assist ventilations with BVM at age appropriate rate. [2]
- Vital Signs. [3]
- SAMPLE History including history of exposure and Physical Exam.
- Measure patient with Broselow Tape, if applicable.
- Gather ALL possible bottles or substances at scene and transport with patient to hospital.

SPECIAL CONSIDERATIONS

[1] Consider hazardous material exposure and consultation with appropriate advisory agency, prior to decontamination or patient contact.
Poison Control (800) 222-1222

[2] Refer to Broselow Tape for respiration rate, OP Airway size, ET tube size, etc.

[3] Use pulse oximeter.

ADVANCED THERAPY

1. Advanced airway, prn. [2] [4] [5]
2. EKG.
3. IV/IO access.
4. Lavage with NS or H2O until clear (only with secure airway).
5. Activated charcoal 1 gm/kg PO or NGT.
6. For suspected organophosphate poisoning, Atropine 0.05 mg/kg IV/IO repeated q 15 minute until atropinized or 1 mg IM q 15 minutes until atropinized or until IV/IO established.
7. For suspected opiate overdose, Narcan 0.01 mg/kg IV/IO/IM/IN, titrate to effect. May repeat every 5 minutes prn. [7]
8. For confirmed Tricyclic antidepressant overdose, Sodium Bicarbonate 0.5 mEq of 4.2% solution. Consider Epinephrine Infusion to maintain adequate blood pressure. [6]
9. Benadryl 1.0 mg/kg IV/IO or deep IM (maximum of 50 mg) for treatment of dystonia associated with Phenothazine ingestion.

[4] If suspected opiate overdose, administer Narcan prior to advanced airway.

[5] Use End Tidal CO2 Detector whenever ventilating intubated patients.

[6] See **INFUSION RATE CHART** page.

[7] Narcan:

- Titration of Narcan can lessen the possibility of an unconscious patient becoming combative.
- IN dosage is ½ appropriate dose per nare.

Atropinized

- Under the influence of Atropine.
- Appropriate heart rate based on age.

PEDIATRIC TOXIC EXPOSURES

Pediatric Trauma Emergencies Patient Care Guidelines

PEDIATRIC ABDOMINAL TRAUMA

BASIC THERAPY

- Scene Survey.
- Assess Airway, Breathing, Circulation, Disability, Expose and Examine. [1]
- Airway management with high flow oxygen via Pedi mask or assist ventilations with BVM at age appropriate rate. [1]
- Use jaw thrust maneuver to open airway in patients with suspected C-Spine injury. [2]
- Vital Signs. [3]
- SAMPLE History and Physical Exam.
- Stabilize impaled objects in place.
- Cover eviscerations with saline-soaked gauze. Do not attempt to push the organs back into the abdomen.

SPECIAL CONSIDERATIONS

- [1] Refer to Broselow Tape for respiration rate, OP Airway size, ET tube size, etc.
- [2] If unable to open airway using jaw thrust maneuver after first attempt, use head-tilt, chin-lift maneuver.
- [3] Use pulse oximeter.
- [4] Use End Tidal CO₂ Detector whenever ventilating intubated patients.
- [5] See **PEDIATRIC ASSESSMENT: CIRCULATION** page for appropriate systolic pressure.

ADVANCED THERAPY

1. Advanced airway prn. [3] [4]
2. EKG / 12-Lead EKG.
3. IV / IO access (two large bore IV's).
4. If patient hypotensive, give NS bolus to maintain appropriate systolic BP per age [5] (not > 500 ml per bolus) to max of 20 ml/kg. Reassess patient's ABC's and lung sounds between each bolus.

PEDIATRIC ABDOMINAL TRAUMA

PEDIATRIC AMPUTATED PARTS

BASIC THERAPY

- Scene Survey.
- Assess Airway, Breathing, Circulation, Disability, Expose and Examine. [1]
- Airway management with high-flow oxygen via NRB or assist ventilations with BVM at age appropriate rate. [7]
- Use jaw thrust maneuver to open airway in patients with suspected C-spine injury. [2]
- Vital Signs. [3]
- SAMPLE History and Physical Exam.
- Control hemorrhage. If unable to control, apply MAT tourniquet. (once in place, do not remove)
- Splint any associated fractures or dislocations.
- Retrieve amputated part and rinse with normal saline. **DO NOT SCRUB.** Place in plastic bag and keep cool. Label with patient's name, date and time. Physically release to receiving nurse.
- DO NOT:**
 - Soak in water.
 - Cover with wet gauze or towels.
 - Place directly on ice.
- Place any dislodged teeth in milk if available and transport with patient.
- If partial amputation, place in anatomical position to facilitate the best vascular status and wrap in bulky dressings. If circulation to the distal part is compromised, wrap the distal part and apply ice. Consider placing the pulse oximeter probe on a finger or toe of the affected extremity to monitor the vascular status of the injured extremity.

SPECIAL CONSIDERATIONS

- [1] Give special consideration to spinal motion restriction when spinal trauma suspected.
- [2] If unable to open airway using jaw thrust maneuver after first attempt, use head-tilt, chin-lift maneuver.
- [3] Use pulse oximeter.
- [4] Fentanyl:
- Contraindicated in presence of bradycardia
 - Beware of oversedation. Be prepared to ventilate patient with BVM.
 - Give Narcan 0.01 mg/kg IV/IO/IM/IN if respiratory depression occurs.
 - IN dosage is ½ total dose per nare.
- [5] Morphine Sulfate:
- Contraindicated in patients with possible head injury.
 - Give Narcan 0.01 mg/kg IV/IO if respiratory depression occurs.
 - Give Benadryl 1 mg/kg IV/IO if allergic reaction or hypotension occurs due to Morphine administration.

ADVANCED THERAPY

1. EKG / 12-Lead EKG.
 2. IV / IO Access. (large bore IV)
 3. If patient hypotensive, give NS bolus to maintain appropriate systolic BP per age [6] (not > 500 ml per bolus) to max of 20 ml/kg. Reassess patient's ABC's and lung sounds between each bolus.
 4. Consider Fentanyl 1 – 2 mcg/kg IV/IO/IN. [4] [6]
- OR**
- Morphine Sulfate 0.1 – 0.2 mg/kg IV/IO. [5] [6]

- [6] See **PEDIATRIC ASSESSMENT: CIRCULATION** page for appropriate systolic pressure.
- [7] Refer to Broselow Tape for ventilation rate, OP Airway size, ET tube size, etc.

PEDIATRIC AMPUTATED PARTS

PEDIATRIC BURNS/ELECTROCUTIONS

BASIC THERAPY

- ❑ Scene Survey.
- ❑ Assess Airway, Breathing, Circulation, Disability, Expose and Examine.
- ❑ Airway management with high flow oxygen via Pedi mask or assist ventilations with BVM if needed at age appropriate rate. [1]
- ❑ Vital Signs. [2]
- ❑ SAMPLE History and Physical Exam
- ❑ Measure patient with Broselow Tape, if applicable.
- ❑ Stop burning process. Remove jewelry and clothing.
- ❑ If chemical is dry, brush off, then flush with copious water. If liquid, flush with copious water [3]
- ❑ If eye involvement, flush continuously with normal saline during transport.
- ❑ Apply clean, dry wound dressings and / or sheet to involved areas [4]
- ❑ Refer to Rule of Nine's to determine total body surface area involved.
- ❑ Shock position prn.
- ❑ Severe burns should be treated at a burn center. [8] These include:
 - >25% total body surface area
 - Burns involving hands, feet, face, abdomen
 - Electrical burns
 - Inhalation burns
 - Burns in combination with other injuries
 - Severe pre-existing medical problems

SPECIAL CONSIDERATIONS

- [1] Refer to Broselow Tape for respiration rate, OP Airway size, ET tube size, etc.
- [2] Use pulse oximeter.
- [3] Contact with appropriate advisory agency may be necessary for hazardous materials, prior to decontamination or patient contact.
- [4] Do not apply cool dressing or allow environmental exposure since hypothermia will result in a young child.
- [5] Use End Tidal CO2 Detector whenever ventilating intubated patients.
- [6] Fentanyl:
- Contraindicated in presence of bradycardia
 - Beware of oversedation. Be prepared to ventilate patient with BVM .
 - Give Narcan 0.01 mg/kg IV/IO/IM/IN if respiratory depression occurs.
 - IN dosage is ½ total dose per nare.

ADVANCED THERAPY

1. Advanced airway prn. Consider early intubation if singed nasal hairs, carbonaceous sputum, raspy voice, or if patient was in an enclosed space. [1] [5]
2. IV / IO access (large bore IV) in unburned area (if possible).
3. EKG 12-Lead.
4. In moderate to severe burns:
Establish 2nd large bore IV line. Give Fluid replacement Bolus as follows:
Amount of bolus first hour post-burn = 0.5 ml x kg x % BSA burned. May repeat once.
5. Consider Fentanyl 1 – 2 mcg/kg IV/IO/IN. [6] [9]
OR
Morphine Sulfate 0.1 – 0.2 mg/kg IV/IO. [7] [9]
6. Give Sodium Bicarbonate 1 mEq/kg in 1000 ml NS wide open (100 mEq max dose) IV/IO for high voltage electrical injury or direct lightning strike with significant tissue destruction.

- [7] Morphine Sulfate:
- Contraindicated in patients with possible head injury.
 - Give Narcan 0.01 mg/kg IV/IO if respiratory depression occurs.
 - Give Benadryl 1 mg/kg IV/IO if allergic reaction or hypotension occurs due to Morphine administration.

[8] See **HOSPITAL CAPABILITIES** page.

[9] See **PEDIATRIC ASSESSMENT: CIRCULATION** page for appropriate systolic pressure.

PEDIATRIC BURNS/ELECTROCUTIONS

PEDIATRIC CHEST TRAUMA

BASIC THERAPY	SPECIAL CONSIDERATIONS
<ul style="list-style-type: none"> <input type="checkbox"/> Scene Survey. <input type="checkbox"/> Assess Airway, Breathing, Circulation, Disability, Expose and Examine. [1] <input type="checkbox"/> Airway management with high-flow oxygen via NRB or assist ventilations with BVM at age appropriate rate. [9] <input type="checkbox"/> Use jaw thrust maneuver to open airway in patients with suspected C-spine injury. [2] <input type="checkbox"/> Vital Signs. [3] <input type="checkbox"/> SAMPLE History and Physical Exam. <input type="checkbox"/> If penetrating or sucking chest wound, place occlusive dressing over wound during exhalation. Tape on three sides. <input type="checkbox"/> If flail segment is present, stabilize with large bulky dressing and tape. <input type="checkbox"/> Stabilize impaled objects in place. <input type="checkbox"/> Watch for signs/symptoms of tension pneumothorax. [6] 	<p>[1] Give special consideration to spinal motion restriction when spinal trauma suspected.</p> <p>[2] If unable to open airway using jaw thrust maneuver after first attempt, use head-tilt, chin-lift maneuver.</p> <p>[3] Use pulse oximeter. Note SPO₂ before and after oxygen administration.</p> <p>[4] Use End Tidal CO₂ Detector whenever ventilating intubated patients.</p> <p>[5] See PROCEDURES: NEEDLE DECOMPRESSION</p> <p>[6] Tracheal displacement is a very late sign of tension pneumothorax.</p> <p>[7] Fentanyl:</p> <ul style="list-style-type: none"> • Contraindicated in presence of bradycardia • Beware of oversedation. Be prepared to ventilate patient with BVM. • Give Narcan 0.01 mg/kg IV/IO/IM/IN if respiratory depression occurs. <ul style="list-style-type: none"> ▪ IN dosage is ½ total dose per nare. <p>[8] See PEDIATRIC ASSESSMENT: CIRCULATION page for appropriate systolic pressure.</p> <p>[9] Refer to Broselow Tape for respiration rate, OP Airway size, ET tube size, etc.</p>
ADVANCED THERAPY	
<ol style="list-style-type: none"> 1. Advanced airway prn. Consider intubation for markedly decreased LOC or inability to maintain patent airway.[3] [4] [9] 2. EKG / 12-Lead EKG. 3. IV / IO access (two large bore IV). 4. If patient hypotensive, give NS bolus to maintain appropriate systolic BP per age [8] (not > 500 ml per bolus) to max of 20 ml/kg. Reassess patient's ABC's and lung sounds between each bolus. 5. Tension Pneumothorax: Perform needle decompression if increased respiratory distress with the following: [5] <ul style="list-style-type: none"> • Chest pain. • Absent or depressed breath sounds on affected side(s). • Marked deterioration in patient condition. • Increasing difficulty with BVM assistance. • Neck vein distension or tracheal displacement toward the unaffected side. [6] 6. Consider Fentanyl 1 – 2 mcg/kg IV/IO/IN. [7] [8] 	

PEDIATRIC CHEST TRAUMA

PEDIATRIC DIVING EMERGENCIES (DECOMPRESSION SICKNESS)

BASIC THERAPY

- Scene Survey.
- Assess Airway, Breathing, Circulation, and Disability.
- Airway management with high-flow oxygen via NRB or assist ventilations with BVM at age appropriate rate. [5]
- Place patient in a supine, head-down, left lateral decubitus position.
- Vital Signs including temperature every 10 minutes. [1]
- SAMPLE History and Physical Exam.
- Protect patient against hypothermia and hyperthermia.
- Monitor closely for complications such as pneumothorax, shock, seizures.
- Transfer patient to a hospital with hyperbaric facility. [4] Provide hyperbaric personnel with a detailed history of the dive (depth and duration, surface interval, number of dives, timing and onset of symptoms), complications, and any treatment given. If available transport dive computer or dive tables with patient to hospital. [3]

SPECIAL CONSIDERATIONS

- [1] Use pulse oximeter.
- [2] Use End Tidal CO₂ Detector whenever ventilating intubated patients.
- Most patients with Decompression Sickness seek medical attention within 12 – 24 hours of last dive. Signs/Symptoms include:
 - Joint and Abdominal pain
 - Fatigue
 - Paresthesias
 - CNS disturbances
- [3] Contact Divers Alert Network (DAN)
919-684-9111
- [4] See **HOSPITAL CAPABILITIES** page.
- [5] Refer to Broselow Tape for respiration rate, OP Airway size, ET tube size, etc.

ADVANCED THERAPY

1. Advanced airway prn. [2]
2. EKG / 12-Lead EKG
3. IV / IO access (large bore IV).
4. Treat any complications according to appropriate protocols.

PEDIATRIC DIVING EMERGENCIES (DECOMPRESSION SICKNESS)

PEDIATRIC EYE TRAUMA

BASIC THERAPY

- Scene Survey
- Assess Airway, Breathing, Circulation, Disability, Expose and Examine
- Airway management with oxygen prn with appropriate delivery device.
- Vital Signs including any vision disturbances. [1]
- SAMPLE History and Physical Exam.
- Penetrating Injuries: If laceration, impaled object, or other open trauma to the eye, bandage and dress wound appropriately without applying pressure. Do not irrigate with water. Cover both eyes to prevent sympathetic movement.
- Non-Penetrating Injuries: Irrigate with copious amounts of fluid (at least 1 liter per affected eye). Do not allow irrigation runoff to enter unaffected eye.

SPECIAL CONSIDERATIONS

[1] Use pulse oximeter.

[2] Fentanyl:

- Contraindicated in presence of bradycardia
- Beware of oversedation. Be prepared to ventilate patient with BVM.
- Give Narcan 0.01 mg/kg IV/IO/IM/IN if respiratory depression occurs.
- IN dosage is ½ total dose per nare.

[3] See **PEDIATRIC ASSESSMENT: CIRCULATION** page for appropriate systolic pressure.

ADVANCED THERAPY

1. IV / IO access prn.
2. Consider Fentanyl 1 – 2 mcg/kg IV/IO/IN. [2] [3]

PEDIATRIC EYE TRAUMA

PEDIATRIC NEAR-DROWNING

BASIC THERAPY

- Scene Survey.
- Assess Airway, Breathing, Circulation, Disability, Expose and Examine. [1]
- Airway management with high flow oxygen via NRB or assist ventilations with BVM at age appropriate rate. [9]
- Use jaw thrust maneuver to open airway. [2]
- Vital Signs including temperature and blood glucose. [3]
- SAMPLE History and Physical Exam. Note any paralysis or weakness found.
- If patient hypothermic, move patient to warm environment, remove wet clothing and cover with blankets.
- Treat any associated injuries (fractures, head injury, etc.) according to appropriate protocols.

SPECIAL CONSIDERATIONS

- [1] Give special consideration to spinal motion restriction when spinal trauma suspected.
- [2] If unable to open airway using jaw thrust maneuver after first attempt, use head-tilt, chin-lift maneuver.
- [3] Use pulse oximeter. Note SPO₂ before and after oxygen administration.
- [4] Use End Tidal CO₂ Detector whenever ventilating intubated patients.
- [5] Note pulse rate before, during, and after treatment.
- [6] See **INFUSION RATE CHART** page.
- [7] See **PEDIATRIC ASSESSMENT: CIRCULATION** page for appropriate systolic pressure.
- [8] PEEP = Positive End Expiratory Pressure.
- [9] Refer to Broselow Tape for respiration rate, OP Airway size, ET tube size, etc.

ADVANCED THERAPY

1. Advanced airway prn. [4]
2. EKG / 12-Lead EKG.
3. IV / IO access (large bore IV).
4. Give Albuterol 2.5 mg via HHNB for bronchial spasms and wheezing. [5]
5. If using BVM and patient is exhibiting signs/symptoms of pulmonary edema, consider PEEP (usually run at 5 – 10 mmHg). [8]
6. If patient hypotensive, give NS bolus to maintain appropriate systolic BP per age [7] (not > 500 ml per bolus) to max of 20 ml/kg. Reassess patient's ABC's and lung sounds between each bolus.
7. If patient remains hypotensive following bolus, consider Epinephrine infusion or Dopamine infusion to maintain adequate blood pressure. [6] [7]

PEDIATRIC NEAR-DROWNING

PEDIATRIC SEXUAL ASSAULT

BASIC THERAPY

- Scene Survey.
- Assess Airway, Breathing, Circulation, and Disability.
- Airway management with oxygen prn via appropriate delivery device.
- Vital Signs. [1]
- SAMPLE History and Physical Exam [2]
- Reassure patient and provide emotional support.
- Treat all injuries appropriately, preferably with a relative present.
- Protect the scene and preserve evidence. Do not allow the patient to bathe, change clothes, go to the bathroom or douche.
- Notify police if not already informed.
- Transport to facility with Sexual Assault trained nursing staff. [3]

SPECIAL CONSIDERATIONS

- [1] Use pulse oximeter.
- [2] Physical exam should be appropriate to patient's injuries caused by assault.
- [3] See **HOSPITAL CAPABILITIES** page.

ADVANCED THERAPY

1. IV / IO access prn.
2. Treat injuries and complications according to appropriate protocols.

PEDIATRIC SEXUAL ASSAULT

PEDIATRIC SKELETAL TRAUMA

BASIC THERAPY	SPECIAL CONSIDERATIONS
<ul style="list-style-type: none"> <input type="checkbox"/> Scene Survey. <input type="checkbox"/> Assess Airway, Breathing, Circulation, Disability, Expose and Examine. [1] <input type="checkbox"/> Airway management oxygen via appropriate delivery device. Use jaw thrust maneuver to open airway in patients with suspected C-spine injury. [2] <input type="checkbox"/> Vital Signs. [3] <input type="checkbox"/> SAMPLE History and Physical Exam. <input type="checkbox"/> Immobilize extremity fractures in position found. If limb severely angulated and circulation is absent, attempt to reposition limb prior to splinting by gently pulling traction on CLOSED FRACTURES ONLY. If <u>any</u> resistance is met during repositioning, stop and splint in place. Provide rapid transport to appropriate facility. <input type="checkbox"/> Open fractures should be covered with moist, sterile gauze and padded with bulky dressing prior to bandaging. <input type="checkbox"/> Use traction splint on CLOSED femur fractures if no additional fractures in that extremity. <input type="checkbox"/> Note pulse, motor, sensation in extremities before and after splinting. Mark location of peripheral pulses with a small "X". Continue to monitor PMS enroute to facility. <input type="checkbox"/> Hip fractures should be splinted in position found with pillows and/or blankets. 	<p>[1] Give special consideration to spinal motion restriction when spinal trauma suspected.</p> <p>[2] If unable to open airway using jaw thrust maneuver after first attempt, use head-tilt, chin-lift maneuver.</p> <p>[3] Use pulse oximeter.</p> <p>[4] Fentanyl:</p> <ul style="list-style-type: none"> • Contraindicated in presence of bradycardia • Beware of oversedation. Be prepared to ventilate patient with BVM. • Give Narcan 0.01 mg/kg IV/IO/IM/IN if respiratory depression occurs. ▪ IN dosage is ½ total dose per nare. <p>[5] See PEDIATRIC ASSESSMENT: CIRCULATION page for appropriate systolic pressure.</p>
ADVANCED THERAPY	
<ol style="list-style-type: none"> 1. IV / IO access (large bore IV). Establish 2nd large bore IV/IO prn according to severity of fracture(s). 2. If patient hypotensive, give NS bolus to maintain appropriate systolic BP per age [5] (not > 500 ml per bolus) to max of 20 ml/kg. Reassess patient's ABC's and lung sounds between each bolus. 3. Consider Fentanyl 1 – 2 mcg/kg IV/IO/IN. [4] [5] 	

PEDIATRIC SKELETAL TRAUMA

PEDIATRIC SNAKEBITE

BASIC THERAPY

- Scene Survey.
- Assess Airway, Breathing, Circulation, Disability, Expose and Examine.
- Airway management with oxygen prn via appropriate delivery device.
- Vital Signs. [1]
- SAMPLE History and Physical Exam.
- If bite on extremity, immobilize affected extremity in dependent position. Patient should remain still and in a position of comfort.
- Remove watches, rings, and jewelry from affected extremity.
- Mark borders of inflammation and document time to allow ED to track the rate of progression.
- If signs of toxicity (local edema and hypotension), give high-flow oxygen via NRB.

SPECIAL CONSIDERATIONS

[1] Use pulse oximeter.

[2] Fentanyl:

- Contraindicated in presence of bradycardia
- Beware of oversedation. Be prepared to ventilate patient with BVM.
- Give Narcan 0.01 mg/kg IV/IO/IN if respiratory depression occurs.
 - IN dosage is ½ total dose per nare.

[3] See **PEDIATRIC ASSESSMENT: CIRCULATION** page for appropriate systolic pressure.

ADVANCED THERAPY

1. IV / IO access.
2. If patient hypotensive, give NS bolus to maintain appropriate systolic BP per age [3] (not > 500 ml per bolus) to max of 20 ml/kg. Reassess patient's ABC's and lung sounds between each bolus.
4. Consider Fentanyl 1 – 2 mcg/kg IV/IO/IN. [2] [3]

General Information:

Pit Vipers

Rattlesnake, water moccasin, and copperhead typically cause puncture wounds. There may be Ecchymosis at site, localized pain, swelling weakness, tachycardia, nausea, shortness of breath, dim vision, vomiting, or shock.

Coral Snakes

Usually a chewed wound. There may be slight burning pain, mild swelling, blurred vision, drooping eyelids, slurred speech, drowsiness, salivation and sweating, nausea and vomiting, shock, respiratory difficulty, paralysis, convulsions, and coma.

PEDIATRIC SNAKE BITE

PEDIATRIC SPINAL TRAUMA

BASIC THERAPY

- Scene Survey.
- Assess Airway, Breathing, Circulation, Disability, Expose and Examine. [1]
- Airway management with high flow oxygen via NRB mask or assist ventilations with BVM at age appropriate rate.[8]
- Use modified jaw thrust maneuver to open airway. [2]
- Vital Signs including blood glucose level. [3]
- SAMPLE History and Physical Exam including PMS (pulses, motor and sensory evaluation). Note any paralysis or weakness found.

SPECIAL CONSIDERATIONS

- [1] Give special consideration to spinal motion restriction when spinal trauma suspected.
- [2] If unable to open airway using jaw thrust maneuver after first attempt, use head-tilt, chin-lift maneuver.
- [3] Use pulse oximeter.
- [4] Laryngoscopy increases intracranial pressure (ICP). If head injury is suspected and intubation is necessary, PAI is the definitive method of airway control.

ADVANCED THERAPY

1. Advanced airway prn. [4] [5]
2. IV / IO Access (two large bore IV).
3. If patient hypotensive, give NS bolus to maintain appropriate systolic BP per age [7] (not > 500 ml per bolus) to max of 20 ml/kg. Reassess patient's ABC's and lung sounds between each bolus.
4. Give Solu-Medrol 30 mg/kg in 100 ml NS over 20 minutes in spinal cord injuries < 8 hours old. [6]
5. If Bradycardic, refer to **PEDIATRIC BRADYCARDIA** protocol.

- Consider PAI in patients that present with the following:
- GSC less than 8
 - Signs/Symptoms of ICP including increased blood pressure, decreased heart rate, decreased respirations
 - Combativeness or altered mental status
 - Polytrauma with CHI
 - Posturing
- [5] Use End Tidal CO2 Detector whenever ventilating intubated patients.
- [6] Solu-Medrol:
- Contraindicated in patients with CHI or CVA.
- [7] See **PEDIATRIC ASSESSMENT: CIRCULATION** page for appropriate systolic pressure.
- [8] Refer to Broselow Tape for respiration rate, OP Airway size, ET tube size, etc.

PEDIATRIC SPINAL TRAUMA

PEDIATRIC TRAUMA

BASIC THERAPY	SPECIAL CONSIDERATIONS
<ul style="list-style-type: none"> <input type="checkbox"/> Scene Survey. <input type="checkbox"/> Assess Airway, Breathing, Circulation, Disability, Expose and Examine. [1] <input type="checkbox"/> Airway management with high flow oxygen via Pedi mask or assist ventilations with BVM at age appropriate rate. [1] [2] <input type="checkbox"/> Use jaw thrust maneuver to open airway in patients with suspected C-Spine injury. [6] <input type="checkbox"/> Vital Signs [2] <input type="checkbox"/> SAMPLE History and Physical Exam. 	<p>[1] Refer to Broselow Tape for respiration rate, OP Airway size, ET tube size, etc.</p> <p>[2] Use pulse oximeter.</p> <p>[3] Use End Tidal CO2 Detector whenever ventilating intubated patients.</p> <p>[4] Fentanyl:</p> <ul style="list-style-type: none"> • Contraindicated in presence of bradycardia • Beware of oversedation. Be prepared to ventilate patient with BVM. • Give Narcan 0.01 mg/kg IV/IO/IN if respiratory depression occurs. ▪ IN dosage is ½ total dose per nare. <p>[5] See PROCEDURES: NEEDLE DECOMPRESSION</p> <p>[6] If unable to open airway using jaw thrust maneuver after first attempt, use head-tilt, chin-lift maneuver.</p> <p>[7] See PEDIATRIC ASSESSMENT: CIRCULATION page for appropriate systolic pressure.</p>

ADVANCED THERAPY

BLUNT TRAUMA	PENETRATING TRAUMA	CRUSH INJURIES
<ol style="list-style-type: none"> 1. Advanced airway prn. [2] [3] 2. IV / IO Access. 3. EKG / 12 Lead EKG. 4. See PEDIATRIC SHOCK: HYPOVOLEMIC protocol if signs of shock present. 	<ol style="list-style-type: none"> 1. Advanced airway prn. [2] [3] 2. IV / IO Access. 3. EKG / 12 lead EKG. 4. Seal sucking chest wound with occlusive dressing taped on 3-sides. 5. If suspected tension pneumothorax with severe respiratory distress, consider Needle Decompression. [5] 6. See PEDIATRIC SHOCK: HYPOVOLEMIC protocol if signs of shock present. 	<ol style="list-style-type: none"> 1. Advanced airway prn. [2] [3] 2. IV / IO Access. 3. EKG / 12 lead EKG. 4. Constant crush injuries over 4 hours: Sodium Bicarbonate infusion 1 mEq/kg in 1000 ml NS wide open (100 mEq max) IV/IO. 5. Consider Fentanyl 1 – 2 mcg/kg IV/IO/IN. [4] [7]

PEDIATRIC TRAUMA

PEDIATRIC TRAUMATIC BRAIN INJURY

BASIC THERAPY

- Scene Survey.
- Assess Airway, Breathing, Circulation, Disability, Expose and Examine. [1]
- Airway management with high flow oxygen via NRB mask or assist ventilations with BVM at age appropriate rate.[7]
- Use modified jaw thrust maneuver to open airway. [2]
- Vital Signs including blood glucose level. [3] [4]
- SAMPLE History and Physical Exam.

SPECIAL CONSIDERATIONS

- [1] Give special consideration to spinal motion restriction when spinal trauma suspected.
- [2] If unable to open airway using jaw thrust maneuver after first attempt, use head-tilt, chin-lift maneuver.
- [3] Elevation of the head 6" – 10" may help decrease ICP.
- [4] Use pulse oximeter. Note SPO₂ before and after oxygen administration.

ADVANCED THERAPY

1. Advanced airway prn. [5] [6]
2. IV / IO access (two large bore IV). Titrate fluid administration to maintain perfusion at > minimum age associated systolic BP. [8]
3. Signs/Symptoms of Tentorial Herniation (unreactive pupil(s), motor posturing, and/or acute deterioration of neurological status):
 - Intubate [5] [6]
 - Ventilate at age appropriate rate [7], or at a rate to maintain ETCO₂ at 30-35 mmHg.

- [5] Laryngoscopy increases intracranial pressure (ICP). If intubation is necessary, PAI is the definitive method of airway control.
- Consider PAI in patients presenting with the following:
- GSC less than 8
 - Signs/Symptoms of ICP including increased blood pressure, decreased heart rate, decreased respirations
 - Combativeness or altered mental status
 - Polytrauma with CHI
 - Posturing
- [6] Use End Tidal CO₂ Detector whenever ventilating intubated patients.
- [7] Refer to Broselow Tape for respiration rate, OP Airway size, ET tube size, etc.
- [8] See **PEDIATRIC ASSESSMENT: CIRCULATION** page for appropriate systolic pressures.

PEDIATRIC TRAUMATIC BRAIN INJURIES

PROCEDURES

12 Lead EKG
Advanced Airway Management
Automatic External Defibrillator
Continuous Positive Airway Pressure (CPAP)
Discretionary IV Access
Epinephrine by EMT-I's
EpiPen® and EpiPen Jr.™
External Jugular Vein Cannulation
External Pacing
EZ IO Intraosseous Infusion
Intranasal Medication Administration
King Tube™ Airway™
MAT Tourniquet
Nasogastric Insertion and Lavage
Nasotracheal Intubation
Needle Decompression
Pediatric Intubation
Pharmacologically Assisted Intubation
Rectal Dextrose 50%
ResQPOD™
Surgical Cricothyrotomy
Termination of Resuscitation

12 LEAD EKG

PURPOSE

- To acquire a diagnostic quality electrocardiogram in the patient who may be suffering from a primary cardiac event, or a secondary event due to other illness or injury.
- To monitor patient who may receive therapy that is potentially cardiotoxic.

PROCEDURE

1. Place limb leads in respective sites. Although placing the limb leads on the torso may be acceptable for rhythm strip interpretation, placing the electrode on the inner aspect of the distal extremities yields a more accurate EKG
2. Precordial leads are placed as follows:
 - V₁ 4th intercostal space just to the right of the sternum
 - V₂ 4th intercostal space just to the left of the sternum
 - V₄ 5th intercostal space at the midclavicular line
 - V₃ 5th intercostal space midway between V₂ and V₄
 - V₅ 5th intercostal space at the anterior axillary line
 - V₆ 5th intercostal space at the midaxillary line
3. In the female patient, the precordial leads must be positioned under the breast, against the chest wall. Using the posterior aspect of a gloved hand to displace the breast for electrode placement is the least threatening means for application.
4. Occasionally, skin prep (including shaving chest hair) may be necessary to get a good reading. This is best achieved by using a small quantity of water or alcohol to wipe the electrode site followed by a brisk rub.
5. The best patient position during acquisition is supine although not all patients will tolerate this position for significant periods of time.
6. Provide documentation of 12 Lead acquisition and interpretation;
7. Leave a copy (or second printing) of all rhythm strips and 12 Leads at the destination facility with patient identification correctly labeled on each.
8. Obtain a copy (or second printing) of all rhythm strips and 12 Lead EKG and attach to PCR.
9. A patient who presents with evidence of inferior wall AMI (S-T segment elevation in leads II, III, or aVF; reciprocal changes in leads I or aVL) or a right ventricular infarct is suspected, acquire V_{4R} and label accordingly.
10. Obtain the 12 Lead EKG at the earliest opportunity without interfering with the urgent needs of the patient.
11. Occasionally, situations may arise where a 12 Lead EKG is not possible or practical. Reasonable judgment should guide this decision and through documentation to that effect is required.

MINIMUM LEVEL

- Paramedic
 - Basic and Intermediate may attach and monitor for training purposes only.

ADVANCED AIRWAY MANAGEMENT

PURPOSE

- ❑ To improve the oxygenation and ventilation status of the patient.
- ❑ To protect and secure the patient's airway.

GENERAL CONSIDERATIONS

- ❑ The need for any type of airway management will be the decision of the in-charge ALS provider if on-scene, or properly trained first responder up to their available skill level. The procedure for maintaining the airway shall include, but is not limited to, the following: BVM ventilation with an oropharyngeal airway, King Tube insertion, oral endotracheal intubation, nasal tracheal intubation, and surgical cricothyrotomy.
- ❑ Succinylcholine may be used by approved Paramedics to facilitate endotracheal intubation if deemed necessary by that medic. Attempts at oral and/or nasal intubation, if appropriate, should be made prior to determining the need for relaxation in order to secure the airway. Use of paralytics shall be limited to those patients who are in need of immediate airway control, in whom endotracheal intubation is impossible under non-relaxed conditions, and nasal tracheal intubation is contraindicated or impossible. The need for sedation along with relaxation should always be considered.
- ❑ Etomidate may be administered by approved Paramedics as part of a pharmacologically assisted intubation. Ativan, Versed and Fentanyl may be used for sedation before and/or after intubation. Vecuronium may be used for the control of post-intubation movement and as the first line paralytic in pediatric patients.
- ❑ Approved Paramedics may use surgical cricothyrotomy when all other means at airway control have been unsuccessful.
- ❑ Prior to the administration of any medication that may alter the patient's respiratory status, complete monitoring should be instituted to include blood pressure, EKG and pulse oximetry. If indicated by a SpO₂ less than 90%, patients should be oxygenated and ventilated with 100% oxygen prior to attempts at intubation, while maintaining cricoid pressure.
- ❑ Nasotracheal intubation should be reserved for those patients with an intact gag reflex and relaxation is not indicated or not available.

CRICOID PRESSURE

- ❑ Every patient who is unable to protect his or her own airway will receive cricoid pressure with BVM ventilation. This is maintained until the trachea has been successfully intubated, the ETT Cuff is inflated, and ETT placement has been confirmed.
- ❑ The purpose of cricoid pressure, or Sellicks Maneuver, is to protect the airway from passive aspiration of stomach contents in a patient who has lost airway reflexes. The oropharynx should be suctioned, and a cuffed ETT (for adults) placed as soon as possible.

MINIMUM LEVEL

- ECA (OPA / BVM / King Tube)
- EMT-Intermediate (Nasotracheal / Endotracheal Intubation)
- P3 (PAI, Surgical Cricothyrotomy)

AUTOMATIC EXTERNAL DEFIBRILLATOR

INDICATIONS

Any apneic and pulseless adult patient

CONTRAINDICATIONS

- Under 12 years old
- Weight less than 80 lbs. (35 kg)
- Hypothermia
- Rigor/livor mortis
- Presence of properly completed Texas OOH-DNR form (original or photocopy) or ID device.
- Fixed, dilated pupils

PROCEDURE

1. Establish that the patient is apneic and pulseless
2. Move patient to the floor and bare chest.
3. If two rescuers are present, one should begin CPR while the second rescuer turns on the AED and applies the defibrillator pads. The single rescuer with an AED should verify unresponsiveness, open the airway, give two respirations per BVM, then check for a pulse. If full cardiac arrest is confirmed, the rescuer should attach the AED and proceed.
4. Apply pads.
5. Stop CPR and allow AED to analyze rhythm
6. Initiate analysis of rhythm
7. Confirm that personnel are clear.
8. AED delivers shock
9. Directs rescuers to continue CPR if indicated.

SPECIAL CONDITIONS

- If necessary to analyze rhythm during transport, stop unit and allow AED to analyze rhythm and give shock if necessary.
- Do not use AED while standing in water or in rain.
- Electrical appliances such as fluorescent lights, electric blankets, televisions, clocks and radios may interfere with rhythm analysis. Unplug or remove these items for accurate assessment.

MINIMUM LEVEL

- ECA

CONTINUOUS POSITIVE AIRWAY PRESSURE (CPAP)

PURPOSE

- ❑ To reduce the need for intubation and mechanical ventilation in severely compromised respiratory patients.
- ❑ To provide instant and significant relief from fluid congestion, reduce the inspiratory work of breathing, reduce diaphragm stress, and force oxygen rich air into the lungs.

INDICATIONS

Hypoxemia secondary to CHF	COPD
Pulmonary edema	Asthma
Hypoxemia/SOB secondary to Pneumonia	Fluid overload (i.e.: dialysis patients)

CONTRAINDICATIONS

Respiratory or Cardiac Arrest	Penetrating Chest Trauma
Agonal Respirations	Persistent nausea/vomiting
Unresponsiveness	Facial Anomalies/Facial Trauma
Pneumothorax	Inability to control airway

PROCEDURE

1. Connect the oxygen to the DISS oxygen inlet located on the side of the CPAP unit.
2. Connect the Breathing Circuit.
3. Instruct the patient and apply the mask to the patient.
4. Leave pressure on 5 cmH₂O for patients with Asthma/COPD/SOB/Hypoxemia.
5. CHF patients: slowly increase pressure up to 12 cmH₂O per patient tolerance.
6. Monitor patient's vital signs including blood pressure, pulse rate, SpO₂, respiratory rate and effort, and lung sounds while CPAP is in use.
7. If the patient begins showing signs/symptoms of dehydration and/or chest discomfort, decrease the amount of cmH₂O being delivered by the CPAP. If signs/symptoms continue, discontinue use of CPAP and provide oxygenation and/or ventilation appropriate for the patient's condition.

SPECIAL CONSIDERATIONS

- ❑ Patient head of bed/stretchers **MUST** be at a minimum of 30 degrees.
- ❑ Do **NOT** initiate this therapy if the patient is lying flat.
- ❑ Monitor the airway pressure gauge to assure that pressure is nearly constant (variation <±2 cmH₂O) while the patient is breathing. Pressure changes <±2 cmH₂O show that the CPAP is not being effectively delivered. Possible causes are insufficient source gas pressure and flow or possibly a malfunction of the CPAP unit and/or breathing circuit. Excessive pressure variation during CPAP treatment can cause fatigue and respiratory failure.

MINIMUM LEVEL

- EMT-Basic

DISCRETIONARY IV ACCESS

PURPOSE

To establish an intravenous route for medications and fluid replacement.

PROCEDURE

- ❑ A saline lock, peripheral venous, Intraosseous, or Catheter lumens access can accomplish intravenous access.
- ❑ PICC, Hickman and Broviac Catheter access should be reserved for those critical patients who require medication administration or fluid volume replacement; otherwise, access should not be attempted in the Prehospital setting since the risk of infection is higher. Under critical circumstances it is unnecessary to attempt other access first. If line is used for dialysis, do NOT access. Due to special equipment requirements, indwelling (under the skin) catheters will NOT be accessed. Line must have external lumen(s) to be accessed.
 1. Select lumen to be used. (any can be used)
 2. Keep line clamped (if equipped) unless infusing or aspirating.
 3. Clean all hub ends with alcohol swab prior to attachments.
 4. Attach "lock" if not equipped.
 5. Aspirate 10cc of blood and dispose of. (Ensure easy aspiration)
 6. Attach Saline drip set and run at minimum TKO to prevent clotting.
- ❑ Rate of administration of intravenous fluids should be appropriate to patient condition.
- ❑ In all pediatric patients receiving intravenous fluids, a micro drip administration set should be used and delivery of fluids should be carefully monitored. It is encouraged to use a 100ml bag of Normal Saline when possible, to minimize the risk of fluid overload. A macro drip administration set may be used for hypovolemic (without evidence of uncontrollable hemorrhage) pediatric patients.
- ❑ Aseptic technique shall be used at all times for all situations.

NOTE:

- ❑ Also see **EXTERNAL JUGULAR VEIN CANNULATION** procedure.
- ❑ Also see **EZ-IO™ INTRAOSSEOUS INFUSION** procedure.

MINIMUM LEVEL

- EMT-Intermediate

EPINEPHRINE USE BY EMT-I'S

INDICATIONS

Patients in cardiac arrest.

DOSAGE

Epinephrine 1 mg IV/IO/ETT q 3 – 5 minutes.

NOTE:

Defibrillation takes precedence over the administration of epinephrine in the cardiac arrest setting if indicated.

MINIMUM LEVEL

- EMT-Intermediate

EpiPen and EpiPen Jr.™

PURPOSE

To reverse the effects of severe allergic reactions (anaphylaxis) in adults and children.

INDICATIONS

Patients that are exhibiting signs/symptoms of severe allergic reaction (anaphylaxis) including respiratory distress, wheezing, hypoperfusion (shock).

CONTRAINDICATIONS

None in the presence of anaphylaxis

PROCEDURE

1. Confirm that the patient is in anaphylaxis.
2. Attempt to remove any irritant.
3. For the pediatric patient, confirm patient's weight to determine proper dose.
4. Ensure that the medication is not expired.
5. Ensure that the medication is not discolored (if visible).
6. Remove the safety cap from the auto-injector.
7. Place the tip of the auto-injector against the lateral aspect of the patient's thigh, midway between the waist and knee.
8. Push the injector firmly against the thigh until the injector activates.
9. Hold the injector in place until the medication is injected.
10. Reassess the patient's condition.
11. Document administration including time given and patient's response to medication.

DOSAGE

Adult:

- One EpiPen® auto-injector (0.3 mg)

Child/Infant > 1 month old and < 30 kg:

- One EpiPen Jr.® auto-injector (0.15 mg)

MINIMUM LEVEL

- EMT-Basic

EXTERNAL JUGULAR VEIN CANNULATION

INDICATIONS

For infusion of fluid or administration of medications when other peripheral IV attempts have been unsuccessful.

PROCEDURE

1. Place patient in a supine, head-down position.
2. Turn patient's head to side opposite the intended venipuncture site.
3. Locate vein (the external jugular vein runs downward and obliquely posteriorly behind the angle of the jaw until it pierces the deep fascia of the neck just above the mid-clavicular region).
4. Align the cannula in the direction of the vein with the point aimed toward the shoulder on the side of the venipuncture site.
5. Using an aseptic technique, make venipuncture midway between the angle of the jaw and the mid-clavicular line (stabilized the vein by placing one finger on the vein just above the clavicle).
6. When the vein has been penetrated, remove the needle and advance the cannula while compressing the vein at the end of the cannula.
7. Connect the IV tubing or lock securely to cannula hub and release compression – do not allow air to enter the catheter once it has been inserted.
8. Tape line securely in place. A cervical collar may be useful to reduce movement and ensure that the catheter does not dislodge.

MINIMUM LEVEL

- EMT-Intermediate

EXTERNAL PACING

PURPOSE

To increase the heart rate when the intrinsic rate is not adequate to perfuse the patient.

PROCEDURE

1. Rotate "power" control to a power source.
2. Connect EKG 4 lead electrodes to patient.
3. Expose, clean, dry, and remove excess hair in areas over which pacing pads will be placed.
4. Connect pacing pads cable to the monitor in use.
5. Peel off protective covering from each pacing pad to expose conductive surface and position on the patient's chest.
6. Select "Pacer" and select desired rate.
7. Observe oscilloscope for "Sense" marker which should appear above each QRS complex.
 - a. If "Sense" marker is not present on QRS or appears elsewhere, adjust EKG size control for optimal sensing.
 - b. If EKG size is adjusted too high, EKG artifact may inhibit pacing.
 - c. If adjustment of EKG size fails to correct positioning of "Sense" marker, select another lead and re-adjust EKG size.
 - d. If intrinsic beats are not present, EKG size adjustment is not necessary.
8. When unit is sensing properly, activate pacing by depressing "Start/Stop" button.
9. Set the energy level at the minimum necessary current:

MINIMUM LEVEL

- Paramedic

EZ-IO™ INTRAOSSEOUS INFUSION

INDICATIONS

Adult and Pediatric patient in:

- Cardiopulmonary arrest
- Profound shock
- Need for immediate vascular access for resuscitation
- Rapid vascular access is required and IV access cannot be established in 2 attempts or within 90 seconds.

CONTRAINDICATIONS

In the following situations, using the unaffected leg for IO access should be considered:

- Fracture of the tibia or humerus being considered as the insertion site.
- Knee replacement
- IO within the previous 24 hours
- Cutaneous infection or burn overlying the insertion site
- Inability to locate anatomical landmarks due to significant edema at site
- Excessive tissue at insertion site
If suspected, this can be determined by powering the needle set through the skin up to but not into the bone. At this point, the 5 mm mark on the catheter should be visible. If it is not, there is excessive tissue at the site.
- Osteomyelitis (infection of the bone or bone marrow)
- Osteogenesis imperfecta (“weak, brittle bones”)

RELATIVE CONTRAINDICATION:

Fracture of another bone (e.g. femur, clavicle) proximal to the bone being long as perfusion distal to the fracture site can be confirmed.

EZ-IO SIZES AND INSERTION LOCATIONS:

Adult EZ-IO needle ≥ 37 kg

EZ-IO Site: Tibia or Humerus

Pediatric EZ-IO needle 3-36 kg

EZ-IO site: Tibia

MINIMUM LEVEL

- EMT-Intermediate

INTRANASAL MEDICATION ADMINISTRATION

INDICATIONS

Administration of approved medications when other routes are unavailable or deemed too dangerous to attempt.

CONTRAINDICATIONS

- Nasal trauma.
- Nasal discharge will reduce effectiveness.
- All medication contraindications still apply.

PROCEDURE

1. Draw up desired dose of approved medication into appropriate syringe.
2. Remove needle and attach MAD (Mucosal Atomization Device), or equivalent, to the syringe.
3. Insert into nare and rapidly deliver $\frac{1}{2}$ of total dose, repeat on opposite nare.

NOTE

- Approved medications are Versed, Narcan, and Fentanyl.
- Desired amount for IN is $\frac{1}{4}$ to $\frac{1}{2}$ ml per nare, but up to 1 ml per nare is acceptable, although there may be runoff from the nare.

MINIMUM LEVEL

- EMT-Intermediate (Narcan)
- Paramedic (Fentanyl and Versed)

KING TUBE™

PURPOSE

- ❑ To provide effective assisted ventilation in the unconscious patient without requiring endotracheal intubation or visualization of the glottis.
- ❑ The King Tube™ may be used as the initial airway for approved ECA's, EMT-Basics, Intermediates and Paramedics or as an airway option in failed PAI intubations for Senior Paramedics and Supervisors.

PROCEDURE

1. Initiate cricoid pressure in patients at risk of vomiting (i.e. patients ventilated with BVM and face mask prior to King Tube™ insertion, non-fasting patients). Cricoid pressure is to be maintained until an ET tube is in place or until patient is delivered to appropriate facility and airway is managed by emergency room staff.
2. Select appropriate size

King Tube Size	Patient's Height/Weight	Connector Color	Cuff Volume
2.5	41-51 in / 25-35 kg	Orange	30 - 40 ml
3	4 – 5 feet	Yellow	45 - 60 ml
4	5 – 6 feet	Red	60 - 80 ml
5	Over 6 feet	Purple	70 – 90 ml

3. Pre-use inspection: Inflate cuff and inspect for leaks
4. Lubricate King Tube™ distal tip with KY Jelly.
5. If patient has potential C-Spine injury, maintain C-Spine immobilization and open airway using jaw-thrust maneuver. If C-Spine precautions are not necessary, place patient in the sniffing position providing at least a 90 degree angle at the back of the tongue.
6. Hold the King Tube™ at the connector with the dominant hand. With the non-dominant hand, hold mouth open and apply chin lift.
7. Using a lateral approach, introduce tip into mouth.
8. Advance the tip behind the base of the tongue while rotating tube back to midline so that the blue orientation line faces the chin of the patient.
9. Without exerting excessive force, advance tube until base of connector is aligned with teeth or gums.
10. Inflate cuff with the appropriate volume.
11. Attach BVM and end-tidal CO₂ detector. While bagging the patient, gently withdraw the tube until ventilation becomes easy and free flowing (large tidal volume with minimal airway pressure). NOTE: Intubation of the trachea can not be ruled out as a potential complication of the insertion. After placement, perform routine checks for breath sounds and utilize an appropriate CO₂ detector.
12. Adjust cuff inflation if necessary to obtain a seal of the airway at the peak ventilatory pressure employed.
13. Secure King Tube with tube tamer supplied. Apply C-Collar to help limit movement of the patient's head.

MINIMUM LEVEL

- ECA

MAT TOURNIQUET™

PURPOSE

- To provide bleeding control for lacerations and/or amputations with signs of life-threatening arterial bleeding.
- The MAT Tourniquet is approved ECA's, EMT-Basics, Intermediates and Paramedics.

PROCEDURE

1. Place the MAT Tourniquet on arm or leg approximately 2" superior to laceration/ amputation.
2. Click strap buckle into place.
3. Pull strap until the tourniquet is tight against the skin
4. Turn key on tourniquet until arterial bleeding has stopped. Document time of application of tourniquet and advise ER staff of application time.
5. Once bleeding has been controlled, apply gauze dressing along with an Ace Bandage to injury site.
6. Once tourniquet is applied, it is only to be removed by hospital personnel.

NOTES

- If applied correctly, bleeding should be controlled within 10 minutes.
- Once tourniquet is applied, do not remove it even if bleeding is not completely controlled.

MINIMUM LEVEL

- ECA

NASOGASTRIC TUBE INSERTION AND LAVAGE

PURPOSE

- ❑ Nasogastric tube insertion may be performed on cardiac arrest patients to decompress the stomach of air.
- ❑ Nasogastric / Orogastric tube insertion with lavage may be performed on patients who have or are:
 - Ingested non-caustic poisons
 - Ingested an excessive amount of medication(s)
 - Hyperthermic, to lower core body temperature through cold-water lavage
 - Severely hypothermic (core body temperature < 86° F) to increase core body temperature through warm water lavage

PROCEDURE

1. Airway management and oxygen therapy appropriate to patient condition
2. EKG monitoring appropriate to patient condition
3. Select appropriate catheter size as available:
 - Adults: 12 – 18 French
 - Pediatric 8 – 12 French
4. Measure insertion length from nose to ear to xyphoid process and mark with tape.
5. Lubricate tube generously with water-soluble jelly
6. In conscious patients: place patient in a high fowler's position with patient's chin to chest and advance tube slowly while patient swallows or sips small amounts of water. 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
7. In unconscious patient: insert tube slowly while gently stroking downward on patient's throat to stimulate swallowing reflex.
8. Once tube has been inserted, verify proper placement by aspirating for stomach contents.
9. If no contents are aspirated, inject a 20 ml bolus of air and listen over stomach.
10. Introduce lavage fluids (Sodium Chloride solution) in 20 ml portions and remove the stomach contents. 20 ml IN – 20 ml OUT.

NOTE

- ❑ It is a rare circumstance that lavage is needed. The primary indication would be that of excessive cyclic antidepressant ingestion. Tap water may be used for the adult patient but not for the pediatric patient.
- ❑ In the unconscious patient, lavage shall only be performed if the airway is secured with an endotracheal tube.
- ❑ Decompressing the stomach improves the effectiveness of CPR during cardiac arrest.
- ❑ Nasogastric lavage shall not be performed if the patient is convulsing.

MINIMUM LEVEL

- EMT-Intermediate

NASOTRACHEAL INTUBATION

PURPOSE

To protect the airway and oxygenate/ventilate the patient when orotracheal intubation is not possible.

PROCEDURE

1. Ventilate patient with 100% oxygen using BVM at 12 – 18 bpm.
2. Select an appropriate endotracheal tube size that approximates patient's nares.
3. Intubate using right nasal passage if possible.
4. Lubricate cuff and distal end of tube with water-soluble jelly. Place bevel against floor or septum of nasal cavity and advance tube until the tip reaches the posterior pharyngeal wall.
5. Twist tube counterclockwise (clockwise if in the left nare) slightly as tube advances.
6. Listen for breath sounds and advance tube through as the cords open (inspiration).
7. Tube should be placed at 27 – 28 cm mark at the nares in most adult patients.
8. Listen for air escaping out of the tube upon exhalation after inflating the cuff and sealing the mouth and nose. Assess breath sounds for proper tube placement.
9. Secure tube and recheck placement frequently.

NOTE

Performance of the Sellick Maneuver may improve the chance of passage into the trachea.

DO NOT PERFORM NASOTRACHEAL INTUBATION IF:

- Patient has major facial trauma
- Brain matter is present in the nose
- Excessive force is needed in order to pass the tube.
- Patient is exhibiting signs and symptoms of vocal cord spasms.

MINIMUM LEVEL

- EMT-Intermediate

NEEDLE DECOMPRESSION

INDICATIONS:

Suspected tension pneumothorax.

Signs and symptoms include

1. Difficulty breathing or difficult ventilations with BVM.
2. Distended neck veins. (JVD)
3. Absent breath sounds on affected side(s).
4. Hyperresonance to percussion.
5. Possible Subcutaneous Emphysema to area.

CONTRAINDICATIONS:

Simple Pneumothorax

PROCEDURE:

1. Locate 2nd Intercostal Space, Mid-Clavicular.
2. Clean and Prep area.
3. Using a 14 gauge (2 inch) catheter, place the tip onto the top of the 3rd rib.
4. Ensuring contact is maintained with superior portion of the rib, begin insertion into the pleural space.
5. After “rush” of air is heard, remove the needle and advance the catheter.
6. If catheter was correctly placed, secure it.
7. Reassess lung sounds and be prepared for the need to perform additional decompressions.

NOTES:

- A “flutter” type valve is recommended, but not required.
- Use of saline filled syringe attached during insertion to allow visible “bubbling” as air is released from Pleural Space is optional.
- If additional decompressions are necessary, do not remove previous catheter prior to insertion of additional catheter.
- 5th ICS, Mid-Axillary is an optional location, but 2nd ICS, Mid-Clavicular is the preferred site for Tension Pneumothorax.

MINIMUM LEVEL

- Paramedic

PEDIATRIC INTUBATION

PURPOSE

To provide guidelines for pediatric advanced airway management that addresses the anatomical and physiological differences of the pediatric population.

PROCEDURE

The size of the endotracheal tube should be based upon one of the following:

1. The Broselow Tape measurement
2. For patients over the age of two years old, the following formula may be utilized:

$$\text{Tube size} = \text{Age in years} + 16 \text{ divided by } 4$$

3. For patients less than 2 years old, the following chart may be used:

Premature Infant	2.5 – 3.0 mm
0 – 6 months	3.0 – 3.5 mm
6 months – 1 year	3.5 – 4.0 mm
1 – 2 years	4.0 – 5.0 mm

NOTE

- ❑ It is important to replace any endotracheal tube with a larger one if a leak is present that precludes adequate chest expansion.
- ❑ To prevent right mainstem intubation while decreasing the risk of extubation due to the tube being placed too close to the vocal cords (especially with the uncuffed tubes), use the following technique:
 1. Intentionally place the tube into the right mainstem bronchus.
 2. While listening to the left lung field, withdraw the tube slowly until good lung sounds are heard.
 3. Compare the two sides.
- ❑ It is very important to adequately secure uncuffed endotracheal tubes.
- ❑ Cuffed endotracheal tubes are acceptable in children greater than 7 years old, but inflate the cuff with only as much air as required to prevent a leak that could interfere with ventilation. Quite often, no air is required. The receiving hospital should be notified that a cuffed endotracheal tube has been placed.
- ❑ Vecuronium 0.1 mg/kg IV/ IO is the first line paralytic in pediatric rapid sequence induction.
- ❑ ALL children less than 5 years of age shall be pre-medicated with Atropine Sulfate 0.02 mg/kg prior to Pharmacological Assisted Intubation, especially if a closed head injury is suspected.

MINIMUM LEVEL

- EMT-Intermediate
- P3 (PAI)

PHARMACOLOGICAL ASSISTED INTUBATION (PAI)

PURPOSE

To rapidly secure the airway in any patient requiring endotracheal intubation by administering neuromuscular blocking agents in combination with sedative / hypnotic agents. Only approved paramedics shall perform PAI.

PROCEDURE

1. Upon patient contact and determination that the patient requires mechanical ventilation, the airway should be assessed for gag reflexes. If not present, immediate cricoid pressure should be applied and maintained until the airway is protected by a cuffed ETT.
2. The paramedic should rapidly determine the need for neuromuscular relaxation in order to secure the airway. If intubation is necessary, it should proceed without neuromuscular blockade (NMB). The need for sedation should always be considered prior to laryngoscopy. If adequate intubation conditions do not exist, and further attempts need to be made, the approved paramedic should prepare to administer the appropriate paralytic. NMB should never be administered with conscious patients without the provision of sedation and/or hypnosis.
3. Prior to the administration of a paralytic, the paramedic should determine the need for agents to provide hypnosis, sedation, and protection of the brain and heart from deleterious effects of intubation. Medications available for these purposes include Etomidate, Lidocaine, Atropine, Fentanyl, and Versed.

NOTE

- Should the patient become combative after Succinylcholine wears off, appropriate sedation and/or NMB with Vecuronium may be utilized as follows:
 1. The Vecuronium dose should not exceed 0.1 mg/kg and most appropriately should be administered in 2.0 mg doses prn movement for post-intubation.
 2. Give Versed or Fentanyl IV/IO as needed for continued sedation.
- Neuromuscular relaxants should never be administered to patient who you feel you will not be able to intubate. The status of the patient's airway should always be assessed prior to administering these medications. Physical attributes that would lead you to suspect that the intubation would be difficult or impossible are large amounts of swelling, maxillofacial trauma, patients with receding mandibles, patients with short, thick necks, patients who are actively vomiting, or any other suspicions should contraindicate the use of the relaxants. It would be acceptable at that point to attempt other methods of airway management, including needle cricothyrotomy or surgical cricothyrotomy.
- The paramedic who administered them should accompany all patients who receive relaxants to the hospital. The ED physician should be advised of the use of these medications and times given. If questions arise, the paramedic should attempt to educate the ED staff about the indications for their use in that particular situation. If this fails, the medical director or clinical manager should be contacted as soon as possible.

MINIMUM LEVEL

- P3

SIX P'S OF PARALYTIC USE

PREPARE

(Gather all airway equipment)

PRE-OXYGENATE

(100% oxygen NRB at 15 lpm)

PRIME

(Administer sedative/hypnotic)

PRESSURE

(Cricoid)

PARALYZE

(Administer NMB drug)

POST-INTUBATION MANAGEMENT

(Sedatives, etc)

PHARMACOLOGICAL ASSISTED INTUBATION (PAI)

Adult:

1. Prepare equipment (EKG, SpO₂, suction, ETT)
2. Spinal motion restriction as per patient condition
3. Pre-oxygenate with 100% oxygen (no positive pressure ventilations)
4. Prime (sedate with Etomidate 0.3 mg/kg IV/IO and Fentanyl 1-2 mcg/kg IV/IO)
5. Pressure (Cricoid)
6. If CHI or CNS pathology, give Lidocaine 1 mg/kg IV/IO prior to intubation
7. Paralyze, if needed. (Succinylcholine 1 mg/kg IV/IO)
8. Intubation within 30 – 45 seconds of relaxation
9. Inflate cuff
10. Verify tube placement
11. Check chest expansion
12. Check breath sounds
13. Fogging of tube/End Tidal CO₂ detector
14. Visualized tube going between cords is the best indicator
15. SpO₂ greater than 95%
16. Secure tube
17. Administer Vecuronium 0.1 mg/kg IV/IO for post intubation agitation
18. Administer Versed 2 – 5 mg or Fentanyl 1-2 mcg/kg IV/IO as needed for continued sedation.
19. Monitor vital signs closely for prevention of paralysis without sedation.

Pediatric:

1. Prepare equipment (EKG, SpO₂, suction, ETT)
2. Spinal motion restriction as per patient condition
3. Pre-oxygenate with 100% oxygen (no positive pressure ventilations)
4. Prime (sedate with Etomidate 0.3 mg/kg IV/IO and Fentanyl 1-2 mcg/kg IV/IO)
5. Pressure (Cricoid)
6. If CHI or CNS pathology, give Lidocaine 1 mg/kg IV/IO prior to intubation
7. Atropine Sulfate 0.02 mg/kg IV/IO (blocks reflex bradycardia)
8. Paralyze, if needed. (Vecuronium 0.1 mg/kg IV/IO)
9. Intubation within 30 – 45 seconds of relaxation
10. Inflate cuff (if applicable)
11. Verify tube placement
12. Check chest expansion
13. Check breath sounds
14. Fogging of tube/End tidal CO₂ detector
15. Visualized tube going between cords is the best indicator
16. SpO₂ greater than 95%
17. Secure tube
18. Administer Vecuronium 0.1 mg/kg IV/IO for post intubation agitation
19. Administer Versed 0.05-0.2 mg/kg or Fentanyl 1-2 mcg/kg IV/IO as needed for continued sedation.
20. Monitor vital signs closely for prevention of paralysis without sedation.

RECTAL ADMINISTRATION OF DEXTROSE 50%

The rectal administration of D50% is an alternate method of delivery for treatment of hypoglycemia.

INDICATIONS

Hypoglycemia

CONTRAINDICATIONS

None

EQUIPMENT NEEDED

- Adequate insertion device (14 gauge plastic catheter, measured length of cut cannula tubing, etc)
- Tape
- KY jelly
- Saline flush

PROCEDURE

1. Carefully restrain patient
2. Draw up calculated dose
3. Have assistant hold legs apart
4. Introduce lubricated device into rectum
5. Inject contents into rectum
6. Flush with 5 ml saline
7. Hold buttocks together to retain medications

MINIMUM LEVEL

- EMT-Intermediate

ResQPOD™

The ResQPOD is an impedance threshold device (ITD) that provides Perfusion on Demand (POD) by regulating pressures in the thorax during CPR.

INDICATIONS

Ventilating a patient in cardiac arrest

CONTRAINDICATIONS

- Flail Chest
- ROSC

EQUIPMENT NEEDED

- ResQPOD
- BVM
- Confirmed ETT or facemask
- Oxygen

PROCEDURE

1. Attach the bottom of the ResQPOD Circulatory Enhancer directly to the face mask or ETT connector.
2. Once assembled, gently but firmly, hold the ResQPOD with the facemask over the nose, or on the ETT and begin ventilating at 10 per minute with each breath lasting 1.0 seconds
3. The device can be cleaned of secretions (mucus, spit) by shaking the device and reapplying it.
4. Remove device with ROSC.

MINIMUM LEVEL

- ECA

SURGICAL CRICOTHYROTOMY

PURPOSE

- To provide an emergency airway by approved paramedics when other means have failed. (i.e. epiglottitis, laryngospasm, facial trauma/burns, fractured larynx, foreign body obstruction, laryngeal edema)
- This is the method of **last resort** at establishing an airway.

PROCEDURE – SURGICAL CRICOTHYROTOMY

1. Cricoid pressure shall be applied IMMEDIATELY and maintained continuously
2. Prepare and assemble all equipment
 - #11 or #15 scalpel
 - Endotracheal tube
 - Stylet or Eschmann introducer
 - 10 ml syringe
3. The cricothyroid membrane is the preferred site and should be identified by the attendant performing the skill. If, due to trauma or obstruction at this level, the cricothyroid membrane is inaccessible, a site two finger widths above the sternoclavicular notch should be identified and utilized.
4. Prepare the site with Betadine and / or alcohol solution.
5. Make a 1.5 – 2 cm vertical incision through the skin overlying the cricothyroid membrane.
6. Bluntly dissect the skin and fatty tissue overlying the trachea to visualize to cricothyroid membrane.
7. Make a horizontal incision through the cricothyroid membrane into the trachea.
8. Insert the scalpel handle into the tracheal incision and twist 3 – 4 times. If a larger opening is required, a gloved finger can be inserted into the trachea to enlarge the opening.
9. Form the distal end of the endotracheal tube into the shape of an “L” utilizing the stylet.
10. Insert the tube within the trachea, remove the stylet, and inflate the cuff.
11. Verify placement and secure.

MINIMUM LEVEL

- P3

TERMINATION OF RESUSCITATION

PURPOSE

Termination of advanced life support efforts in the pre-hospital setting will apply to situations in which adult patients experience a non-traumatic cardiac arrest. The decision to implement the policy may be initiated by the paramedic in accordance with the standing orders set forth in this policy by the WCEMS medical director.

PROCEDURE

Resuscitation efforts **will not** be terminated in patients meeting the following criteria:

1. Cardiac arrest that may be associated with overdose, toxicologic agents, hypo/hyperthermia, submersion, electrocution, burns, trauma, airway obstruction, or other sudden external sources.
2. Persistent ventricular fibrillation or ventricular tachycardia.
3. A return of a spontaneous pulse (even a transient pulse).
4. Presence of any neurological signs (i.e. spontaneous eye opening or movement).
5. Patient who has suffered cardiac arrest while in the care of WCEMS personnel.
6. No secure endotracheal tube and/or IV in place.

Resuscitation efforts **may** be terminated in patients meeting the following criteria:

1. Must be an adult 18 years of age or older.
2. Patient must have had a presumed cardiac arrest not associated with sudden external sources (i.e. overdose, toxicologic exposure, hypo/hyperthermia, submersion, electrocution, burns, trauma, and / or airway obstruction).
3. Patient must have been intubated successfully and have had IV / IO access and standard advanced life support measures applied throughout the resuscitation.
4. Resuscitative efforts shall be at least 30 minutes regardless of previous CPR time and arrest interval.

If the patient remains unresponsive to advanced life support measures and meets the criteria above, the paramedic should approach the family about termination of the resuscitative efforts.

NOTE

- ❑ Once the approval to terminate the resuscitation efforts is acknowledged by the family or responsible party, the EMS crew shall tie off and knot any established IV line close to the site and remove the IV fluid bag and any other supplies at the code site. The IV/IO catheters and endotracheal tube shall remain in place.
- ❑ The paramedic shall contact the Communications Center for notification of code being terminated and to call law enforcement.
- ❑ At all times WCEMS personnel shall be attentive to the psychological needs of the "survivors" and provide support as needed.

MINIMUM LEVEL

- P3

MEDICATIONS

Activated Charcoal
Adenosine (Adenocard)
Albuterol Sulfate (Proventil)
Amiodarone (Cordarone)
Aspirin
Ativan (Lorazepam)
Atropine Sulfate
Atrovent (Ipratropium)
Benadryl (Diphenhydramine)
Calcium Chloride
Cardizem (Diltiazem)
Dextrose 50%
Dopamine (Intropin)
Epinephrine (Adrenalin)
Etomidate (Amidate)
Fentanyl (Sublimaze)
Glucagon (Glucogen)
Labetalol HCl (Normodyne)
Lasix (Furosemide)
Lidocaine HCl (Xylocaine)
Magnesium Sulfate
Morphine Sulfate
Motrin (Ibuprofen)
Narcan (Naloxone)
Nitroglycerine Sublingual Spray (Nitrostat)
Nitroglycerine Topical Ointment (Nitro-bid)
Phenergan (Promethazine)
Sodium Bicarbonate
Solu-Medrol (Methylprednisolone)
Succinylcholine (Anectine)
Thiamine
Tylenol (Acetaminophen)
Vecuronium (Norcuron)
Versed (Midazolam)
Zofran (Ondansetron)

ACTIVATED CHARCOAL

MEDICATION

Activated charcoal is a suspension with each milliliter containing 208 mg of activated charcoal and 400 mg of Sorbitol.

MECHANISM OF ACTION

Charcoal attracts and absorbs many poisonous compounds to its surface, thereby reducing the poison's absorption by the body.

INDICATIONS

- ❑ May be used in treating patients who have ingested certain poisons or excessive amounts of certain medications.
- ❑ It is especially useful in the treatment of Aspirin, Amphetamines, Strychnine, Dilantin, and Phenobarbital overdoses.

CONTRAINDICATIONS

- ❑ Should not be administered before, or in conjunction with, Syrup of Ipecac.
- ❑ Should not be given in Cyanide poisoning.
- ❑ Should not be used if container has been stored without a tight seal.
- ❑ Is of no value in poisoning due to Methanol, Corrosive Substances, Iron Tablets, and Organophosphates.

SIDE EFFECTS

None known

DOSAGE AND ADMINISTRATION

May be given PO or through the NG tube. If given PO, mix desired dose with glass of water for ease of administration. If patient is unconscious or has ingested a substance that may result in decreased LOC, have airway secured before administration of charcoal.

- **Adults**
1 gram/kg. Usual dose 25 – 50 grams.
- **Pediatric**
1 gram/kg. Usual dose 10 – 30 grams.

MINIMUM LEVEL

- ❑ EMT-Basic

ADENOSINE

ADENOCARD

MEDICATION

A naturally occurring, rapid acting, antiarrhythmic agent effective in the treatment of Paroxysmal Supraventricular Tachycardia (PSVT).

MECHANISM OF ACTION

Slows electrical conduction through the AV node and can interrupt the re-entry pathways.

INDICATIONS

Narrow Complex Tachycardia (PSVT) Wide Complex Tachycardia

CONTRAINDICATIONS

- Second degree AV blocks, Third degree AV block or Sick Sinus Syndrome.
- Known hypersensitivity.
- Should be used with caution in pregnant women.
- Should be used with caution in patients who are wheezing.

SIDE EFFECTS

- ❑ Transient dysrhythmias, facial flushing, headache, shortness of breath/dyspnea, chest pain/pressure, hypotension, lightheadedness, vertigo and nausea.
- ❑ May produce a short lasting First, Second, or Third degree AV block. Patients who develop high-grade block after administration of one dose of Adenosine should not be given additional doses.
- ❑ May produce bronchoconstriction.

NOTE: Due to the very short half-life of Adenosine (about 10 seconds), these side effects should be self-limiting. Treatment of any prolonged adverse effects should be directed towards the appropriate protocol.

DOSAGE AND ADMINISTRATION

Adenosine is given as a RAPID bolus IV or IO over 1 – 2 seconds. It should be given as proximal as possible and followed by rapid fluid flush of 10 ml saline and elevation of limb.

Adults (IV or IO)

Initial Dose: 6 mg
Subsequent Dose: 12 mg, may repeat once
Max Single Dose: 12 mg
Max Total Dose: 30 mg

Pediatric (IV or IO)

Initial Dose: 0.1 mg/kg up to 6 mg
Subsequent Dose: 0.2 mg/kg up to 12 mg
Max Single Dose: 12 mg
Max Total Dose: 18 mg

INTERACTIONS

- ❑ Antagonized by methylxanthines (caffeine, Theophylline), larger doses may be necessary.
- ❑ Potentiated by dipyridamole, smaller doses may be effective.
- ❑ Adenosine is not blocked by Atropine.

SPECIAL CONSIDERATIONS

- ❑ The medication should be inspected for particulate matter prior to administration.
- ❑ If crystallization occurs, dissolve crystals by warming to room temperature.

MINIMUM LEVEL

- ❑ Paramedic

ALBUTEROL SULFATE

PROVENTIL

MEDICATION

Albuterol is a relatively selective Beta 2 adrenergic bronchodilator.

MECHANISM OF ACTION

Albuterol produces bronchial smooth muscle relaxation and like other Beta adrenergic agonists, it can produce significant cardiovascular effects in some patients, as measured by pulse rate, blood pressure, and/or EKG changes.

INDICATIONS

- Anaphylaxis
- Obstructive Airway Disease
- Reactive Airway Disease
- Submersion / Drowning
- Inhaled irritant exposure

CONTRAINDICATIONS

- Known hypersensitivity

Should be used cautiously in the following:

- Cardiovascular Disorders, especially Coronary Insufficiency
- Cardiac Dysrhythmias and Hypertension
- Convulsive Disorders
- Hyperthyroidism
- Diabetes

SIDE EFFECTS

The following are possible but occur infrequently:

- Body tremors
- Headache
- Insomnia
- Palpitations
- Tachycardia
- Hypertension
- Bronchospasm, Cough, Wheezing
- Urticaria, Angioedema, Rash

DOSAGE AND ADMINISTRATION

- 2.5 mg in 3.0 ml NS via HHNB until respiratory status improves.

SPECIAL CONSIDERATIONS

- Any Beta 2 adrenergic agonist may have a clinically significant cardiac effect.
- Accurate documentation of pulse rate before, during, and after treatment must be noted.

MINIMUM LEVEL

- EMT-Basic

AMIODARONE

CORDARONE

MEDICATION

Antiarrhythmic

MECHANISM OF ACTION

- Sympatholytic
- Blocks sodium and potassium channels
- Negative inotropic and chronotropic Slows conduction, prolongs refractory period
- Vasodilation

INDICATIONS

- V-Fib and Pulseless V-Tach
- Wide Complex Tachycardia with pulses
- Atrial Fibrillation and Atrial Flutter that is refractory to all other treatments.

CONTRAINDICATIONS

- Known Hypersensitivity
- Hypotension
- Bradycardia or High Degree AV Block

SIDE EFFECTS

- Profound Hypotension
- Bradycardia and AV block
- Liver Enzyme Elevation
- Nausea / Vomiting
- Fever

DOSAGE AND ADMINISTRATION

	Adult	Pediatric
V-FIB/ Pulseless V-TACH	300 mg Slow IV/IO x 1 dose. Consider additional dose 150 mg IV/IO x 1 dose	5 mg/kg IV/IO x 1 dose. Consider additional 5 mg IV/IO x 1 dose.
Wide Complex Tachycardia with Pulses Atrial Flutter, A-Fib	150 mg IV/IO over 10 minutes	5 mg/kg IV/IO over 20 minutes.
Infusion	1 mg/kg	5 – 15 mcg/kg/min

Maximum total dose: 15 mg/kg q 24 hours

Maximum single dose: 300 mg.

SPECIAL CONSIDERATIONS

- After conversion, an infusion needs to be established within 20 – 25 minutes of initial bolus.
- Do not administer Amiodarone at the same time or through the same IV/IO line as Sodium Bicarbonate without flushing the line adequately.
- Used for A-Fib / A-Flutter when refractory to all other Atrial Antiarrhythmic medications.

MINIMUM LEVEL

- Paramedic

ASPIRIN

MEDICATION

- ❑ Aspirin (Acetylsalicylic acid) is an analgesic, antipyretic, and anti-inflammatory agent.
- ❑ It also inhibits platelet aggregation thus making it a beneficial antithrombotic.

MECHANISM OF ACTION

Inhibits the synthesis of Thromboxane A₂, which induces platelet aggregation, by inhibiting a metabolic enzyme necessary for it's production.

INDICATIONS

Acute Coronary Syndrome

CONTRAINDICATIONS

Known moderate to severe hypersensitivity

SIDE EFFECTS

- ❑ Prolonged bleeding time
- ❑ Gastric irritation
- ❑ Nausea / Vomiting

DOSAGE AND ADMINISTRATION

- **Adult**
324 mg PO

SPECIAL CONSIDERATIONS

In non-traumatic chest pain, aspirin should be given regardless of daily use by patient.

MINIMUM LEVEL

- ❑ EMT-Basic

ATIVAN **LORAZEPAM**

MEDICATION

Ativan is a benzodiazepine with CNS depressant, anxiolytic and sedative properties.

MECHANISM OF ACTION

- ❑ Ativan is the most potent of the available benzodiazepines.
- ❑ Its effects are mediated by the inhibitory neurotransmitter GABA.

INDICATIONS

- ❑ First-line medication for treatment of Status Epilepticus.
- ❑ Behavioral Emergencies.

CONTRAINDICATIONS

- ❑ Known Hypersensitivity to benzodiazepines, polyethylene glycol, propylene glycol or benzyl alcohol.
- ❑ Myasthenia gravis
- ❑ Narrow angle glaucoma

Should be used cautiously in the following:

- Coma
- Shock
- Acute Alcohol Intoxication

SIDE EFFECTS

- ❑ Anterograde Amnesia, Drowsiness, Sedation, Dizziness, Weakness
- ❑ Disorientation, Restlessness, Confusion, Hallucinations
- ❑ Hypertension or Hypotension
- ❑ Blurred Vision,
- ❑ Depressed Hearing
- ❑ Nausea, Vomiting, Abdominal Discomfort, Anorexia

DOSAGE AND ADMINISTRATION

- **Adult**
0.5 – 2 mg Slow IV/IO/IM. Maximum 4 mg.
- **Pediatric**
0.1 mg/kg Slow IV/IO/IM

MINIMUM LEVEL

- ❑ Paramedic

ATROPINE SULFATE

MEDICATION

Atropine is a naturally occurring autonomic nervous system inhibitor extracted from the Atropa Belladonna plant (deadly nightshade).

MECHANISM OF ACTION

- ❑ Blocks parasympathetic (vagal) action of the heart.
- ❑ Improves cardiac output by increasing rate of sinus node discharge, enhances conduction through the AV junction, and increases heart rate.
- ❑ By increasing heart rate to normal range, Atropine decreases the chance of ectopic activity in the ventricles.

INDICATIONS

- ❑ Sinus bradycardia when accompanied by PVC's or hypotension.
- ❑ 2nd or 3rd Degree AV Block when accompanied by bradycardia.
- ❑ 2nd line medication in asystole.
- ❑ Neurogenic shock when the patient's heart rate is less than 60.

CONTRAINDICATIONS

- ❑ Atropine should not be used in patients presenting with atrial flutter or atrial fibrillation where there is rapid ventricular response.
- ❑ Patients with known history of glaucoma should not be given Atropine.

SIDE EFFECTS

- ❑ Blurred vision, headache, pupillary dilation
- ❑ Dry mouth, thirst
- ❑ Dysuria

DOSAGE AND ADMINISTRATION

Atropine may be give IM, IV, IO or ETT

	ADULT	PEDIATRIC
Bradycardia/AV Block	0.5 mg IV/IO q 5 minutes until desired heart rate is achieved. Max total dose 3 mg. If no response and patient is symptomatic, go directly to TCP.	0.02 mg/kg IV/IO Min single dose 0.1 mg Max single dose 0.5 mg for child; 1 mg for age > 10 years. May repeat once
Asystole / PEA	1 mg IV/IO q 5 minutes, max total dose 3 mg	Not Indicated
Organophosphate Poisoning	2 mg IV/IO/IM q 15 minutes until heart rate stabilizes.	0.05 mg/kg IV/IO q 15 minutes or 1 mg IM q 15 minutes until heart rate stabilizes.

SPECIAL CONSIDERATIONS

- ❑ Atropine may precipitate V-Tach or V-Fib and therefore should be used with caution in the setting of an AMI.
- ❑ A dose less than 0.5 mg in an adult (0.1 mg in pediatrics), or a dose given too slowly, may decrease rather than increase the heart rate.

MINIMUM LEVEL

- ❑ Paramedic

ATROVENT

IPRATROPIUM BROMIDE

MEDICATION

- Anticholinergic
- Parasympatholytic

MECHANISM OF ACTION

- Bronchodilation
- Dries respiratory tract secretions

INDICATIONS

- Obstructive Airway Disease
- Reactive Airway Disease

CONTRAINDICATIONS

- Known hypersensitivity
- Glaucoma
- Allergy to soy products or peanuts

SIDE EFFECTS

- Palpitations
- Dizziness
- Anxiety,
- Headache, Nervousness
- Dry mouth

DOSAGE AND ADMINISTRATION

- **Adult**
0.5 mg (“bullet”) mixed with Albuterol Sulfate 2.5 mg via HHNB.
- **Pediatric**
< 10 kg : 0.25 mg mixed with Albuterol Sulfate 2.5 mg via HHNB
> 10 kg : 0.5 mg mixed with Albuterol Sulfate 2.5 mg via HHNB

SPECIAL CONSIDERATIONS

- Single dose only.
- To be used as a “combination” with Albuterol. Do not administer alone.

MINIMUM LEVEL

- Paramedic

BENADRYL

DIPHENHYDRAMINE

MEDICATION

An antihistaminic agent, Benadryl is a crystalline powder, freely soluble in water and alcohol.

MECHANISM OF ACTION

- Benadryl produces anticholinergic (drying) and sedative effects of patients. It's antihistamine characteristic appear to compete with histamines for cell receptor sites on effector cells.
- Blocks histamine effects that are caused by allergic reactions
- Reverses the side effects of Phenothiazines, antipsychotic medications
- Reduces or prevents motion sickness.

INDICATIONS

- Anaphylactic shock
- Allergic reaction
- Motion sickness
- Phenergan overdose

CONTRAINDICATIONS

- Pregnancy
- Asthma
- Glaucoma or prostate problems
- Known alcohol or depressant abuse

SIDE EFFECTS

- Drowsiness, confusion
- Blurred vision
- Dry mouth
- Dysuria
- Wheezing due to thickening of bronchial secretions
- Excitability in pediatric patients

DOSAGE AND ADMINISTRATION

- **Adults**
12.5 - 50 mg IV/IO/IM

- **Pediatric**
1 mg/kg IV/IO/IM. Max single dose 50 mg

SPECIAL CONSIDERATIONS

- Benadryl should be used as an adjunct to epinephrine and other standard measures after the acute symptoms of anaphylaxis have been controlled.
- Antihistamine overdose reactions may vary from central nervous system depression to stimulation.
- Vasopressors may be used to treat hypotension.

MINIMUM LEVEL

- Paramedic

CALCIUM CHLORIDE

MEDICATION

A salt solution used to increase the calcium content of the blood in disorders resulting from a lack of sufficient calcium, such as hypocalcemic tetany. (involuntary muscle contractions)

MECHANISM OF ACTION

- ❑ In the past, Calcium Chloride was believed to be beneficial in resuscitation, stimulating the heart to beat in asystole and to strengthen cardiac contractions in PEA.
- ❑ Recent studies have failed to show any benefit from using calcium in cardiac arrest, but it is not thought that the effects of calcium may be harmful in that situation.

INDICATIONS

- ❑ Magnesium Sulfate or calcium channel blocker overdose
- ❑ May be helpful in relieving specific muscle spasms.
- ❑ Cardiac arrest in a renal failure patient.

CONTRAINDICATIONS

- ❑ Calcium Chloride should be given with extreme caution and in reduced dosage to patients taking digitalis.
- ❑ Given too rapidly, calcium can cause sudden death from V-Fib.

SIDE EFFECTS

May increase irritability in the presence of digitalis and precipitates when mixed with sodium bicarbonate.

DOSAGE AND ADMINISTRATION

- **Adult**
500 – 1000 mg IV/IO
- **Pediatric**
20 mg/kg IV/IO (0.2 ml/kg)

SPECIAL CONSIDERATIONS

- ❑ Should not be administered IM or SQ
- ❑ Causes tissue irritation and necrosis if infiltrated

MINIMUM LEVEL

- ❑ Paramedic

CARDIZEM

DILTIAZEM, TIAZAC

MEDICATION

Cardizem is a slow channel blocker or calcium channel antagonist for use in treatment of atrial fibrillation with a rapid ventricular rate.

MECHANISM OF ACTION

- ❑ Cardizem inhibits the influx of Ca⁺ ions during membrane depolarization of cardiac and vascular smooth muscle.
- ❑ Cardizem slows the ventricular rate in patients with a rapid ventricular response during A-Fib or A-Flutter.
- ❑ The therapeutic benefits of Cardizem in supraventricular tachycardia's are related to its ability to slow AV nodal conduction time and prolong AV nodal refractoriness.

INDICATIONS

Temporary control of rapid ventricular rate in A-Fib or A-Flutter

CONTRAINDICATIONS

- ❑ Known hypersensitivity
- ❑ Patient with sick sinus syndrome except in the presence of a functioning ventricular pacemaker.
- ❑ Patients with 2nd or 3rd Degree AV Blocks.
- ❑ Patients with severe hypotension (systolic BP < 90 mmHg) or cardiogenic shock.
- ❑ Any patient who has received IV beta blockers within the last few hours.
- ❑ Patients with A-Fib or A-Flutter associated with WPW and short PR syndrome.
- ❑ Ventricular tachycardia or any wide QRS of uncertain origin.
- ❑ Contraindicated in newborns.

SIDE EFFECTS

- ❑ 2nd or 3rd Degree AV Block
- ❑ Symptomatic hypotension
- ❑ PVC's may be present on conversion to sinus rhythm. These are transient, benign, and appear to have no clinical significance.

DOSAGE AND ADMINISTRATION

- **Initial Dose:**
0.25 mg/kg Slow IV/IO (over 2 minutes). 20 mg is an acceptable dose for the average patient.
- **Subsequent Dose:**
0.35 mg/kg Slow IV/IO (over 2 minutes). 25 mg is an acceptable dose for the average patient.

To obtain Slow IV/IO, may consider injecting desired dose of Cardizem into 100 ml bag of NS. Run at 50 ml/min with 60 gtts administration set.

SPECIAL CONSIDERATIONS

- ❑ Patient may experience burning or itching at the injection site.
- ❑ Consider ½ dose and titrating to effect for patients > 70 yrs.

MINIMUM LEVEL

- ❑ Paramedic

DEXTROSE 50%

MEDICATION

- ❑ A simple sugar of the monosaccharide group, Dextrose occurs naturally in plants and in the body fluids of animals.
- ❑ It is formed in the digestive tract by the action of enzymes or carbohydrates.

MECHANISM OF ACTION

- ❑ The administration of Dextrose 50 % raises circulation blood sugar levels.
- ❑ It also acts transiently as a diuretic.

INDICATIONS

- ❑ Hypoglycemia
- ❑ Unconsciousness of unknown origin with documented BGL of < 60 mg/dl
- ❑ Seizure of unknown origin with documented BGL of < 60 mg/dl

CONTRAINDICATIONS

Sugar should not be administered to any patient presenting with signs/symptoms of central nervous system pathology.

SIDE EFFECTS

- ❑ Necrosis due to tissue infiltration.
- ❑ Can cause severe neurologic symptoms in the alcoholic patient.
- ❑ Administer Thiamine prior to D50 in patient presenting with possible alcohol abuse or malnutrition.

DOSAGE AND ADMINISTRATION

- **Adults**
25 grams IV/IO (50 ml of D50)
- **Newborns up to 3 kg**
Dextrose 10% 2 ml/kg IV/IO (Dilute Dextrose 50% 1 ml/4 ml NS). Titrate to effect.
- **Infants/Children > 3 kg to 36 kg**
Dextrose 25% 2ml/kg IV/IO. Titrate to effect.

SPECIAL CONSIDERATIONS

- ❑ Dextrose 50 % is a relatively thick solution and is more easily administered through a large bore catheter.
- ❑ Ensure that the line is patent, D50% is extremely necrotic.
- ❑ Consider Dextrose PR if no response to Glucagon.

MINIMUM LEVEL

- ❑ EMT-Intermediate

DOPAMINE

INTROPIN

MEDICATION

Dopamine is chemically related to Epinephrine and Norepinephrine, and is most commonly used to treat hypotension associated with Cardiogenic Shock.

MECHANISM OF ACTION

- ❑ It acts primarily on alpha 1 and beta 1 adrenergic receptors, increasing systemic vascular resistance and exerting a positive inotropic effect on the heart.
- ❑ Onset 2 – 4 minutes with duration of 10 – 15 minutes.
- ❑ Renal dose : 2 – 5 mcg/kg/min
- ❑ Beta Agonist dose (Cardiac): 5 – 15 mcg/kg/min
- ❑ Alpha Agonist dose (Vasopressor): >15 mcg/kg/min

INDICATIONS

- ❑ Bradycardia
- ❑ CHF / Pulmonary Edema
- ❑ Post-Resuscitation
- ❑ Hypotension and Hypoperfusion (non-traumatic)

CONTRAINDICATIONS

- ❑ Tachydysrhythmias, V-Fib
- ❑ Hypoperfusion associated with trauma where Intravascular volume depletion may be present.

SIDE EFFECTS

- ❑ Dose-related Tachydysrhythmias
- ❑ Hypertension
- ❑ Increased myocardial oxygen demands

DOSAGE AND ADMINISTRATION

- **Adults:**
2 – 20 mcg/kg/min IV/IO
- **Pediatric:**
Start at 5 mcg/kg/min and titrate to max of 20 mcg/kg/min IV/IO

mcg/kg/min	Patient Weight in kg											
	2.5	5	10	20	30	40	50	60	70	80	90	100
2 mcg	*	*	*	1.5	2	3	4	5	5	6	7	8
5 mcg	*	1	2	4	6	8	9	11	13	15	17	19
10mcg	1	2	4	8	11	15	19	23	26	30	34	38
15 mcg	1.4	3	6	11	17	23	28	34	39	45	51	56
20 mcg	2	4	8	15	23	30	38	45	53	60	68	75

DRUG INTERACTIONS

- ❑ May be deactivated by alkaline solutions (Sodium Bicarbonate and Lasix)
- ❑ MAOIs and Bretyllium may potentiate the effect of Dopamine.
- ❑ Beta adrenergic antagonist may blunt inotropic response.
- ❑ May cause hypotension, bradycardia, and seizures when administered with Phenytoin.

SPECIAL CONSIDERATIONS

- ❑ Safety in pregnancy not well established.
- ❑ Not to be used without adequate Intravascular volume.

MINIMUM LEVEL

- ❑ Paramedic

EPINEPHRINE HCl

ADRENALINE

MEDICATION

- An endogenous catecholamine with nonselective beta-1, beta-2 and alpha properties.
- It is an adrenergic (sympathomimetic) agent and cardiac stimulant.

MECHANISM OF ACTION

Rapid intravenous injection produces a rapid rise in blood pressure, mainly systolic blood pressure. Given slowly IV, usually produces a moderate rise in systolic and a fall in diastolic pressures. Although some increase in pulse pressure occurs, there is usually no great elevation in mean blood pressure. The beta effect increases myocardial contractility, decrease the threshold for defibrillation, and bronchodilation. The alpha effect causes vasoconstriction, thus increasing the perfusion pressure.

INDICATIONS

- Anaphylaxis / severe allergic reaction
- Asthma
- Cardiac arrest

CONTRAINDICATIONS

There are no contraindications for the use of epinephrine in cardiac arrest or anaphylactic shock.

Should be used cautiously in the following:

- Hypertension, angina and hyperthyroidism
- Following administration of sodium bicarbonate, which may inactivate epinephrine
- Where vasopressor drugs may be contraindicated
- Patients receiving other medications that sensitize the myocardium to the actions of sympathomimetic drugs (digitalis, glycosides)

SIDE EFFECTS

- Palpitations, Tachycardia, ectopy, Dysrhythmias, Hypertension, Anginal Pain
- Cerebral Hemorrhage, Hemiplegia, Subarachnoid Hemorrhage, Throbbing Headache,
- Anxiety, Restlessness, Tremors, Weakness, Vertigo, Pallor, Respiratory Distress

Dosage and Administration

	ADULT	PEDIATRIC
Cardiac Arrest	1 mg IV/IO q 3 – 5 minutes (1:10,000)	0.01 mg/kg (1:10,000) IV/IO q 3 – 5 minutes 0.1 mg/kg (1:1000) ETT q 3 – 5 minutes
Bradycardia	2 – 10 ug/minute See Infusion Rate Chart page	0.01 mg/kg (1:10,000) IV/IO q 3 – 5 minutes 0.1 mg/kg (1:1000) ETT q 3 – 5 minutes
Asthma/ Anaphylaxis	<u>EMT-Basic/Intermediate</u> Children > 30 kg and Adults = EpiPen© (0.3 mg/dose) x one dose IM <u>Paramedics</u> 0.3 mg IM (1:1000) or 0.3 mg IV/IO (1:10,000) q 20 minutes up to 1.2 mg total dose	<u>EMT-Basic / Intermediate</u> Children > one month old and < 30 kg = EpiPen Jr.© (0.15 mg/dose) x one dose IM <u>Paramedics</u> 0.01 mg/kg IM (1:1000) q 20 minutes up to 1.2 mg total dose

SPECIAL CONSIDERATIONS

- Pediatric Infusion at 0.1 mcg/kg/minute for initial, and titrate to effect at 0.1 – 1.0 mcg/kg/min
- IV/IO injection of epinephrine produces an immediate and intensified response that disappears rapidly from the bloodstream.
- In case of anaphylactic shock and severe asthma, epinephrine can be administered IV/IO rather than IM.

MINIMUM LEVEL

- EMT-Basic (EpiPen© and EpiPen Jr.©)
- EMT-Intermediate (Cardiac Arrest)
- Paramedic

ETOMIDATE

AMIDATE

MEDICATION

- ❑ A non-barbiturate hypnotic without analgesic properties.
- ❑ In therapeutic doses, Etomidate has minimal effect on the myocardial metabolism, cardiac output and peripheral or pulmonary circulation.
- ❑ It may also decrease ICP.

MECHANISM OF ACTION

Etomidate is a sedative/hypnotic used to induce anesthesia that will last anywhere from 3 – 10 minutes.

INDICATIONS

Induction of anesthesia prior to administration of a neuromuscular blockade.

CONTRAINDICATIONS

Children less than 2 years old or less than 10 kg, otherwise, none if used as directed

SIDE EFFECTS

- ❑ Hypotension, Hypertension and Arrhythmias
- ❑ Hyperventilation and Laryngospasm
- ❑ Myoclonus Tonic Movement and rapid eye movements
- ❑ Nausea, vomiting

DOSAGE AND ADMINISTRATION

- **Adult**
0.3 mg/kg Slow IV/IO.
 - 20 mg is acceptable dose for average patient.
- **Pediatric**
0.3 mg/kg Slow IV/IO

SPECIAL CONSIDERATIONS

- ❑ Use with caution in seizure disorders
- ❑ Injection into small veins can cause pain

MINIMUM LEVEL

- ❑ Paramedic

FENTANYL

SUBLIMAZE

MEDICATION

- ❑ It is most often used to provide sedation and analgesia as an adjunct to anesthesia.
- ❑ It can be used as pre-medication, during induction of endotracheal intubation with NMB.
- ❑ It is used in the ED as a sedative after RSI.

MECHANISM OF ACTION

- ❑ Fentanyl is a potent narcotic analgesic, with a potency that is 70 times that of morphine.
- ❑ It is readily reversible with Narcan yet can last long enough for most emergency procedures.

INDICATIONS

- ❑ Induction on anesthesia prior to administration of neuromuscular blockage.
- ❑ Pain management in isolated trauma.

CONTRAINDICATIONS

- ❑ Pre-existing bradycardic arrhythmias
- ❑ Caution in other CNS drug use (i.e., benzodiazepines)
- ❑ Patients weighting < 10 lbs.

SIDE EFFECTS

- ❑ Hypotension and Arrhythmias
- ❑ Hypoventilation and Skeletal Muscle Rigidity (chest)
- ❑ Nausea and Vomiting

DOSAGE AND ADMINISTRATION

- **Adult**
 - 1 - 2 mcg/kg IV/IO/IM/IN. Titrate to effect
 - Increments of 25mcg, 50mcg, 100mcg and 200mcg are acceptable.
- **Pediatric**
 - 1 - 2 mcg/kg IV/IO/IM/IN.

SPECIAL CONSIDERATIONS

- ❑ Beware of oversedation.
- ❑ Be prepared to ventilate with BVM and/or reverse the effects with Narcan.
- ❑ Desired amount for IN is $\frac{1}{4}$ to $\frac{1}{2}$ ml per nare, but up to 1 ml per nare is acceptable, although there may be runoff from the nare.

MINIMUM LEVEL

- ❑ Paramedic

GLUCAGON

GLUCOGEN

MEDICATION

Antihypoglycemic hormone.

MECHANISM OF ACTION

- Causes glycogen to breakdown into glucose.
- Inhibits glycogen synthesis.
- Elevates blood glucose levels.
- Increases cardiac contractile force and heart rate by stimulating production of cyclic AMP.

INDICATIONS

- Hypoglycemia – only after 2 unsuccessful IV attempts.

CONTRAINDICATIONS

- Known hypersensitivity
- Active CVA

SIDE EFFECTS

- Respiratory depression
- Altered mental status
- Dizziness

DOSAGE AND ADMINISTRATION

- > 20 kg use 1 mg IM/SQ
- < 20 kg use 0.5 mg IM/SQ

SPECIAL CONSIDERATIONS

- Only effective when there are sufficient stores of glycogen in the liver.
- Use with caution in patients with cardiovascular or Renal disease.
- Two (2) IV attempts mandatory prior to use of Glucagon as safety permits.
- Consider Dextrose PR if no response to Glucagon.

MINIMUM LEVEL

- EMT-Intermediate

LABETALOL HCl

NORMODYNE

MEDICATION

Non-selective beta-blocker

MECHANISM OF ACTION

- No preference for beta 1 or beta 2
- Blocks alpha 1 adrenergic receptors
- Potent agent for lowering BP and cardiac output through beta 1 and causes peripheral vasodilation with alpha.

INDICATIONS

- Acute management of hypertensive crisis: DBP > 120 mmHg, chest pain, epistaxis, AMS.
- BP goal is 25% reduction of DBP \geq 120 mmHg with no S/S of Stroke.
- BP goal for HTN during CVA is 180 systolic and/or MAP = 130.

CONTRAINDICATIONS

- Bronchial asthma
- CHF
- 2nd or 3rd Degree AV Blocks
- Bradycardia
- Cardiogenic shock
- Any patient who has received IV Beta Blockers within the last few hours.

SIDE EFFECTS

- CHF
- Bradycardia
- Hypotension
- Dyspnea
- Weakness
- Sweating
- Nausea

DOSAGE AND ADMINISTRATION

- 10 mg Slow IV/IO over 2 minutes.
 - May repeat or double dose q 10 minutes to maximum of 150 mg if no decrease in blood pressure.

SPECIAL CONSIDERATIONS

- Monitor cardiac and respiratory status of patient during administration. Watch for signs and symptoms of CHF, heart blocks, bradycardia, and cardiogenic shock.
- Keep patient supine during administration if possible.

MINIMUM LEVEL

- Paramedic

LASIX

FUROSEMIDE

MEDICATION

Lasix is a potent diuretic, which if given in excessive amounts, can lead to profound diuresis with water and electrolyte depletion.

MECHANISM OF ACTION

- ❑ Lasix inhibits sodium reabsorption in the kidneys promoting diuresis. It is also thought that Lasix causes venous dilation, decreasing venous return.
- ❑ Lasix is a rapid acting diuretic with peak effects within 30 – 60 minutes.

INDICATIONS

- ❑ CHF/Pulmonary edema
- ❑ Hypertension associated with pulmonary edema or shortness of breath

CONTRAINDICATIONS

Because of the potency of this medication, blood pressure must be monitored carefully during administration and Lasix should not be given in the following:

- Pregnant women
- Hypokalemia
- Hypovolemia and / or Dehydration

SIDE EFFECTS

- ❑ Nausea/vomiting
- ❑ Potassium depletion
- ❑ Dehydration

DOSAGE AND ADMINISTRATION

- **Adults**
40 mg slow IV/IO (regardless of prescribed dosage)
- **Pediatrics**
0.5 – 1 mg/kg Slow IV/IO over 2 minutes. (Not to exceed 40 mg)

SPECIAL CONSIDERATIONS

- ❑ Dosage may be adjusted to each patient's needs, but not to exceed 40 mg.

MINIMUM LEVEL

- ❑ Paramedic

LIDOCAINE HCl

XYLOCAINE

MEDICATION

- ❑ Lidocaine is a local anesthetic that is used intravenously to treat certain cardiac dysrhythmias.
- ❑ Also used topically as an anesthetic.

MECHANISM OF ACTION

- ❑ Suppresses ectopy
- ❑ Decreases the excitability in the myocardium and conduction system
- ❑ Dose not significantly alter conduction or contractility on healthy tissue
- ❑ Increase V-Fib threshold
- ❑ Causes only minimal effects on atrial muscle

INDICATIONS

- ❑ For PVC's, treat if the following occurs:
 - ❑ PVC's in a patient with chest pain, on Digitalis™, or any cardiac history
 - More than 6 per minute
 - Couplets, V-Tach (3 PVC's in a row)
 - Multifocal PVC's
 - Malignant PVC's (R on T phenomenon)
- ❑ V-Fib or Pulseless V-Tach.
- ❑ To prevent the recurrence of V-Fib or V-Tach after successful conversion with Lidocaine.
- ❑ Prevention and control of the sympathetic response in procedures such as endotracheal intubation or nasogastric tube insertion.

CONTRAINDICATIONS

- ❑ Known hypersensitivity
- ❑ 2nd degree or 3rd degree AV block
- ❑ Sinus bradycardia or sinus arrest and Idioventricular rhythm

SIDE EFFECTS

- ❑ Due to it's mechanism of action, Lidocaine may cause a fall in cardiac output and blood pressure.
- ❑ When given in high doses, especially to the elderly or patients in heart failure, may cause seizure-like activity.
- ❑ Reduce dose in patients > 70 years old, patients presenting with decreased cardiac output (CHF, shock), or patients with liver disease.

DOSAGE AND ADMINISTRATION

	ADULT	PEDIATRIC									
V-Fib / Pulseless V-Tach	1 mg/kg IV/IO/ETT q 3 – 5 minutes to max of 3 mg/kg	1 mg/kg IV/IO/ETT q 3 – 5 minutes to max of 3 mg/kg									
PVC's	1 – 1.5 mg/kg IV/IO. Repeat q 5 minutes at 0.5 – 0.75 mg/kg to total max of 3 mg/kg.	Not indicated									
Infusion	2 – 4 mg/minute of a 4 mg/ml solution using a 60 gtts drip set.										
	<table border="1"><tr><td>mg/min</td><td>2</td><td>3</td><td>4</td></tr><tr><td>gtts/min</td><td>30</td><td>45</td><td>60</td></tr></table>			mg/min	2	3	4	gtts/min	30	45	60
mg/min	2	3	4								
gtts/min	30	45	60								

SPECIAL CONSIDERATIONS

If patient is bradycardic (< 60 BPM), treat rate first according to appropriate protocols prior to administering Lidocaine.

MINIMUM LEVEL

- ❑ Paramedic

MAGNESIUM SULFATE

MEDICATION

Magnesium Sulfate is an electrolyte salt solution.

MECHANISM OF ACTION

- ❑ Magnesium is a cofactor in numerous enzymatic reactions and is essential for the function of the sodium-potassium ATPase pump.
- ❑ It acts as a physiological calcium channel blocker and blocks neuromuscular transmission.
- ❑ Magnesium is also a potent peripheral vasodilator.

INDICATIONS

- ❑ Refractory V-Fib or V-Tach
- ❑ Torsades de Pointes
- ❑ Toxemia of pregnancy
- ❑ Reactive Airway Disease

CONTRAINDICATIONS

None when used as indicated

SIDE EFFECTS

- ❑ Hypotension, circulatory collapse, heart block
- ❑ Respiratory paralysis
- ❑ Flaccid paralysis, depressed reflexes
- ❑ Hypocalcemia
- ❑ Flushing, sweating, hypothermia

DOSAGE AND ADMINISTRATION

	Adults	Pediatric
Torsades de Pointes	2 grams IV/IO over 10 minutes	25 – 50 mg/kg IV/IO over 10 minutes max dose 2 G
Wide Complex Tachycardia	2 grams IV/IO over 10 minutes	25 – 50 mg/kg IV/IO over 10 minutes max dose 2 G
Overdose	2 grams IV/IO over 10 minutes	25 – 50 mg/kg IV/IO over 10 minutes max dose 2 G
Reactive Airway Disease	2 grams IV/IO over 10 minutes	25 - 50 mg/kg IV/IO over 10 minutes max dose 2 G
Pre-eclampsia / Preterm Labor	2 grams IV/IO over 10 minutes	Not Indicated

SPECIAL CONSIDERATIONS

- ❑ Side effects are usually from too rapid administration. Do not give faster than 1 G/min.
- ❑ If eclamptic seizures are refractory to Magnesium Sulfate, then proceed to benzodiazepines.
- ❑ Consider mixing dosage into 100cc NS with 60 gtts set ran at 10cc/min to prevent rapid administration.

MINIMUM LEVEL

- ❑ Paramedic

MORPHINE SULFATE

MEDICATION

Narcotic analgesic

MECHANISM OF ACTION

- CNS depressant.
- Acts on opiate receptors of the brain.
- Provides both analgesia and sedation.
- Lowers venous return and myocardial oxygen demand.

INDICATIONS

- ❑ Severe pain
- ❑ Pulmonary edema
- ❑ Acute Coronary Syndromes (non-traumatic chest pain)

CONTRAINDICATIONS

- ❑ Known hypersensitivity
- ❑ Systolic BP < 100 mmHg
- ❑ Head injury
- ❑ Abdominal pain
- ❑ Volume depleted patients

SIDE EFFECTS

Allergic Reactions include:

- ❑ Itching, Rash, Urticaria, Edema
- ❑ Respiratory Depression
- ❑ Disorientation, Visual Disturbances
- ❑ Restlessness, Dizziness, Drowsiness, Constricted Pupils
- ❑ Bradycardia, Palpitations
- ❑ Syncope, Orthostatic Hypotension
- ❑ Nausea, Vomiting
- ❑ Dry Mouth, Abdominal Cramps

DOSAGE AND ADMINISTRATION

- **Adult**
2 -5 mg IV/IO, repeat q 5 minutes as needed to max of 10 mg.
- **Pediatric**
0.1 – 0.2 mg/kg IV/IO, titrate to effect

SPECIAL CONSIDERATIONS

- ❑ Treat respiratory depression with 0.4 – 2 mg Narcan IV/IO. IM/IN Dose: 1 - 2 mg
- ❑ If allergic reaction or hypotension occurs, give 50 mg Benadryl IV/IO.
- ❑ Nausea is a frequent side effect of Morphine Sulfate. Consider 4 mg Zofran IV/IO/IM.
- ❑ Concurrent administration of Phenergan and Morphine Sulfate can produce respiratory arrest.
- ❑ Carefully monitor patient's condition and be prepared to assist ventilations.

MINIMUM LEVEL

- ❑ Paramedic

MOTRIN **IBUPROFEN**

MEDICATION

An analgesic/antipyretic that has weak anti-inflammatory activity and no effects on platelets or bleeding time.

MECHANISM OF ACTION

Reduces fever by acting directly on the heat-regulating center of the hypothalamus.

INDICATIONS

Motrin is to be given in conjunction with Tylenol in pediatric patients with fever $\geq 102.5^{\circ}$.

CONTRAINDICATIONS

None

SIDE EFFECTS

Rare, gastric irritation

DOSAGE AND ADMINISTRATION

Concentration: 100 mg/5 ml (20 mg/ml)

AGE	WEIGHT	DOSEAGE
0 – 3 mo	6 – 11 lbs	25 mg (1.25 ml)
6 – 11 mo	12 – 17 lbs	50 mg (2.5 ml)
12 – 23 mo	18 – 23 lbs	75 mg (3.75 ml)
2 – 3 yrs	24 – 35 lbs	100 mg (5 ml)
4 – 5 yrs	36 – 47 lbs	150 mg (7.5 ml)
6 – 8 yrs	48 – 59 lbs	200 mg (10 ml)
9 – 10 yrs	60 – 71 lbs	250 mg (12.5 ml)
11 yrs	72 – 95 lbs	300 mg (15 ml)

SPECIAL CONSIDERATIONS

- Doses may be repeated q 4 hours prn not to exceed 75 mg/kg total per 24 hour period.
- Do not administer if last administration was less than 4 hours ago.
- Hepatic damage begins at overdoses of approximately 150 mg/kg.

MINIMUM LEVEL

- EMT-Basic (PO)
- EMT-Intermediate (PR)

NARCAN

NALOXONE

MEDICATION

Narcan, a synthetic medication, is an opiate antagonist that prevents or reverses the action of Morphine Sulfate and other opioid drugs.

MECHANISM OF ACTION

Narcan competes for and displaces narcotic molecules from opiate receptors in the brain. Narcan will reverse Stupor, Coma and Respiratory Depression when administered to patients having taken narcotic drugs including Heroin, Morphine Sulfate, Methadone, Codeine, Demerol, Dilaudid, Darvon, Paregoric and Percodan.

INDICATIONS

- Known narcotic overdose
- Unconsciousness of unknown etiology
- Reversal of respiratory depression associated with narcotic administration

CONTRAINDICATIONS

None

SIDE EFFECTS

Rapid administration may precipitate projectile vomiting and ventricular dysrhythmias. In rare cases, rapid administration has been reported to cause pulmonary edema and sudden death.

DOSAGE AND ADMINISTRATION

- **Adult**
0.4 – 2 mg IV/IO to max of 10 mg. 1 - 2 mg IM/IN if unable / unsafe to establish IV/IO. Titrate to patient's respirations.
- **Pediatric**
0.01 mg/kg IV/IO/IM/IN. Titrate to patient's respirations.

SPECIAL CONSIDERATIONS

- The patient who has satisfactorily responded to Narcan should be continually monitored.
- Repeated doses may be necessary since the duration of action for some narcotics exceed that of Narcan. Titrate dosing to prevent patient from becoming combative.
- For IN administration, ½ total dose per nare.

MINIMUM LEVEL

- EMT-Intermediate

NITROGLYCERIN - SUBLINGUAL

NITROSTAT, NITROLINGUAL SPRAY

MEDICATION

Nitroglycerin is an organic nitrate and potent vasodilator with antianginal, anti-ischemic, and antihypertensive effects.

MECHANISM OF ACTION

- ❑ Relaxes vascular smooth muscle, resulting in dose-related dilation of both venous and arterial blood vessels.
- ❑ It also promotes peripheral pooling of blood, reduction of peripheral resistance, and decreased venous return to the heart.
- ❑ Both preload and afterload are reduced and myocardial oxygen consumption and demand is decreased.

INDICATIONS

- ❑ Acute Coronary Syndromes (non-traumatic chest pain)
- ❑ Hypertensive crisis
- ❑ Pulmonary edema

CONTRAINDICATIONS

- ❑ Patients who have taken Erectile Dysfunction drugs (Viagra™, Cialis™, etc) within the past 24 hours
- ❑ Known hypersensitivity
- ❑ Systolic blood pressure < 100 mmHg
- ❑ Severe Bradycardia or severe Tachycardia
- ❑ Stroke or Intracerebral Hemorrhage

Should be used cautiously in the following:

- Right Ventricular AMI
- Increased ICP
- Glaucoma
- Severe anemia

SIDE EFFECTS

- ❑ Headache, Blurred Vision, Weakness, Vertigo, Dizziness, Faintness, Apprehension
- ❑ Postural Hypotension, Palpitations, Tachycardia (sometimes with Paradoxical Bradycardia)
- ❑ Syncope, Circulatory Collapse
- ❑ Nausea, Vomiting, Abdominal pain, Dry mouth

DOSAGE AND ADMINISTRATION

- 0.4 mg SL metered dose spray q 5 minutes prn for chest pain to total of 3 sprays by WCEMS crews.

SPECIAL CONSIDERATIONS

- ❑ Nitroglycerin should be given to patients while they are sitting or semi-reclined.
- ❑ Monitor blood pressure closely and give only number of doses necessary for effective relief up to maximum of 3.
- ❑ If patient shows relief with SL spray, but symptoms continue to reappear after 3 -5 minutes, consider NTG Paste for sustained relief.

MINIMUM LEVEL

- ❑ EMT-Basic

NITROGLYCERIN TOPICAL OINTMENT

NITRO-BID

MEDICATION

Nitroglycerin is an organic nitrate and potent vasodilator with antianginal, anti-ischemic, and antihypertensive effects.

MECHANISM OF ACTION

- The transdermal topical ointment is designed to provide a continual release of nitroglycerin through the skin directly into the peripheral circulation.
- The onset of action is approximately 30 minutes.
- Physical activity and elevated ambient temperatures may increase the rate of absorption.
- Dosing is in mg/inch.

INDICATIONS

- Acute Coronary Syndromes (non-traumatic chest pain)
- Pulmonary edema

CONTRAINDICATIONS

- Patients who have taken Viagra™, Cialis™, etc within the past 24 hours
- Known hypersensitivity
- Systolic blood pressure < 100 mmHg
- Severe Bradycardia or severe Tachycardia
- Stroke or Intracerebral Hemorrhage

Should be used cautiously in the following:

- Right Ventricular AMI
- Increased ICP
- Glaucoma
- Severe anemia

SIDE EFFECTS

- Headache, Blurred Vision, Weakness, Vertigo, Dizziness, Faintness, Apprehension
- Postural Hypotension, Palpitations, Tachycardia (sometimes with Paradoxical Bradycardia)
- Syncope, Circulatory Collapse
- Nausea, Vomiting, Abdominal pain, Dry mouth

DOSAGE AND ADMINISTRATION

½ to 2 inches (1 inch equals to approximately 15 mg) according to Systolic BP:

110 – 140	½ inch	181 – 200	1 ½ inch
141 – 180	1 inch	> 200	2 inches

The ointment is applied with the dose-measuring application papers supplied with the medicine. The ointment is squeezed onto the measuring scale printed on the paper. The paper is then used to spread the ointment onto the skin in a thin, even layer, covering an area (at least 2 by 3 inches) of the same size at each dose without rubbing or massaging. Place paper on clean, dry, hairless skin on the chest, stomach, front of the thighs, or any other accessible area.

SPECIAL CONSIDERATIONS

- Avoid placing defibrillator / pacing pads near patch. If necessary, remove patch and wipe skin clean.
- Nitroglycerin should be given to patients while they are sitting or semi-reclined. Monitor blood pressure closely.
- If hypotension occurs, remove patch and wipe area clean.

MINIMUM LEVEL

- Paramedic

PHENERGAN

PROMETHAZINE

MEDICATION

Antiemetic

MECHANISM OF ACTION

- Phenergan is a long-acting derivative of Phenothiazine with marked antihistaminic activity and prominent sedative, amnesic and anti-motion sickness actions.
- Potentiates the action of analgesics.

INDICATIONS

- Profound nausea and/or vomiting refractory to Zofran.

CONTRAINDICATIONS

- Known hypersensitivity to Phenothiazines.
- Altered mental status.
- Patients who have received a large amount of depressants (including alcohol).
- CHI or CNS pathology.
- Nursing mothers, newborn or premature infants, acutely ill or dehydrated children.
- Pedi < 2 years old.

SIDE EFFECTS

- Altered mental status (drowsiness).
- Local venous irritation or phlebitis. Do not give IV.

DOSAGE AND ADMINISTRATION

- **Adults and Pediatric > 2 years old.**
12.5 – 25 mg IM only.

SPECIAL CONSIDERATIONS

- Given IM only if Zofran ineffective.
- Concurrent administration of Phenergan and Morphine Sulfate could produce respiratory arrest.
- Careful monitoring of patient's status is essential.

MINIMUM LEVEL

- Paramedic

SODIUM BICARBONATE

MEDICATION

- ❑ Sodium Bicarbonate is a hypertonic solution used as an electrolyte replenisher and systemic alkalizer.
- ❑ In water, it dissociates to provide sodium (Na⁺) and bicarbonate (HCO₃) ions.

MECHANISM OF ACTION

- ❑ Corrects metabolic acidosis by neutralizing excess acid, helping return the blood towards a physiologic pH, in which normal metabolic processes and sympathomimetic agents work more efficiently.
- ❑ In tricyclic antidepressant overdose, alkalization of serum pH increases protein binding of TCA's, which significantly lessen the potential for drug toxicity because it reduces the amount of available free drug.

INDICATIONS

Acidosis, Hyperkalemia, Overdose, Burns, Crush Injuries

CONTRAINDICATIONS

- ❑ Hypokalemia
- ❑ Patients who cannot tolerate a salt load (e.g., CHF)

SIDE EFFECTS

- ❑ Metabolic alkalosis may occur
- ❑ Precipitates when mixed with calcium chloride
- ❑ May increase intracellular acidosis
- ❑ May cause electrolyte imbalance
- ❑ May deactivate catecholamine
- ❑ Large solute load may lead to fluid overload

DOSAGE AND ADMINISTRATION

	Adult	Pediatric
Acidosis, Hyperkalemia, Overdose	1 mEq/kg IV/IO	1 mEq/kg IV/IO
Burns, Crush Injuries	1 mEq/kg/1000 ml NS wide open (100 mEq maximum) IV/IO	1 mEq/kg/1000 ml NS wide open (100 mEq maximum) IV/IO
Newborn Resuscitation		Use 4.2% concentration 1 mEq/kg IV/IO

SPECIAL CONSIDERATIONS

- ❑ Intubation with adequate ventilations and CPR are the major "buffer agents" in cardiac arrest. Sodium Bicarbonate is a Class III intervention (not useful or effective) in cardiac arrest and CPR without intubation.
- ❑ Not recommended for routine use in cardiac arrest patients.

MINIMUM LEVEL

- ❑ Paramedic

SOLU-MEDROL

METHYLPREDNISOLONE

MEDICATION

Solu-Medrol, a glucocorticoid medication, is used principally to treat allergic reaction or respiratory illnesses. High doses are used to reduce post-traumatic spinal cord edema.

MECHANISM OF ACTION

- Inhibits inflammatory response of tissue due to mechanical, chemical, infectious, or other causes.
- Preserves the integrity of small blood vessels in shock states, increases cardiac output.

INDICATIONS

- Anaphylactic Shock / Allergic Reaction
- Exacerbation of Asthma or COPD
- Spinal Cord injuries

CONTRAINDICATIONS

- Known hypersensitivity
- CHI or CVA

SIDE EFFECTS

- Headache
- Hypertension
- Sodium and Water retention
- Hypokalemia
- Alkalosis

DOSAGE AND ADMINISTRATION

Act-O-Vial use, push top down to make fluid escape into bottle shake well and draw up using sterile technique, then administer.

	ADULT	PEDIATRIC
Anaphylactic Shock Allergic Reaction Asthma/COPD	125 mg IV/IO	2 mg/kg IV/IO max dose 125 mg
Spinal Cord Injury	30 mg/kg Slow IV/IO over 20 minutes	30 mg/kg Slow IV/IO over 20 minutes

MINIMUM LEVEL

- Paramedic

SUCCINYLCHOLINE

ANECTINE

MEDICATION

Depolarizing neuromuscular blocker

MECHANISM OF ACTION

Succinylcholine is a synthetic, ultra-short-acting depolarizing neuromuscular blocking agent with high affinity for acetylcholine (ACh) receptor sites. Its initial transient contractions and fasciculation's are followed by sustained flaccid skeletal muscle paralysis produced by state of accommodation that develops in adjacent excitable muscle membranes. It may increase vagal tone initially, particularly in children and with high doses, and subsequently produce mild sympathetic stimulation. Following IV injection, muscle paralysis begins at the eyelids and jaw, then progresses to the limbs, the abdomen, and diaphragm. There is no effect on level of consciousness.

INDICATIONS

To induce neuromuscular paralysis in order to facilitate endotracheal intubation in those patients requiring mechanical ventilation, improve oxygenation, protect the airway, and in anyone whom intubation might otherwise be difficult or traumatic.

CONTRAINDICATIONS

- Burns > 24 hours old
- Spinal cord injury > 24 hours old
- Neuromuscular disease (e.g., myasthenia gravis)
- Major facial trauma
- Large/short neck patients

SIDE EFFECTS

- Muscle fasciculation's, profound and prolonged muscle relaxation, muscle pain
- Bradycardia, tachycardia, hypotension, hypertension, dysrhythmias, sinus arrest
- Respiratory depression, bronchospasm, hypoxia, apnea
- Malignant hyperthermia, hyperkalemia, Masseter spasm, histamine release

DOSAGE AND ADMINISTRATION

- **Adult**
1 mg/kg IV/IO. Will produce flaccid paralysis within 45 – 60 seconds
- **Pediatrics** (2nd line PAI paralytic)
2 mg/kg IV/IO
 - Administer 0.02 mg/kg Atropine IV/IO prior to Succinylcholine to offset vagal response.

SPECIAL CONSIDERATIONS

- All monitors (EKG, blood pressure, SpO2) and airway equipment MUST be in place prior to administration.
- Cricoid pressure shall be maintained until the cuff on the ETT is inflated.
- If unsuccessful, the patient should be oxygenated and ventilated prior to additional attempts.
- Equipment to perform an emergency surgical airway should be readily accessible.
- Positive pressure ventilation should not be administered unless absolutely necessary prior to PAI. High flow O2 by NRB mask at 25 liters per minute for 3 minutes should be sufficient.

MINIMUM LEVEL

- P3

THIAMINE

MEDICATION

- ❑ A vitamin of the B complex, occurring naturally and produced synthetically.
- ❑ Thiamine is widely distributed in various animal and plant foods, especially wheat germ, dry yeast, nuts, legumes, most vegetables, and some meat.

MECHANISM OF ACTION

Thiamine is essential for the normal metabolism of carbohydrates and fats.

INDICATIONS

- ❑ Thiamine is beneficial for patients presenting with signs/symptoms of alcohol toxicity, Wernicke's syndrome or Korsakoff's psychosis.
- ❑ It should be administered prior to Dextrose if patient appears to have chronic alcoholism or appears malnourished.

CONTRAINDICATIONS

Known hypersensitivity

SIDE EFFECTS

None

DOSAGE AND ADMINISTRATION

- 100mg IV/IO
Can be split 50/50 between IV/IO and IM

SPECIAL CONSIDERATIONS

- ❑ In alcoholics, thiamine deficiency causes Wernicke's syndrome, an acute and reversible encephalopathy (brain dysfunction) characterized by ataxia (defective muscular coordination), eye muscle weakness, and mental derangements.
- ❑ A more serious complication of thiamine deficiency is known as Korsakoff's psychosis, a memory disorder that may be irreversible once it becomes established.
- ❑ Since thiamine is utilized in carbohydrate metabolism, these syndromes may be precipitated by the administration of dextrose to the alcoholic with preexisting thiamine deficiency.
- ❑ Severe prolonged deficiency results in Beriberi (nerve inflammation).

MINIMUM LEVEL

- ❑ EMT-Intermediate

TYLENOL **ACETAMINOPHEN**

MEDICATION

An analgesic / antipyretic that has weak anti-inflammatory activity and no effects on platelets or bleeding time.

MECHANISM OF ACTION

Reduces fever by acting directly on the heat-regulating center of the hypothalamus.

INDICATIONS

Fever of any etiology.

CONTRAINDICATIONS

None

SIDE EFFECTS

Rare, gastric irritation

DOSAGE AND ADMINISTRATION

Concentration: 160 mg/5 ml (32 mg/ml)

AGE	WEIGHT	DOSEAGE
0 – 3 mo	6 – 11 lbs	40 mg (1.25 ml)
4 – 11 mo	12 – 17 lbs	80 mg (2.5 ml)
12 – 23 mo	18 – 23 lbs	120 mg (3.75 ml)
2 – 3 yrs	24 – 35 lbs	160 mg (5 ml)
4 – 5 yrs	36 – 47 lbs	240 mg (7.5 ml)
6 – 8 yrs	48 – 59 lbs	320 mg (10 ml)
9 – 10 yrs	60 – 71 lbs	400 mg (12.5 ml)
11 yrs	72 – 95 lbs	480 mg (15 ml)

SPECIAL CONSIDERATIONS

- Doses may be repeated q 4 hours prn not to exceed 75 mg/kg total per 24 hour period.
- Do not administer if last administration was less than 4 hours ago.
- Hepatic damage begins at overdoses of approximately 150 mg/kg.

MINIMUM LEVEL

- EMT (PO)
- EMT-Intermediate (PR)

VECURONIUM

NORCURON

MEDICATION

A non-depolarizing blocking agent

MECHANISM OF ACTION

- ❑ Through competitive inhibition, blocks cholinergic receptors at the motor end plate initiating a neuromuscular paralysis within approximately 3 minutes that lasts approximately 25 – 30 minutes.
- ❑ It is given only after induction of general anesthesia.

INDICATIONS

- ❑ To sustain neuromuscular paralysis after the patient has been intubated with an endotracheal tube.
- ❑ Vecuronium is the first-line paralytic in pediatric Pharmacological Assisted Intubation.

CONTRAINDICATIONS

- ❑ Known hypersensitivity.

Should be used cautiously in the following:

- Severe hepatic disease
- Impaired acid-base or fluid/electrolyte balance
- Severe obesity
- Adrenal or neuromuscular disease (myasthenia gravis)
- Patients with slow circulation time (cardiovascular disease, elderly, edematous states)
- Malignant hyperthermia

SIDE EFFECTS

- ❑ Bradycardia
- ❑ Skeletal muscle weakness
- ❑ Respiratory depression, prolonged apnea (dose related)
- ❑ Malignant hyperthermia
- ❑ Prolonged recovery in elderly and obese patients and those with cardiovascular disease

DOSAGE AND ADMINISTRATION

- **Adult**
0.1 mg/kg IV/IO
 - Increments of 2 mg acceptable and titrated to maintain paralysis.
- **Pediatric** (1st line PAI paralytic)
0.1 mg/kg IV/IO

SPECIAL CONSIDERATIONS

Vecuronium should not be given until the airway is secured with ETT in adults.

MINIMUM LEVEL

- ❑ P3

VERSED

MIDAZOLAM

MEDICATION

Short acting Benzodiazepine with hypnotic, sedative and amnesic qualities.

MECHANISM OF ACTION

- Provides conscious sedation plus amnesiac qualities.
- Primary use is as a priming agent prior to conscious intubation attempts and cardioversion.
- Respiratory effort must be monitored continuously and ventilatory support provided when necessary.

INDICATIONS

- Conscious sedation prior to intubation and cardioversion.
- Seizures.
- Behavioral Emergencies.

CONTRAINDICATIONS

- Known hypersensitivity.
- Narrow angle glaucoma.
- Shock.

SIDE EFFECTS

- Respiratory depression, apnea.
- Hypotension.
- Amnesia.
- Drowsiness.
- Altered mental status.

DOSAGE AND ADMINISTRATION

- **Adult**
2 – 20 mg (2 - 5 mg increments) IV/IO. Give 5 mg IM/IN if unable / unsafe to establish IV/IO.
- **Pediatric**
0.05 – 0.2 mg/kg IV/IO/IM/IN.

SPECIAL CONSIDERATIONS

- Emergency resuscitation equipment must be available when administering Versed.
- Dosing may need to be adjusted based on vital signs.
- For IN administration, ½ total dose per nare.

MINIMUM LEVEL

- Paramedic

ZOFRAN

Ondansetron

MEDICATION

Anti-Emetic

MECHANISM OF ACTION

A selective antagonist of the serotonin receptor subtype, 5-HT₃.

INDICATIONS

Nausea and Vomiting

CONTRAINDICATIONS

- Known hypersensitivity
- Long Q-T Syndrome

SIDE EFFECTS

- Headache
- Dizziness
- Musculoskeletal pain
- Bradycardia
- Anxiety and/or agitation
- Shivering
- Skeletal muscle weakness

DOSAGE AND ADMINISTRATION

- **Adult**
4 mg IV/IO over 2 – 5 minutes. If unable to establish IV/IO, give 4 mg IM.
- **Pediatric**
≤ 40 kg: give 0.1 mg/kg IV/IO. If over 40 kg, give 4 mg IV/IO.

SPECIAL CONSIDERATIONS

Do not administer Zofran IM to pediatric patients as it may cause extreme musculoskeletal pain.

MINIMUM LEVEL

- Paramedic

INFUSION RATE CHART

Amiodarone Infusion Mix 150mg/100cc NS = 1.5mg/ml	
Mg/min	Amount to Infuse via 60 drip set
1	45 gtts/min

To be used after conversion with Amiodarone

Dopamine Infusion 2-20mcg/kg/min using 60 gtts set 1600mcg/ml premixed bag												
	Patient Weight in kg											
mcg/kg/min	2.5	5	10	20	30	40	50	60	70	80	90	100
2 mcg	*	*	*	1.5	2	3	4	5	5	6	7	8
5 mcg	*	1	2	4	6	8	9	11	13	15	17	19
10mcg	1	2	4	8	11	15	19	23	26	30	34	38
15 mcg	1.4	3	6	11	17	23	28	34	39	45	51	56
20 mcg	2	4	8	15	23	30	38	45	53	60	68	75

Renal dose: 2 – 5 mcg/kg/min
Beta Agonist dose: 5 – 15 mcg/kg/min
Alpha Agonist dose: >15 mcg/kg/min

Epinephrine Infusion 2-10 ug/min using 60 gtts set 1 mg (1:1000) / 250cc = 4mcg/ml										
Ug/min	2	3	4	5	6	7	8	9	10	
gtts/min	30	45	60	75	90	105	120	135	150	

Pediatric Infusion at 0.1 mcg/kg/minute for initial, and titrate to effect at 0.1 – 1.0 mcg/kg/min

Lidocaine Infusion 1 – 4 mg/min using 60 gtts set 4mg/ml premixed bag				
mg/ml	1	2	3	4
gtts/min	15	30	45	60

DRUG CALCULATIONS

Drug Dosage for Injection

$$\frac{\text{Drug Dose Ordered} \times \text{Volume of Stock Solution}}{\text{Dose on Hand}} = \text{ml of Medication to be Administered}$$

Drip Rates

$$\frac{\text{ml to be Infused} \times \text{gtts/ml of Infusion Set}}{\text{Total time of Infusion in Minutes}} = \text{Drops per Minutes}$$

Note: When a factor of 60 is used, the drop-per-minute rate will always equal the ml/hour infusion rate

Infusions

$$\frac{\text{Prescribed Dose} \times \text{Administration Set Drop Factor}}{\text{Concentration of Drug}} = \text{Drops per Minute}$$

Note: When a factor of 60 is used, the drop-per-minute rate will always equal the ml/hour infusion rate