ACCESS

Ada County-City Emergency Services System

Standing Written Orders of Ada County

DECEMBER 01, 2022

SWO UPDATES -DECEMBER 01, 2022		
APPX-26 Patient Handoff	M-01 General Medical Care	PM-01
APPX-31 Treat & Release Checklist	M-08 Adult Vomiting/Nausea/Vertigo	PM-08 Peds/Nausea/Vertigo/ Dehydration
G-01 Foundation of Pt Care	M-16 Epistaxis	
G-03 Hospital Destination	PC-01 Peds Cardiac Respir. Arrest	RX Nor-Epinephrine
G-04 Special Resuscitation	PC-01a Peds-AEMT Algorithm	RX Ondansetron
G-06 Prehospital Integration of Care	PC-01b Peds-ALS Algorithm	RX Tranexamic acid
G-09 Patient Refusal/Documentation	R-02 Opiate Overdose	RX Etomidate
G-10 EMS Incident Documentation	T-01 General Trauma	APPX-28 Abbreviations

WORKING TOGETHER TO SERVE ADA COUNTY

- ADA COUNTY PARAMEDICS
- BOISE FIRE DEPARTMENT
- EAGLE FIRE DEPARTMENT
- KUNA FIRE DEPARTMENT
- MERIDIAN FIRE DEPARTMENT
- STAR FIRE DEPARTMENT

VISION

To be a premeir emergency medical response and mitigation system that meets the current and future needs of Ada County.

These Standing Written Orders are the result of adherence to nationally recognized guidelines, with the input from local EMS services and oversight by the medical directors of Ada County-City Emergency Services System. The following agencies and the medical directors have endorsed the protocols.

Working together to serve Ada County

ACCESS Medical Directors

Benjamin Cornett, M.D.

Ian Butler-Hall, M.D.

AdaCountyParamedics

Darby Weston, EMS Director/Chief

Dennis Doan, Fire Chief

Rusty Coffelt, Fire Chief

Perry Palmer, Fire Chief

Mark Niemeyer, Fire Chief

Greg Timinsky, Fire Chief

Table of Contents

Table of Contents

Drug Table of Contents

Drug References

Drug Name	*Trade Name*	Transport	Non-Transport	NOTES
Acetylsalicylic Acid-01May18	*Aspirin, ASA*	*YES*	*YES*	
Adenosine	*Adenocard*	*YES*	*YES*	
Albuterol Sulfate	*Albuterol, Proventil, Ventolin Salbutamol*	*YES*	*YES*	
Amiodarone – 01Nov19	*Cordarone, Pacerone*	*YES*	*YES*	
Atropine Sulfate 01Jun19	*Atropine*	*YES*	*YES*	
Calcium Chloride	*Calcium, CaC12*	*YES*	*YES*	
Hydroxocobalamin	**Cyanokit**	*YES*	*YES*	
Dextrose 50% in Water-01May18	*Dextrose, D50, D50W, Glucose*	*YES*	*YES*	
Diazepam	*Valium, Diastat*	*YES*	*YES*	
Diltiazem	*Cardizem, Dilacor XR, Tiazac, Cartia XT, Tiamate*	*YES*		
Diphenhydramine Hydrochloride	*Benadryl*	*YES*	*YES*	
Dopamine Hydrochloride– 01Nov19	*Dopamine, Intropin*	*YES*		
Dropenidol 01Nov21	*Inapine, Droleptan*			
Epinephrine-01Nov21	*Adrenalin, Epi*	*YES*	*YES*	
Etomidate 01DEC21	*Amidate*	*YES*	*YES*	
Famotidine	*Pepcid*	*YES*		
Fentanyl Citrate	*Sublimaze, Atiq (lollypop for PEDs)*	*YES*	*YES*	
Glucagon - 01Jun19	*Glucagon*	*YES*	*YES*	
Haloperidol	*Haldol*	*YES*	*YES*	
Hydromorphone	*Dilaudid*	*YES*	*YES*	
Ipratropium Bromide -15Jun21	*Atrovent*	*YES*	*YES*	
Ketamine Hydrochloride – 01May21	*Ketamin, Ketanest, Ketaset, Ketalar*	*YES*	*YES*	
Lidocaine Hydrochloride-01Nov18	*Lidocaine, Xylocaine*	*YES*	*YES*	
Lorazepam-01May18	*Ativan*	*YES*	*YES*	
Magnesium Sulfate – 15Jun21	*Mag, Mag Sulfate, MgS04++*	*YES*	*YES*	
Methylprednisolone	*Solu-Medrol*	*YES*		
Midazolam	*Versed*	*YES*	*YES*	
Morphine Sulfate	*Duramorph, Morphine, MS MS04*	*YES*	*YES*	
Naloxone- 01Nov21	*Narcan*	*YES*	*YES*	
Nitroglycerin	*Nitro, NTG, Nitrostat, Nitrol, Tridil, Nitrolingual, Nitro-Bid Ointment*	*YES*	*YES*	
Norepinephrine – 01Dec01	*Noradrenalin, Nor-Epi, Levophed,*	*YES*	*YES*	
Ondansetron – 01Dec01	*Zofran*	*YES*	*YES*	
Oral Glucose	*Glutose, Insta-Glucose*	*YES*	*YES*	
Oxytocin	*Pitocin, Syntocinon*	*YES*		
Phenylephrine-01Nov18	*Neosyephrine*	*YES*	*YES*	
Ranitidine	*Zantac*	*YES*		
Rocuronium Bromide	*Zemuron*	*YES*		
Sodium Bicarbonate	*Bicarb, NaHC03*	*YES*	*YES*	
Succinylcholine Chloride-01Jan18	*Anectine*	*YES*	*YES*	
Tetracaine Hydrochloride	*Pontocaine Eye, Pontocaine HCl*	*YES*	*YES*	
Tranexamic Acid – 01Dec22	*TXA, Cyklokapron Lysteda (oral only)*	*YES*		
Vecuronium	*Norcuron*	*YES*		

Inter-Facility Transfers
Drug References

IFT-Drug References New-01Nov18				
RX-IFT Drug Name	***IFT-Trade Name***	**Transport**	**Non-Transport**	**NOTES**
Antibiotics	*N/A*	*Yes*	*Yes*	Inter-Facility Transfers
Beta Blocker	*N/A*	*Yes*	*Yes*	Inter-Facility Transfers
Blood Products	*Packed Red Cells, Fresh Plasma, Platelets, Whole Blood*	*Yes*	*Yes*	Inter-Facility Transfers
Clevidipine – 01May22	*CLEVIPREX*	*Yes*	*Yes*	Inter-Facility Transfers
Diltiazem Infusion	*Cardizem, Dilacor XR, Tiazac, Cartia XT*	*Yes*	*Yes*	Inter-Facility Transfers
Dobutamine HCL	*Dobutrex*	*Yes*	*Yes*	Inter-Facility Transfers
Fentanyl Citrate	*Sublimaze*	*Yes*	*Yes*	Inter-Facility Transfers
Heparin (Unfractionated) UF	*Heparin, Lovenox*	*Yes*	*Yes*	Inter-Facility Transfers
Insulin Infusion	*Regular Insulin*	*Yes*	*Yes*	Inter-Facility Transfers
Levetiracetam	*Keppra*	*Yes*	*Yes*	Inter-Facility Transfers
Mannitol	*Osmitrol*	*Yes*	Yes	Inter-Facility Transfers
Midazolam	*Versed*	*Yes*	*Yes*	Inter-Facility Transfers
Naloxone	*Narcan*	*Yes*	*Yes*	Inter-Facility Transfers
Nicardipine	*Cardene*	*Yes*	*Yes*	Inter-Facility Transfers
Nitroglycerin Infusion	*NitroStat, Nitrol, Nitrolingual, Nitro-Bid Ointment, Tridil, Nitro, NTG*	*Yes*	*Yes*	Inter-Facility Transfers
Norepinephrine	*Nor adrenalin, Nor Epi, Levophed*	*Yes*	*Yes*	Inter-Facility Transfers
Phenylephrine	*Neosynephrine, Vazculep*	*Yes*	*Yes*	Inter-Facility Transfers
Phenytoin Sodium/Fosphenytoin	*Dilantin/Cerebyx*	*Yes*	*Yes*	Inter-Facility Transfers
Potassium	*Potassium, K+*	*Yes*	*Yes*	Inter-Facility Transfers
Propofol	*Diprovan*	*Yes*	*Yes*	Inter-Facility Transfers
Proton Pump Inhibitors	*N/A*	*Yes*	*Yes*	Inter-Facility Transfers
Sodium Nitroprusside	*Nipride, Nitropress*	*Yes*	*Yes*	Inter-Facility Transfers
Thrombolytics/Fibrinolytics	*tPA, REtavase, Streptase, Alteplase*	*Yes*	*Yes*	Inter-Facility Transfers
Vasopressin	*Pitressin*	*Yes*	*Yes*	Inter-Facility Transfers

Protocol
G-01

SECTION: G-01

TITLE: Foundations of Patient Care

REVISED: December 01, 2022

FOUNDATIONS OF PATIENT CARE

Ada County/City Emergency Services System Standing Written Orders (SWOs)

A. Foundation: These SWOs are the result of the combination of nationally recognized guidelines, local medical practice, and input from the medical directors and the SWO sub-committee. Sources include but are not limited to:

- Basic Life Support (CPR), Advanced Cardiac Life Support (ACLS and ACLS-EP) and associated branch courses
- Pediatric Advanced Life Support (PALS)
- Emergency Pediatric Care (EPC)
- Pediatric Education for Prehospital Professionals (PEPP)
- Neonatal Resuscitation Program (NRP, NALS)
- Advanced Medical Life Support (AMLS)
- International Trauma Life Support (ITLS), Pre-Hospital Trauma Life Support (PHTLS) and associated branch courses, and
- Advanced Burn Life Support (ABLS)

EMS personnel are encouraged to use the guidance and algorithms of these courses to *supplement* SWOs. If contradiction occurs, these SWOs will supersede any other algorithm or guidelines. Alternative courses of action may be utilized, when appropriate, following standard medical control, deviation, and documentation guidelines.

Special Emergency Response Team (SERT) providers face unusual situations often outside the depth of these guidelines, having roles that border on law enforcement functions, or require procedures beyond the scope of normal EMS providers. These special situations may be covered in separate protocols and policies which will supplement this document.

B. While this document cannot cover every possible variation of disease or injury encountered in the field, it should provide a foundation for the acute care of the majority of patients seen.

C. Each and every protocol should be considered to have, as its first directive, a mandate to maintain universal blood and body fluid precautions/isolation.

D. Newer defibrillators using biphasic technology require lower energy doses and self-regulate the appropriate electrical energy. When not specified, or when a different device (than normally used), or if device deployment changes after publication of the SWOs, all protocols assume energy levels as set by the manufacturer recommendations for the device.

E. Unless specifically addressed in these protocols, a provider's scope of practice is assumed to include lower levels. For example, a paramedic level guideline is assumed to include the EMT scope as well.

F. Time Sensitive Emergencies (TSE): The state of Idaho has recognized that certain patients may benefit from rapid access to specialty centers under the Time Sensitive Emergencies Program. All TSE patients shall be stabilized and transported as rapidly and efficiently as possible. When treating patients who may benefit from specific interventional therapy (surgery, thrombolytic, catheterization lab) a goal of less than ten minutes on-scene time is desirable (within the bounds of providing quality patient care).

G. EARLY NOTIFICATION OF RECEIVING FACILITY IS ESSENTIAL IN SIGNIFICANT CASES

H. General treatment: All patients shall receive the following general supportive care as appropriate within the scope of practice and sound clinical judgment of the provider:

Airway control

- Positioning/suctioning
- Oral or nasopharyngeal airways
- Combi-tube, King LTS, LMA (or other adopted advanced airway)
- Endotracheal intubation (oral, nasal, RSI, digital)
- Cricothyrotomy (needle, surgical, and similar devices)
- Use of pharmacological agents to facilitate airway control
- Use of difficult airway devices, such as the Endotracheal Tube Introducer (a.k.a. the Gum Bougie) to facilitate airway control
- Use of video laryngoscopes to assist with intubation when available and if appropriate.

Ventilatory support

- Supplemental oxygen by appropriate means
- Bag-valve mask using a traditional face mask, intra-oral mask (IOM) , or similar device
- Bag-valve ETT
- Monitoring of pulse oximetry and end tidal CO_2
- CPAP and BiPAP devices when available
- Deep tracheal suctioning
- Use of a mechanical ventilator

Circulatory support

- CPR and components of CPR
- Use of devices to support circulation, including mechanical CPR devices (such as the LUCAS™2, or other devices) and CPR adjuncts

(such as the ResQPod, ITD, and similar devices) as training and availability allow
- Basic bleeding control, up to and including use of wound packing, hemostatic agents (if trained and available) and tourniquets

Naso-Orogastric tube placement

Spinal immobilization/Restriction: Selective immobilization/restriction using cervical collars, KEDs (or similar devices), spine boards (or similar devices), and improvised devices. This includes screening for appropriate immobilization.

Orthopedic Care: Using cold packs, pillows, cardboard splints, vacuum splints, traction devices, pelvic binding and other improvised devices as appropriate and available. Paramedics may reduce patellar dislocations. Paramedics may reduce angulated extremity injuries with neurological compromise as appropriate.

Vascular access
- Single or multiple lumens
- Peripheral or intraosseous access, including pre-established lines
- Crystalloid (i.e. Normal Saline, Lactated Ringers etc.) infusions and saline/medication locks as appropriate
- Use and maintenance of other crystalloid solutions via pre-established vascular access, including PICC lines, Hickman catheters, hemodialysis lines, and other routes of vascular access (as provider training and comfort level allows)
- While AEMT providers are often limited in the number of IV attempts and fluid administration by this document, ALS providers may exceed those guidelines when functioning under the general direction of the Paramedic in charge of the patient. Likewise, Paramedics are limited by sound clinical judgment rather than an arbitrary number of "attempts" at vascular access

EKG/Electrical therapy: Defibrillation/cardioversion/pacing, including AEDs and manual devices. EKG and 12-lead monitoring.
- Patients in which EKG monitoring has been initiated for any reason will be considered ALS patients; these patients shall be attended by a Paramedic at all times.
- Medication administration will be considered an indication for EKG monitoring, **particularly those with sedative, analgesic, or cardiovascular properties**, with the following exceptions:
    - Administration of Oxygen (Specific acute complaints such as Shortness of breath not-withstanding)
    - Administration of crystalloid intravenous fluids (without medication)
    - Administration of Oral Glucose or Dextrose containing intravenous solutions

    - Administration of Neo-Synephrine for epistaxis
    - Administration of TXA for epistaxis
    - Administration of ODT Zofran for nausea absent other factors consistent with cardiac or respiratory pathology.
    - Administration of *over-the-counter* (OTC) oral medications.
    - Chronic and routine use of patient prescribed medications self-administered by the patient.
- Patients who have recently received medications which from another healthcare provider (such as a transport from one ER to another) shall receive the same consideration for EKG monitoring as if the ACCESS provider had administered the medication.

Needle thoracostomy (chest decompression)

Blood glucose monitoring

Medication administration: Medications may be administered by numerous routes and methods as indicated by the SWO's or medical order. Patient safety and clinical judgement is paramount. To facilitate patient safety:

- Careful attention to the 5 Rights of Medication Administration should be adhered to prevent avoidable errors. These include: Right Patient, Right Medication, Right Dose, Right Route, and Right Time.
- Whenever possible, confirmation of proper medication administration should be verified with another ACCESS medical provider.
- ALS providers may decrease the dosage or prolong the administration intervals of any medication with sedative properties when doing so would decrease adverse effects and still likely obtain the clinical goal.

Monitoring and titration of medication infusions, including medications on pumps when appropriate and training allows.

Monitoring/maintenance of blood product infusions

Physical restraints as required for patient and provider safety. This does not imply that EMS providers assume law enforcement functions.

Optional Modules: Some providers, particularly EMTs, may have received additional optional module (AKA "O.M.") training to perform skills or interventions that may be outside of the normal scope of practice in the State of Idaho. **A provider should not perform any skill or intervention that he has not been credentialed/approved by the ACCESS medical directors or their designees**.

The currently approved optional modules are:

EMR

- Cervical Collar Application

EMT:

- 12-Lead EKG Acquisition
- ETCO2 monitoring/Capnography
- Co-oximetry
- IM administration injection (epinephrine)
- SQ Injection (Epinephrine)
- Suctioning-Tracheal Via Adv. Airway
- Pelvic Immobilization Device
- Taser Barb Removal
- Blood Glucose Monitoring
- Advanced Airway devices not intended to be inserted into the trachea (Supraglottic Airway)*
- Intraosseous—Adult*
- Intraosseous – Pediatric*
- Peripheral – Initiation (includes External Jugular)*
- IV Fluid infusion – non-medicated*
- Vaccinations

* These OMs have not been universally adopted across the ACCESS system and are agency specific.

AEMT (I-85)

- 12 lead acquisition
- Asa administration for chest pain
- Blood glucose monitoring
- CPAP
- Co-oximetry
- ETCO2
- IM/SQ administration of epi
- Lidocaine administration as adjunct for IO
- Pelvic immobilization devices
- Pulse oximetry
- Tracheal suctioning
- Taser barb removal
- Vascular access IO - adult

Protocol G-01

FOUNDATIONS OF PATIENT CARE

AEMT (2011)

- 12-Lead EKG Acquisition
- ETCO2 monitoring/Capnography
- Co-oximetry
- Pelvic Immobilization Device
- Taser Barb Removal
- ETCO2
- CPAP
- Lidocaine Administration - IO adjunct only
- Pelvic Immobilization Device
- Vaccinations

Paramedic

- Co-Oximetry
- Intubation-Medication Assisted (RSI, Paralytics)
- Pelvic Immobilization Device
- Taser Barb Removal
- Cricothyrotomy – Surgical
- IV Programmable Volume Infusion Device

Protocol
G-02

SECTION: G-02

TITLE: Medical Direction

REVISED: 01MAY2018

Medical Direction

These standing written orders are written physician orders giving field personnel the authority to implement procedures and administer designated medications.

A. These standing written orders are to be used only by field personnel operating under a medical control recognized by the Idaho State Board of Medicine *AND* who are authorized by the medical directors to provide care within the ACCESS system. The *minimum* standards for authorization are:

    a. All Providers (EMR, EMT, AEMT, and Paramedics):

        i. **Current state licensure:** All providers will maintain current state licensure at their level.

        ii. **Approval by the medical directors**

        iii. High Performance CPR: High Performance CPR training will be offered annually through ACCESS multi-agency training. All licensed providers shall attend at least one of the High Performance CPR courses in a two-year cycle.

        Failure to complete one High Performance CPR course in a two-year cycle will result in revocation of credentials as a medical provider in the ACCESS system.

    b. ALS Providers (Paramedics)

        i. **CPR:** ALS providers must have and maintain a current AHA CPR card as part of the ACLS requirement.

        ii. **ACLS:** Each licensed Paramedic in the ACCESS system shall maintain ACLS Certification. If the provider's certification expires, a full ACLS course will be required. There will be a 30-day grace period past expiration for the provider to take and pass the ACLS course.

        Failure to maintain certification will result in suspension of credentials at this level of a medical provider in the ACCESS system.

        iii. **PALS/PEPP:** Each licensed Paramedic in the ACCESS system shall maintain PALS/PEPP Certification. If the provider's certification expires, a full PALS/PEPP course will be required. There will be a 30-day grace period past expiration for the provider to take and pass the PALS/PEPP course.

        Failure to maintain certification will result in suspension of credentials at this level of a medical provider in the ACCESS system.

c. **Compliance:** The ACCESS Medical Directors set the minimum expectation of certifications and licenses to practice; Departments are responsible to ensure compliance.

B. These standing written orders may be implemented prior to the establishment of direct communication with medical control. Direct communication with medical control shall be established as soon as feasible in life-threatening situations.

C. Direct communication with medical control shall be established prior to the release of any patient in the following categories:
   - Patients who have received ALS care and/or medications in the field prior to release and do not fall under specific treat-and-release protocols, with the following exceptions:
     - Administration of Oxygen
     - Administration of Dextrose/glucose containing solutions (See hypoglycemia treat and release protocols)
     - Administration of over-the-counter (OTC) oral medications (with the exception of ASA for ACS).
     - Chronic and routine use of patient prescribed medications self-administered by the patient.
   - Where questions over disposition exist
   - As mandated for specific situations and protocols

D. The type of medical control shall be documented when ALS care is provided.

   a. Procedures and medications that are **bold and underlined** normally require a direct order from an acceptable medical control physician (see permissible exceptions below).

   b. An acceptable medical control physician includes either the Emergency Department physician at the receiving hospital or if communication with the receiving medical control physician is delayed (within two to three minutes), personnel may contact the Emergency Department physician at any one of the other acceptable hospitals.

   c. **EXCEPTION:** If attempts to establish communication with medical control fail, and a patient is at high risk for mortality or increased morbidity, *or* if the delay anticipated in establishing communication with medical control may result in mortality or increased morbidity, procedures and/or medications normally restricted to direct medical order may be performed or administered without the direct order of a medical control physician. Communications with medical control shall be established as soon as possible. The reasons for the decision to institute treatment shall be clearly documented both in the chart and on the SWO deviation form.

Protocol
G-03

SECTION: G-03

TITLE: Hospital Destination Protocol

REVISED: December 01, 2022

HOSPITAL DESTINATION

Patient destination shall be based on the following:

- **Acute Care Facilities:** Generally, emergency ambulance transport shall only be provided to acute care facilities (i.e., Emergency Departments) accredited by the Joint Commission (formerly JCAHO).
    - In rare instances (such as crisis standards of care), transport may be an approved alternate medical facility either by pre-established protocol or **WITH THE PERMISSION OF THE ON-DUTY SUPERVISOR, AND THE ON-LINE MEDICAL CONTROL PHYSICIAN.** Providers must confirm receipt of the patient with the receiving facility prior to initiating transport.
    - This does not include **prearranged non-emergency** transports at the order of a physician.
- **Alternative Destination Exceptions**
    - Community Paramedics have specific guidelines, criteria, and resources not covered in these guidelines (ex. PET Program), and therefore may select an alternative destination based on those situations in programs/protocols approved by their medical director.
    - Intimate Partner Violence, Sexual Assault and Strangulation:
        - Patients meeting specific criterial described in protocol T-06 (*Intimate Partner and Sexual Violence*) may be transported to the FACES of HOPE Victim Center *after appropriate screening and assessment.*
    - *Mass gathering, Pandemic, disaster, and other public health circumstances.*
        - *Alternative destinations/treat and release as approved by medical directors or other designated authority after appropriate screening and assessment.*
- **Informed Patient Preference:** shall take precedence over all other sections of the destination protocol. If the attending EMS provider makes contact with the patient's private physician, an expressed hospital preference should be honored in absence of a specific patient request.
- **Closest Appropriate Facility:** If no patient or physician preference is expressed, or the medical problem is not emergent and not specifically otherwise covered in these protocols; patients should be transported to the closest appropriate facility.

HOSPITAL DESTINATION

- **Facilities Outside Ada County:** Request for transportation to a facility outside of Ada County must be approved by the on-duty supervisor. St. Lukes-Nampa, St. Alphonsus -Garrity, Saint Alphonsus Medical Center - Nampa / 12th Avenue Hospital, and West Valley Medical Center will be the only out-of-county hospitals authorized for patient transport.
- **Trauma Patients:** ACCESS personnel shall utilize the trauma triage and priority guidelines in *Appendix 16 Trauma Priority Patients* to determine the most appropriate facility for trauma patients.

  PRIORITY 1:

  - **ADULT** Priority 1 trauma patients shall be transported to Saint Alphonsus Regional Medical Center.
  - **PEDIATRIC (patients ≤14)** Priority 1 trauma patients shall be transported to Saint Luke's Regional Medical Center (Saint Lukes Boise)

  PRIORITY 2:

  - **ADULT Priority 2** trauma patients shall be transported to Saint Alphonsus Regional Medical.
  - **PEDIATRIC (patients ≤14)** Priority 2 trauma patients shall be transported to Saint Luke's Regional Medical Center (Saint Lukes Boise)

  PRIORITY 3:

  - **ADULT and PEDIATRIC (patients ≤14) Priority 3** trauma patients do not mandate transfer to the trauma center; however, the clinical judgment of the medic is essential to ensure proper triage of patients to an appropriate receiving center.

  Minor Trauma/Non-Priority Patients

  - Adult and pediatric patients who suffer minor injuries or who do not fall under the trauma priority guidelines do not mandate transfer to the trauma center; however, the clinical judgment of the medic is essential to ensure proper triage of patients to an appropriate receiving center.

The receiving hospital shall be notified as soon as possible in these situations to ensure rapid notification of appropriate resources. The hospital destination may be modified as needed by medical control.

- **Suspected Acute Coronary Syndrome/STEMI:** (cardiac chest pain, etc.): A patient with chest discomfort relieved by NTG, without other symptoms, and without EKG changes shall follow the standard destination protocol. Patients with ACS/STEMI should be transported to receiving facility with ICU and 24-hour cardiac cath lab capabilities. These currently include:
    - St. Luke's Regional Medical Center-Boise
    - St. Luke's Meridian Medical Center
    - Saint Alphonsus Regional Medical Center-Boise
    - Saint Alphonsus - Garrity
- **Suspected Stroke/Brain Attack**:
    - Undifferentiated strokes with an onset of **less than 4 hours** from "last seen normal" should be transported to the *closest* receiving facility **except:**
        - VAMC
    - Undifferentiated strokes with an onset of **between 4 and 24 hours** from "last seen normal" should be transported to the *closest* receiving facility **except**.
        - VAMC
        - Saint Alphonsus Medical Center - Nampa / 12th Avenue Hospital.
        - Saint Alphonsus – Eagle Health Plaza
- **Pediatric Patients**: Pediatric patients (patients ≤14) who meet certain criteria should preferentially be taken to Saint Luke's Regional Medical Center (Saint Luke's Boise). These conditions include
    - **Any suspected Time Sensitive Emergency (TSE) as defined *Appendix 16: TSE and Code Critical Criteria (STEMI, STROKE, or Code Critical)***
    - **Pediatric trauma patients shall be transported as described previously in these guidelines.**
    - **Pediatric Drowning/Submersion:** Pediatric drowning/submersion is defined as any submersion or immersion incident with evidence of respiratory impairment (aspiration). Any submersion or immersion incident without evidence of respiratory impairment (aspiration) should be considered a water rescue and not drowning.
- **Carbon Monoxide Toxicity:** Carbon Monoxide exposures that involve trauma (i.e., Burns) should be transported in accordance trauma destination guidelines. Carbon Monoxide toxicity without trauma should be to the closest appropriate facility.

Protocol G-03

HOSPITAL DESTINATION

- **Inter-facility Transport:** Physician-ordered inter-facility transport shall be to the hospital directed by the transferring physician. In all cases, to comply with EMTALA/COBRA regulations, the physician or designee must write the order, and the receiving physician must be specifically documented. If, during transport, the patient deteriorates beyond the provider's ability to effectively manage, the provider may divert to the closest appropriate hospital.
- **Pregnant Patients:**
    - A pregnant woman who **has received prenatal care** and has an established physician may be transported to the hospital of choice
    - A pregnant woman who has a history of **high-risk pregnancies should be transported to facilities with NICU capability.**
        - The current NICU facilities in the ACCESS response area are SARMC, SLRMC, SLMMC, SLNMC (Nampa), and Saint Alphonsus - Garrity.
    - Complicated or imminent deliveries from home, medical facilities, or birthing centers will be transported to the closest *appropriate* facility
- **Mass Casualty Incident:** In the event of a Mass Casualty Incident (MCI), the Incident Commander or his designee shall dictate the patient hospital destination.
- **Patients on hospital grounds:** Occasionally patients may be found either on or immediately adjacent to hospital premises, particularly patients who have recently left the Emergency Department either AMA or prior to physician screening. Unless the patient meets certain criteria outlined previously (i.e., TSE or pediatric criteria), the patient should be returned to the emergency department of the facility they just departed.

This protocol shall not relieve Ada County City Emergency Services System (ACCESS) personnel of the responsibility to determine the patient's destination preference.

- If the patient or attending physician requests transport to a facility not consistent with the above guidelines, the request will be honored only after informing the patient, responsible person, or physician of the unavailability of certain services at that facility.

Continued next page

- If the patient demonstrates impairment of judgment related to injury, shock, drug effects, or emotional instability, the Paramedic will act in the patient's best interest and transport to the most appropriate facility.
- Where a question exists concerning the appropriate patient destination, Medical Control should be consulted.

ACCESS personnel has the option to transport patients with immediately life-threatening conditions to the closest appropriate facility based on clinical judgement.

Protocol
G-03

HOSPITAL DESTINATION

BLANK PAGE

Protocol
G-04

SECTION: G-04

TITLE: Special Resuscitation Situations

REVISED: December 01, 2022

Special Resuscitation Situations

A. **Withholding resuscitation**
In situations requiring CPR (e.g., cardiac arrest), resuscitative efforts may be withheld or ceased under the following circumstances:

- Obvious signs of death defined by:
  - Rigor mortis
  - Dependent lividity
  - Obvious and widespread decomposition

- *Acute Traumatic Cardiac Arrest*: Consider withholding resuscitation in traumatic cardiac arrest in any of the following conditions:
  - No signs of life within the preceding 15 min (downtime best estimate) *AND* asystolic.
  - Massive trauma incompatible with survival (e.g. decapitation, gross distortion of vital anatomy, loss of brain tissue).
- In all other situations, full resuscitation efforts shall be initiated **unless** there is:

  A DNR order meeting the following criteria:
  - Idaho Physician Order for Scope of Treatment (POST) form
  - The physical presence of a physician-signed DNR order in the setting of a hospital (e.g., Idaho Elks Rehabilitation Hospital, Treasure Valley Hospital), **or**
  - The physical presence of a physician signed, out-of-state DNR order, **or**
  - An DNR order is written prior to July 1, 2007, regardless of format

See Appendix 26: In-Field Death/POST/Comfort One/DNR Guidelines for further guidance.

If there is a question concerning the appropriateness of CPR initiation, begin CPR and contact Medical Control.

B. **Discontinuation of resuscitation**
In all cases where CPR efforts have been appropriately initiated, Paramedic consultation with the on-line Medical Control physician is **required** prior to discontinuation.

- In addition, BLS interventions, an advanced airway, and at least 20 minutes of rhythm-appropriate therapy should have been performed prior to considering termination of efforts
- If a patient's ETCO2 remains less than 11 mm Hg, despite 20 minutes of rhythm-appropriate therapy with an advanced airway placement, then efforts are likely futile. Conversely, higher ETCO2 may because to consider ongoing resuscitation efforts. Clinical judgement is essential in determining whether to continue resuscitation.
- If CPR has been initiated inappropriately as outlined above, personnel may discontinue CPR without on-line Medical Control.

Protocol
G-05

SECTION: G-05

TITLE: Air Medical Response

REVISED: November 1, 2017

Air Medical Response

Any licensed EMS provider or law enforcement agency within the Ada County EMS system may request an air ambulance. All air medical requests shall go through Ada County Dispatch Center. While a valuable tool in reducing morbidity and mortality in both medical and trauma patients, air medical transport is both expensive and also carries with it inherent safety risks that are often underestimated.

The use of air medical resources should be carefully considered and done on a case-by-case basis. Many situations that may call for an air ambulance in one case may be better handled by ground transport in another. This protocol is a supplement to, not a replacement for, good judgment.

Indications
Use of an air medical transport is based on many considerations including but not limited to:

Physiologic Criteria
- GCS <13 (does not follow commands)
- S/S of shock (e.g., rapid HR; altered mental status; cool, clammy, pale skin)—remember that hypotension is a late sign of shock
- Pediatric trauma (may not see s/s of shock until late)
- Geriatric trauma (may not see s/s of shock until late)
- Hypothermia
- Airway compromise, actual or potential
- Prolonged transport or delayed ALS response/transport that will have a reasonable likelihood of affecting patient mortality/morbidity
- Patients with signs of Acute Coronary Syndrome in which ground ALS response is significantly delayed
- Current or post-cardiac or respiratory arrest situations in which ground ALS response is significantly delayed

Anatomic Criteria
- Penetrating injuries to the head, neck, chest, abdomen, or thighs
- Two or more long bone fractures
- Limb paralysis
- Limb amputation proximal to the wrist or ankle in which bleeding cannot be controlled
- Trauma combined with burns of >20%, particularly those involving the face or airway
- Signs of a rupturing aortic aneurism

Mechanism of Injury
Mechanism of injury criteria should accompany physiologic and/or anatomic criteria.

- High-speed MVC
- Prolonged extrication
- Fatality within the same vehicle
- Ejection from vehicle
- Passenger compartment intrusion of >12 inches
- Fall greater than 2x patient's height

Other Criteria

- Areas where access by EMS vehicles or crews is difficult or impossible

"Stand-By" vs. "Launch" and Cancellation of Air Medical Response
At times, air medical response may have been activated by other agencies or responders. It may seem initially unnecessary based on initial dispatch information, location of call, or capabilities of the responding EMS units. While not prohibited, it is generally not prudent to cancel an air ambulance prior to arriving on scene.

- In most cases, an air ambulance should only be cancelled by EMS personnel who have completed an on-scene patient assessment
- All cancellations of air transport will be brought to the Medical Directorate by the provider for review of the decision

When the need for air medical transport is suspected but unclear, the air ambulance agency may be placed on "stand-by" (the exact meaning of "stand-by" is usually defined by the air ambulance agency and may or may not include aircraft lift-off). In such cases, the air ambulance should be updated as soon as possible if they are needed.

Landing Zones and Safety
In Ada County, landing zones are often handled by law enforcement or the fire service. In some cases, EMS field personnel may be required to establish their own landing zones. In an effort to standardize safe scene operations, Idaho's air ambulance agencies have developed the following basic landing zone (LZ) and safety guidelines.

Types of Landing Zones
Landing zones fall into three basic categories, listed here in order of safety preference.

- Established helipads. Usually located at airports or hospitals, heliports are generally constructed with consideration to size, slope, and surface, as well as approach and departure paths

- Pre-established (or designated) landing areas (PELA). These are essentially pre-arranged rendezvous locations. By pre-planning specific LZ sites with the air medical provider, the pilots are given the opportunity to survey the area ahead of time to identify potential hazards
- On-scene landing zones. Having the aircraft land at the scene typically offers the most expedient evacuation of the patient. Care must be taken to ensure a suitable and safe LZ

Landing Zone Officer
The most important component of safe scene operations is the LZ Officer. S/he is responsible for the safety of the responding aircraft(s), the LZ set up, and basic communication between flight and ground crews. The LZ Officer should be someone not directly involved in patient care. This position may have a different title in the National Incident Management System (NIMS).

Landing Zone Preparation
The following criteria are generally considered "ideal." If local conditions necessitate deviation, consult the pilot as soon as possible.

- Size – The preferred size of landing zone is 100 ft. x 100 ft. (60 ft. absolute minimum)
- Slope – The slope of the ground should be no more than 5 degrees (gentle slope)
- Surface – The ground must be a firm surface preferably, with no loose dirt or snow. If necessary and available, consider wetting down dirt surfaces. Loose snow can be compacted with snowmobiles
- Hazards/Obstructions – Poles, wires, fences, towers, trees, and unstable ground are all hazards to report to the pilot.
    - Hazardous Materials – The presence of hazardous materials MUST be relayed prior to their approach to the scene
    - Clear Area – The area is clear of loose debris, large rocks, posts, stumps, vehicles, people, animals, and other hazards. Caps and hats should be secured
    - Overhead – Free of overhead obstructions such as wires, antennas, and poles
- Marking/Lighting
    - The four corners of the landing zone should be marked. During the daytime, this can be done with traffic cones. At night, flashlights, "LZ lights" or low-beam headlights can be used. Flares, if used at all, must be used with extreme caution as they present a fire hazard and should be secured to the ground
    - Identified hazards should be illuminated if possible
    - NEVER direct any lights up at the aircraft or use high-beam headlights

Protocol
G-05

Air Medical Response

The pilot always has the final say regarding landing zones. He/she may request an alternate site.

Landing Zone Communications
The Landing Zone Officer is responsible for radio communications with the responding air ambulance. Responsibilities include:

- Assisting the pilot in locating the LZ with simple directions and easily identifiable landmarks. Avoid using directions such as right and left unless the aircraft is directly in sight
- Advising the pilot of LZ conditions, wind speed and direction, and hazards
- Primary communications between ground and aircraft should be on "State F2," 155.280 MHz. Other channels or methods may be used as the situation demands
- Hand signals and gestures are discouraged

Landing Zone Safety

- Ensure no one approaches the aircraft **until specifically directed by the pilot or crew**
- **Unless otherwise directed**, always approach from the front half of the aircraft (9 o'clock to 3 o'clock), in view of the pilot, and while maintaining eye contact. Approach from the downhill side if landed on a slope. When in doubt, wait for a member of the crew to escort you
- The tail rotor is an especially dangerous area because, due to its speed, the blades may be nearly impossible to see. **NEVER** go near the tail of the aircraft while it is running
- Rotor wash is the air forced down by the main blades, creating "winds" near 100 mph. All loose objects such as hats, sheets, and blankets must be secured
- Consider dirt and small rocks as potential airborne hazards and wear appropriate personal protective equipment
- If you drop something, do not chase it

Patient Care
Appropriate patient care should continue until the flight crew arrives **at the patient's side**. Patient care should not be delayed "because the air ambulance is coming." After the flight crew arrives, EMS personnel should assist as needed within their respective scope of practice.

Protocol
G-06

SECTION: G-06

PROTOCOL TITLE: Pre-hospital Integration of Care

REVISED: December 01, 2022

PRE-HOSPITAL INTEGRATION OF CARE

Purpose: This protocol is intended to provide a baseline understanding of the interactions that shall take place between ACCESS EMS response agencies. It is the intent and understanding that all agencies involved in the care of a patient strive to work as a team to provide quality patient care, seamless personal interactions, and maximize on-scene efficiency.

It is the responsibility of all ACCESS EMS & Fire responders to:

- insure proper and timely utilization of resources
- meet the goals of scene safety, quality patient care, and rapid movement to medical facilities
- provide all patients with a proper assessment, appropriate treatment and rapid transport experience
- provide any and all necessary care within their scope of practice
- work as part of a high-performance team to provide efficient and seamless patient care

Process:

- Patient care in Ada County requires integration with other medical providers to accomplish the ACCESS goals and mission of providing quality patient care and rapid transport to on-going medical care. The following guidelines will be observed when multiple agencies are on scene.

- The on-scene responder with the highest EMS licensure level is ultimately responsible for supervising and facilitating the care of the patient. Initial arriving personnel shall assume the initial patient care role and provide all necessary care within their scope of practice. Secondary arriving personnel should receive a briefing on patient status and care provided upon arrival (as time permits).

- Provider In-charge of Patient Care can be any ACCESS Provider. Initial provider may transfer care to a higher-level provider at any time or may retain patient care on-scene (if patient care, assessment and needs fall within their scope of practice). Providers with higher EMS licensure may supervise another providers' care as long as both parties are in agreement.

- Transfer of care should be face-to-face describing what they have learned to that point and any interventions done. Once this report is completed, the higher-level provider will assume patient care. All other on-scene providers will integrate into the patient care process by assisting in any way possible using a teamwork approach.

- Multiple Paramedic-level Providers exist within ACCESS staffed on transport and non-transport apparatus. Paramedics generally lead or supervise patient care based on patient need. To simplify on-scene and transport operations, a Primary Paramedic needs to be identified.

To determine the Primary Paramedic, the following will be observed:

- The first arriving Paramedic that has begun an assessment, and/or treatment shall assume the Primary Paramedic role.

- In the event of a simultaneous or near-simultaneous arrival of a Transport Paramedic and a Non-transport Paramedic, the Primary Paramedic role shall default to the Transport Paramedic. If mutually agreed upon, the Non-Transport Paramedic may assume the Primary Paramedic role. All on-scene providers shall assist using a teamwork approach.

- If the Non-Transport Paramedic will not be supervising the transport of the patient, a face-to-face transfer of care to the Transport Paramedic shall take place when feasible. (See SWO Appendix 25: Integration of care reporting guidelines, section III).

Integration of Care during the transport of a patient:

If the Transporting Paramedic needs additional EMS resources during transport, they may request assistance from the Non-Transport EMS Providers (BLS or ALS). This may occur when a patient's condition requires multiple procedures or in situations where the Transport Paramedic sees a need for the continued involvement of the Non-Transport EMS Personnel.

The Non-Transport Paramedic may remain Primary during transport if he/she believes their further involvement would benefit the patient, or the Non-transport Paramedic would like to continue involvement for the development and maintenance of their clinical skills. While the Non-Transport Paramedic may remain primary during transport, the Transport Paramedic shall remain engaged.

Any continued involvement of the Non-Transport Paramedic during transport (as lead or assistant) should take into consideration the positive or negative impact on patient care, current system status, and any other pertinent factors. Disagreements on continued involvement should be reported to the respective Supervisors for review (as appropriate) after the call.

Teamwork is a vital component to the successful treatment and transport of an ill or injured patient. Teamwork and professionalism are paramount in ACCESS and shall be maintained throughout the call.

Conflict Resolution:

If on-scene providers disagree on treatment options and are unable to resolve their differences, the following guidance is provided:

- *Life-threatening decision with discretionary time:* Medical Control shall be contacted, and any decision made by Medical Control will be honored.
- *Life-threatening decision with **NO** discretionary time:* If a delay to contact Medical Control is likely to increase the morbidity or mortality of the patient, the Primary Paramedic (see above) will make the decision but is required to maintain lead on-scene and during transport, perform the patient hand-off at the hospital and be responsible for all remaining patient care decisions.
- *Non-life-threatening decision with discretionary time:* the Primary Paramedic at the time shall make the final decision. If uncomfortable with the decision, the Transport Paramedic may require the Non-Transport Paramedic maintain the lead on-scene, be responsible for remaining patient care decisions throughout transport to the hospital and do the bedside hand-off to the Nurse or Physician. Medical control is also an option.

After completion of the call, the responders involved should meet to attempt to resolve any disagreement between crews. If needed, crews may involve Supervisors to aid in the resolution.

Any time a Non-Transport Paramedic assumes the lead during transport due to a disagreement with the Transport Paramedic, the issue shall be forwarded to their respective Supervisors (and Medical Directors, if appropriate) for review.

Refusals

In the event that a patient refuses care, the Provider In-Charge of Patient Care is responsible for the refusal documentation. Prior to clearing the scene, unit personnel shall

- clearly identify which provider is responsible for the refusal documentation
- confirm that **patient and/or witness signatures have been collected on that provider's tablet.**

All providers in ACCESS are qualified and authorized to complete and document a refusal as long as the chief complaint(s) and assessments conducted fall within their scope of practice.

See SWO *G-09: Patient Refusal and Documentation* for further refusal guidance.

Protocol G-06

PRE-HOSPITAL INTEGRATION OF CARE

Additional Key Points:

- *Every* Provider in the ACCESS EMS system has an obligation to provide high-quality patient care. Each provider has a duty to act and bring any concerns to the attention of the Provider in-Charge of Patient Care. Nothing in this protocol shall indicate poor patient care is acceptable in an attempt to minimize conflict between Providers.

- All ACCESS responders' number one priority is being a patient advocate and shall strive to work together in a team-like fashion to allow for maximum utilization of knowledge and resources. All providers are empowered to contribute to the patient care process and ensure all patient needs are being met.

- Professionalism and teamwork are the goals of the unified ACCESS approach to patient care. All providers are expected to act with professionalism and respect while operating on-scene and during transport.

- Accurate documentation of patient encounters is considered integral to these protocols and will be completed in a timely fashion (prior to end of shift). Demographic information gathered and treatments performed by the non-transport crew shall be documented in EHR ESO Mobile and a mobile-to-mobile transfer will be conducted (when time permits).

- The Primary Paramedic during transport will complete the transport EHR chart in ESO. If the Primary Paramedic is the QRU Paramedic, the QRU Unit will complete their chart as an Assist, Unit and the Non-Transport Paramedic will be added to the Personnel List on the transport chart as Lead Provider for chart completion. See SWO G-10 for guidance on chart completion.

Protocol
G-07

SECTION: G-07

TITLE: Medical Monitoring for Incident Rehabilitation

REVISED: November 1, 2018

Medical Monitoring for Incident Rehab

Any licensed EMS provider in Ada County may be dispatched to the scene of a fire-related incident (structure fire, wildland fire, training operation or other special operations) and be assigned the task of medical monitoring as part of the Rehabilitation Group under the Incident Command structure. This protocol is intended to meet the NFPA 1584 guideline as it pertains to medical monitoring.

Medical Evaluation and Assistance

1. Medical Monitoring Officer – Medical monitoring, when possible, should be conducted by ALS personnel (paramedic) or the highest medically trained personnel available on-scene. Personnel assigned to the rehabilitation group are NOT to be actively involved in Fire-Ground Operations (i.e. fire attack, RIT, etc.).

The Medical Monitoring Officer shall evaluate (as needed):

- **Heart Rate**
- **Respiratory Rate**
- **Blood Pressure**
- **Pulse Oximetry**
- **Carbon Monoxide Oximetry**

After the medical evaluation, the Medical Monitoring Officer will determine a proper disposition:

- **Cleared and released from rehabilitation**
- **Continued rehabilitation/medical monitoring**
- **Medical Assistance and transport to medical facility**
- **Removed from active duty due to a refusal of treatment and/ or need for transport for higher level medical treatment**

Continued rehabilitation should consist of additional monitoring of vital signs, providing rest, providing fluids and food (if available).

Protocol

G-07

Medical Monitoring for Incident Rehab

Personnel whose signs and/or symptoms indicate a medical problem or traumatic injury should be considered a patient and care should be provided in accordance with Ada County/City EMS System Protocols. All care should be recorded on a Patient Information Sheet (ESO) and notification to the Incident Commander shall take place.

- Transport by ambulance: follow normal documentation guidelines
- Transport by department vehicle: complete a Refusal on the Patient Information Sheet (ESO)

2. Medical Criteria - Below is a list of objective measurements that anyone entering medical monitoring via the rehabilitation group must meet before being released by the Medical Monitoring Officer:

- **Minimum 20 minutes rest**
- **RR < 20/min**
- **BP Systolic < 160 and > 100**
- **Diastolic < 100**
- **SpO2 ≥92%**
- **SpCO ≤5% (< 8% for smoker)**

All objective criteria must be met before being released from rehab. If the individual fails to meet one or more of the criteria listed above, he/she will remain under the care of the Medical Monitoring Officer until he/she meets the established criteria. In addition to this, the individual's subjective feelings must be taken into account. Any individual that does not feel fit to return to an assignment will be given additional time.

If at the end of 40 minutes in the medical monitoring unit the individual is still unable to meet all of the objective criteria, transport should be considered and the individual will be required to be evaluated by a physician and obtain a medical release prior to returning to full duty.

3. Documentation - All medical monitoring evaluations shall be recorded on the Ada County Fire Rehabilitation Monitoring Form. These forms will be submitted to the Incident Commander after the incident, which will then be reviewed and attached to the incident report.

4. Accountability

Personnel reporting to the Rehabilitation Group shall enter as a crew and present themselves to the Medical Monitoring Officer. Members shall exit as a crew when possible. If any member remains in Rehabilitation for further evaluation or medical treatment, the Rehabilitation Group Supervisor shall notify Command. The remaining members shall report to the Staging Area/Staging Officer.

The Rehabilitation Group Supervisor or his/her designee shall document:

- Crew designation
- Individual's name
- Vital signs (HR, RR, BP, SpO2, SpCO)
- Associated problems
- Times of entry to and exit from the Rehabilitation Area

Individuals shall not leave the Rehabilitation Area until authorized to do so by the Rehabilitation Group Supervisor.

Ada County Rehabilitation Policy Flow Chart

Entry into Rehab Unit

Triage

- **See Table 2 for transport criteria**
- **Primary assessment:**
  - **Non-life threatening injuries/illness**
  - **Significant heat or cold stress**
  - **HR > 140 or irregular**
  - **SPO2 < 90%**
  - **CO level >10%**

No

Yes

Table 1
Rehabilitation Entry Guidelines

- Second 30-minute SCBA cylinder
- Single 45 or 60 minute cylinder
- > 40 minutes heavy exertion without SCBA (consider shorter time in extreme weather conditions)

Rest and Recovery

- Recommend 20 minutes.
- Rehydration and nutrition: calorie and electrolyte replacement.
- Active/passive cooling or warming
- Exit vital signs

Medical Monitoring and Treatment

- Recommend minimum of 20 minutes
- Secondary assessment. Full vital signs:
  - Temp, BP, RR, SPO2 and CO.

  ***See Table 2 for transport Criteria**
- Treat any wounds or injuries.
- Oral hydration and calorie replacement.
- Active cooling or warming.
- Active monitoring (as indicated).
- Exit vital signs

Meets transport criteria?

Exit Vital Signs

- HR < 100
- RR < 20
- SBP < 160; > 100
- DBP < 100
- SPO2 ≥ 92%
- CO ≤ 5 % (non-smoker)
  or ≤ 8 % smoker

No
Go to Monitoring

Table 2 **Transport Criteria**

- Life Threatening or severe injury
- Chest pain or arrhythmia
- Abnormal vital signs:
  - CO level > 15%
  - SpO2 < 88%
  - BP > 180 or BDP > 110 after 20 min.
- Concerning symptoms: Severe HA, SOB, dizziness, intractable nausea/vomiting, or any neurologic changes.
- Any condition requiring active medical monitoring or active hydration (i.e. IV fluids).

Yes

Yes

Release to Fire Ground Operations

Transport to Closest Emergency Facility

References:

1. NFPA 1584. Standard on the Rehabilitation Process for Members during Emergency Operations and Training Exercises; 2008 Edition.
2. Rehabilitation and Medical Monitoring. A Guide for Best Practices. IAFC. Bryan E. Bledsoe, DO. 2009.

Protocol
G-08

SECTION: G-08

TITLE: Special Needs Population

REVISED: November 1, 2017

SPECIAL NEEDS POULATION

GENERAL COMMENTS:
In certain patient populations there may (in rare instances) arise the need to medications that fall beyond the standard practice guidelines of the paramedic scope of practice.

These are considered time sensitive interventions and may need to be provided to the patient to prevent significant morbidity or mortality.

To be considered, the patient must have an established diagnosis and care plan as directed by their primary (or specialist) physician.

Medications need to be prescribed to that patient specifically and cannot be interchanged with other patients or family members.

BLS Specific Care: *See Adult/Pediatric General Medical Care Protocol M1/PM1 (or other applicable protocol)*

AEMT/O.M. Specific Care: *See Adult/Pediatric General Medical Care Protocol M1/PM1 (or other applicable protocol)*

ALS Specific Care : *See Adult/Pediatric General Medical Care Protocol M1/PM1 (or other applicable protocol)*

- Identify the specific condition the patient is presenting with and confirm with patient, family members or primary prescribing physician if possible.
- Ask for documentation to support condition and use of specific therapies and bring all supporting documentation and medications with patient for transport.
- Ensure that presenting complaint is congruent with indicated therapy.
- If assisting with medication:
    - Identify that medication is specific to patient
    - Ensure dose and route of administration of medication by prescription or care plan
    - Check expiration dates on any and all medications and ask about special handling instructions and that medications have been properly stored and cared for
    - Discuss risks and alternatives (i.e. transport with medications to be given in receiving ER versus prehospital administration)
    - Document consent with witness
    - Administer medications per patient specific protocols exactly as prescribed
    - Monitor for any medication reaction or hypersensitivity response
    - Expedite transport to closest appropriate facility

Protocol G-08

SPECIAL NEEDS POULATION

PHYSICIAN PEARLS:
This protocol is designed for a very small subset of patient populations that may have time sensitive emergencies in which medications may avoid unnecessary complications.

Patients with such conditions have identified themselves with specific diagnoses and have written confirmations of care plans prior to arrival.

Special needs populations may also suffer from other common medical/traumatic emergencies and appropriate protocols should be followed. If the practitioner is going to provide these adjunctive therapies, the chief complaint should be confirmed to be reasonably coupled to the proposed therapy. (i.e. a hemophilia patient with an asthma exacerbation may not be in need of immediate factor VII/IX administration)

If information is lacking or there is question regarding the proposed therapy, contact the receiving hospital for medical control or the patient's personal physician if the contact is available for guidance.

If possible, the patient should be taken to the hospital where they receive their primary specialty care for continuity.

Protocol
G-09

SECTION: Protocol G-09

TITLE: Patient Refusal and Documentation

REVISED: December 01, 2022

PATIENT REFUSAL AND DOCUMENTATION

Purpose: This document provides direction for patient care refusal documentation for all agencies operating within the Ada County-City Emergency Services System (ACCESS).

Definitions:

- **Against Medical Advice (AMA)** – Any refusal for assessment, treatment or transport deemed necessary by any provider.
- **Assessment** – Physical, visual or verbal assessment of an illness or injury in order to create a treatment plan (e.g., palpation, auscultation, visualization, focused questioning about chief complaint).
- **Consent** – A Patients' authorization or agreement to undergo specific medical assessment, treatment or transport. This can be in the form of actual permission (*informed consent*) or in the form of an assumption that authorization would be given by an incapacitated patient or a minor's legal guardian (*implied consent*).
- **Emergency Health Record (EHR)** – ESO medical documentation that includes patient information, patient history, vital signs, care provided, final disposition, etc.
- **Informed Refusal** – A patient with good mental capacity must be informed of the risks of refusing medical treatment and/or transport using descriptive language that can be understood by the patient. All specific risks that were discussed should be documented thoroughly and a witness should be present.
- **Medical Provider In-Charge of Patient Care** – See *SWO G-06 for guidance on establishing Provider in-Charge.*
- **Refusal** – incidence where the patient no longer desires assessment, treatment or transport once an assessment (including visual/verbal assessment) has begun. Patients may accept parts of the offered services while refusing others (document denials). If the patient's accepts transport but refuses some individual interventions, a written refusal does not need to be completed. Specific refusals of interventions should be thoroughly documented in the narrative**.**

Protocol G-09

PATIENT REFUSAL AND DOCUMENTATION

- **Refusal Form** – Legal documentation of a patient who refused initial or on-going medical assessment, treatment, or transport. The patient should be informed of all assessment findings, transport recommendations and interventions recommended by the Medical Provider In-Charge of Patient Care. In addition to completion of this electronic refusal form, a refusing patient shall be offered a physical copy of the 'Notice of Privacy Practices' document.

Patient*:* *

A patient is an individual that:

- has contacted EMS and requested evaluation for a possible injury and/or illness
- has been assessed or examined by another System provider
- Law Enforcement personnel have requested be evaluated by EMS. *Consent to physical assessment or treatment must still be granted by the individual. In the event the individual is in custody, the Officer or Deputy may consent to or refuse evaluation, treatment, and/or transport in-behalf of the individual in custody*
- has requested transport. *Approved courtesy transports and hospital transports of non-injured relatives or friends are excluded from refusal documentation*
- is a minor (< 18 years old or emancipated minor) who is experiencing some type of illness or injury
    - The following person(s) may consent to or refuse the assessment, treatment, and/or transport of a minor:
        - Minor's Parent or Legal Guardian
        - Law Enforcement if in custody
- is ill/injured and mentally disabled or incapacitated where their mental status cannot be verified as normal by someone familiar with the individual
- is not fully conscious, alert, and oriented that presents with illness or injury needing EMS attention
- is a possible victim of intimate partner violence/domestic violence, sexual assault, strangulation or any other form of battery

***** *These criteria are to be considered in the widest, most inclusive sense. If there is any question or doubt, the individual should be treated as a patient in every respect (assessment, treatment, transport and documentation).*

Refusals

Once patient care has begun (assessment or treatment), a patient deemed capable can allow or refuse further care at any point. If a patient refuses care or continuation of care, an informed refusal process shall be conducted or at least attempted by the Medical Provider In-Charge of Patient Care and thoroughly documented.

Patient dispositions that require refusal documentation:

- **Patient Treated, Released (AMA)** – provider recommends further treatment and/or transport and patient refuses further care.
- **Patient Refused Evaluation/Care (without transport)** – patient refused to give consent to assess/treat or withdrew consent for further assessment/treatment/transport. This may be a consensual decision that further care is not warranted.
- **Patient Treated, Transported by Private Vehicle** – Patient was evaluated and or treatment was provided by your EMS unit however patient or guardian refused ambulance transport in lieu of providing their own transport.

Since refusal charts are the highest liability to provider and agency, a Refusal and/or Treat and Release EHR should be thoroughly documented and with an understanding that each appropriate portion of the chart must be completed with greater detail. Refusals can be written by any ACCESS provider as long as the assessment and care provided are within their scope of practice.

Elements of an informed refusal that should be included in EHR:

- Pertinent denials – what the patient denied or refused
- Offer of transport (witness present)
- Outline of the discussion about the patient's refusal (witness present)
    - Was the decision mutual or against medical advice (AMA)?
    - Was Medical Direction contacted?
        - Any Medical Control contact should be documented and include the name of the MD, facility contacted, and summary of the discussion
    - Was the patient offered other transportation/assistance options?
    - What were the circumstances of the refusal?
    - What were the risks of refusal that were discussed (witness present)?
    - Was the patient offered further assistance by calling 911 again?
    - Document mental status of the patient
    - Signature of the patient and witness (who was present during above discussions) on the refusal paperwork
    - Thoroughly documented explanation of any refusal to sign

Protocol G-09

PATIENT REFUSAL AND DOCUMENTATION

Refusal Procedure: *(see Refusal Form in EHR under signatures)*

Refusal documentation and signatures shall be obtained on the tablet of the Medical Provider In-Charge of Patient Care. This will be the provider who completes the refusal chart.

The patient assessment is the foundation for treatment and other considerations. However, not all individuals desire assessment, treatment or transport to a medical facility. An assessment can be done visually. Therefore, the assessment will always serve as the basis for determining medical capacity as it relates to that patient's ability to refuse care.

To provide appropriate care, providers shall attempt to determine:

- **Legal capacity** – patient is > 18yrs old and/or has the legal capacity to make their own decisions (emancipated, been pregnant, married, military)
- **Mental capacity** – patient is in a good mental state and has acceptable **decision-making** ability
- In order to determine good mental capacity, at a minimum, a patient must be alert and oriented to person, place, time and purpose; must not be a danger to themselves or others; understands risks presented; have no signs of mental incapacity, drug/alcohol intoxication, unsteady gait, slurred speech, etc.
- **Medical capacity** – patient must be free from any medical conditions that may impair their ability to make informed decisions for themselves.
- Rule-out: head injury, hypoxia, head trauma, metabolic issues (ie: diabetes), environmental issues (ie: heat/cold injury), or any other mind-altering emergencies or recent unexplained loss of consciousness.

All patients deemed alert and oriented and who have capacity for decision making, will receive a comprehensive assessment (including a complete set of vitals). In the event a comprehensive assessment is refused or is not possible, this will be explained in detail in the narrative.

- **Medical Direction** (called **Medical Command** in EHR) shall be contacted for any question arising outside normal SWOs and operational standards. If Medical Direction is contacted, details including physician contacted, orders received, and time of contact will be recorded in the Refusal Form in the EHR.

- Patients/Guardians shall be informed of assessment findings and provided with recommendations that include treatment and transport options (i.e. ACP, personal vehicle, etc.).

- Patients are to be advised of the risks and possible consequences of refusing care which could include the risk of death (if appropriate). In the case of a refusal on behalf of a minor, the parent or guardian must take responsibility for care of that patient. *Conversation details should be clearly articulated in written narrative section of Narrative tab on the EHR.*

- The Patient or Guardian must sign the refusal form. Refusal to sign must be detailed in the written narrative of the chart.

- The refusal shall be signed by a witness that was present during the discussion of treatment/transport options and witnessed the patient or guardian refuse further care. In order of preference, witness signatures may be obtained from:
    - a patient's family member or someone with the patient
    - law enforcement
    - crew member of another agency
    - crew member of same agency
    - provider cannot sign refusal as witness

- If a patient refuses to sign the refusal form, a witness signature should be obtained, if possible.

- The provider should advise the patient they may re-request assistance at any time. In the event a confirmed guardian is not on location (ie: at a school), a verbal/phone refusal may be considered if all parties are in agreement. Details must be thoroughly documented in the written narrative.

This SWO is intended to support not replace good judgment that will inevitably be required given the wide variety of situations that may be encountered.

Further Assistance:

Providers are encouraged to contact the EMS Battalion Chiefs or utilize on-line Medical Direction in the event questions arise.

Field providers are directed to always hold a potential patient's best interest in mind regardless of considerations for cost, insurance, childcare, or any other patient-perceived obstacle which would prevent that patient being evaluated at a definitive care facility.

Protocol
G-09

PATIENT REFUSAL AND DOCUMENTATION

BLANK PAGE

Protocol
G-10

SECTION: G-10

TITLE: EMS Incident Documentation

REVISED: December 01, 2022

EMS INCIDENT DOCUMENTATION

Purpose:
This document provides direction for medical documentation for the Ada County-City Emergency Medical Services System (ACCESS) agencies. It is intended to establish a uniform, system-wide standard for documenting patient encounters.

This document is to ensure that:

- all employees have direction concerning acceptable documentation
- all employees understand the components that must be included in every chart
- the provider's liability is greatly reduced by charting that is consistent, accurate and thorough.

Medical documentation is required any time response personnel contact potentially ill or injured individual(s):

- in response to a dispatched call
- when the individual(s) presents to a 911 agency outside the bounds of the 911 system (a walk-in/medical stand-by)
- is discovered by a 911 agency during non-emergency operations
- When responding to a request by law enforcement

To provide appropriate care, providers shall attempt to determine:

- **Legal capacity** – patient is > 18yrs old and/or has the legal capacity to make their own decisions (emancipated, been pregnant, married, military)
- **Mental capacity** – patient is in a good mental state and has acceptable decision-making ability
    - In order to determine good mental capacity, at a minimum, a patient must be alert and oriented to person, place, time and purpose; must not be a danger to themselves or others; understands risks presented; have no signs of mental incapacity, drug/alcohol intoxication, unsteady gait, slurred speech, etc.
- **Medical capacity** – patient must be free from any medical conditions that may impair their ability to make informed decisions for themselves.
    - Rule-out: head injury, hypoxia, head trauma, metabolic issues (ie: diabetes), environmental issues (ie: heat/cold injury), or any other mind-altering emergencies or recent unexplained loss of consciousness.

Patient Care Report (PCR)
All patient encounters require documentation by each unit that was part of the event, but each encounter has varying levels of expectation.

Protocol G-10

EMS INCIDENT DOCUMENTATION

PCRs provide:

- A record for continuity of care between pre-hospital providers and ED/hospital staff
- An accurate account of important call details to minimize personal and agency liability
- Quality Assurance (QA) & Quality Improvement (QI) compensation for services (billing)

ACCESS EMS data is used for:

- ACCESS deployment planning
- Meeting State and Federal reporting requirements
- National Fire Incident Reporting System (NFIRS)
- National Emergency Medical Services Information System (NEMSIS)
- Local planning by City & County Governments

The PCR and all associated paperwork should be the only representation of the call that is generated.

- All documentation must be kept confidential and stored, managed or viewed on department owned and secured devices.
- No documentation materials (e.g. written, electronic or photographic) may be stored or accessed on personal devices.
- No documentation materials are for personal use.
- No documentation materials, report information, pictures or other documentation may be posted on social media or other internet sites without pre-approval from Agency Directors or Chiefs and in accordance with local laws and statues.

Charting

A well written chart will allow the provider (author) to easily recall medical and non-medical details of the encounter. The minimum expectation for all encounters is to document information/procedures/assessments conducted by you or your unit. Flowchart items documented and timestamped on your unit's EHR for Mobile to Mobile (MTM) sharing should be deleted once MTM is performed and prior to the chart being locked.

ACCESS currently employs documentation software by ESO in both a web-based and a mobile version. The mobile version is available on a Mobile Data Terminal (MDT) tablet in the apparatus, and it allows crews to document information in any location, upload monitor data and share data with other agencies thru MTM. Charts may be completed on the MDT or on the web. Each chart must be uploaded (sync'd) with the web at the conclusion of the call. All charts are to be completed and locked prior to end of shift.

Generally, ACCESS utilizes a modified SOAP charting method for documentation. In ESO, this is accomplished as:

- ***Subjective*** is captured in the written narrative portion of the Narrative section or in the comments section of the individual Assessment sections
- ***Objective*** is captured in the Assessment and Vitals sections
- ***Assessment*** (field diagnosis) is captured in the Narrative and Assessments sections
- ***Plan*** is captured in the Flowchart and written narrative portion of the Narrative section

Narrative

The Narrative section has a free text field that should be reserved for information told to the provider or information not covered in sufficient detail elsewhere in the chart. It should include several basic elements that may enable a provider to produce an easily understood story with minimal effort.

Narrative elements may include:

- Reason for dispatch
- How the patient was found (environment, body position, etc.)
- Detailed 4 lead/12 lead description/interpretation
- Compliance with medications
- Recent trauma/illness
- Patient safety issues noted
- Hospital destination decision or reason for changing destination
- Patient's mental/personality changes during call
- Anything not documented elsewhere that is pertinent
- Why needed procedures or treatments were not initiated (resistance by the patient, situational conditions, scene factors, etc.)
- Treatments, outcomes or responses that are not detailed in the drop-down menus of EHR

Charting by Exception

By using ESO, providers may elect to employ a method called "*Charting by Exception*" (CBE). CBE is the practice of only documenting unusual or unexpected findings. This type of documentation assumes that all findings are normal unless an abnormal finding is observed.

In ACCESS, CBE will ONLY be used in the "Assessment" portion of EHR to document physical exam finding and NOT for responses to interventions. Strict adherence to use of a comprehensive physical exam, minimizing use of the "Not Assessed" selection in the "Assessment" portion of EHR, and generous use of the "Comments" fields found on the "Assessment" pages is recommended.

Protocol G-10

EMS INCIDENT DOCUMENTATION

In the Assessment section of ESO, the provider is offered four (4) choices:

- ***Not Assessed (default)*** - the body location was not observed, palpated, or examined in any way.
- ***No Abnormalities**** - the body location has been either observed, palpated, and/or directly examined, and no abnormal findings were noted
- ***Check boxes*** - a selection of any one of these precludes use of either "Not Assessed" or "No Abnormalities", and should be followed with a description in the text field of the body location
    - ✓ = yes
    - ✗ = no

- Use of the "Comments" field in combination with "Not Assessed" or "No Abnormalities" to explain assessments not explained adequately in the checkboxes. Accuracy and descriptive language will help color a descriptive picture for those reviewing the chart.

** The definition of "no abnormality" is patient dependent. You may note that your patient has bilateral, below-the-knee amputations. While in general this is not common, it is normal for this patient. This type of finding should be documented in the comments section or the written narrative and noted as 'normal' for that patient.*

Medical (EHR) Documentation Minimum Expectation (as appropriate based on disposition selected on Incident tab):

- **Incident tab** - all required unit incident information, personnel and appropriate disposition. Lead provider is defined as the provider who conducted and lead patient care.
- **Patient tab** - basic patient information to include name, birthdate, weight, contact address and medical history
- **Vitals tab** – minimum 1 set of vitals (non-transport), 2 sets of vitals (transport) as allowed by patient (minimum BP, Pulse, Resp, AVPU)
- **Flowchart tab** – all interventions performed by your unit personnel with applicable details and correct provider responsible for performing intervention
- **Assessment's tab** - at minimum document a visual assessment. Document other physical exams allowed by the patient
- **Forms tab** – any appropriate forms based on patient complaint, assessment, treatment
- **Narrative tab** – primary impression, detailed written subjective narrative
- **Signatures tab** - Lead Provider signature required

Lift Assist/Non-injury:

For a single-unit, non-injury lift assist, the "***Assist, Public"*** disposition should be used.

- Collect patient name and date of birth on these reports to track repetitive EMS calls/EMS abuse. In the written narrative document details of lift assist and absence of complaint or injury before and after the move. Vitals are not required.
    - Fire agencies: on NFIRS Incident Report, use Incident Type 554 (Assist Invalid) and Action Taken 71 (Assist Physically Disabled). Type "See EHR report" in the narrative section.
- If an assessment is necessary prior to or after the lift assist and the patient refuses any further assessment or treatment, use "***Patient Refused Evaluation/Care (Without Transport)***" disposition and a signed refusal is required. In the written narrative portion of the chart, record lift assist details and the reasons for the assessment before or after the move. At minimum, one set of vitals will be needed.
    - Fire agencies: on NFIRS Incident Report, use Incident Type 554 (Assist Invalid) and Action Taken 71 (Assist Physically Disabled). Type "See EHR report" in the narrative section.
- If transport is determined to be necessary, a transport unit shall be requested and documentation shall be completed using the "***Patient Treated, Transferred Care to Another EMS Professional/Unit" disposition***.
    - Fire agencies: NFIRS Incident Report as usual for EMS calls.

Call Cancelled:

- **Cancelled (No Patient Contact)** – cancelled *after* arrival on-scene by other unit(s) on-scene prior to contact with a patient
- **Cancelled (Prior to Arrival at Scene)** – unit or call was cancelled prior to arrival by Dispatch or another unit enroute or on-scene
- **Cancelled on Scene/No Patient Found** – after arrival, unable to identify any individual desiring assessment, treatment or transport

Treat and Release

Treat and release (refusal) calls are the highest liability for EMS. In the case of most treat and release charts, a documented refusal is required.

See SWO *G-09* for guidance on refusal documentation and *App 31 - Treat and Release Checklists*

PD Assist:

When PD requests assistance from Fire or EMS, 1 of 4 call-types are used:

- **PD-Assist PD Fire Only** – PD is requesting assistance with fire-related needs. Typically, not used for medical needs.
- **PDEMER** – Assist PD Emergent – Dual EMS and Fire response for an emergent need – typically for medical emergencies
- **PDNON** – Assist PD Non Emergent – Closest ACCESS Unit is dispatched – single resource. Commonly used for a medical evaluation.

- **PDNOTIFY** – Assist PD NOTIFY AIQ – PD with a possible need, units can stage in quarters for notifications and further requests.

Documentation for PD Assists is based on call actions. PDNON is used when PD is requesting a patient evaluation. ACCESS Providers DO NOT provide medical clearance. Medical clearance is done at the hospital or the jail. ACCESS Providers' job is to rule-out critical issues and provide any emergent care that might be needed.

To document a PD request for a patient evaluation:

- Get patient consent to do an assessment. Unless the patient is in custody, they have the ability to refuse an assessment or care. A visual/verbal assessment can be conducted and documented if patient is uncooperative.
- If cooperative, conduct a thorough patient assessment as usual to include a visual/physical/verbal assessment and full set of vitals.
- Focus on visible injuries, patient complaints and provider suspicions based on mechanism
- Provide care as needed
- Get patient demographics for documentation
- If determined to be a minor but *no care/transport is required*, EHR disposition is "***Assist, Agency"***.
    - Complete all documentation based on actions taken and document assessment findings appropriately (Assessments section and Written Narrative).
    - A signed refusal is recommended if possible. Complete the **PD Medical Evaluation Treat and Release Checklist** (See *App 31 - Treat and Release Checklists)*.
- If determined to be a minor *and care is required*, but transport is not needed or refused, disposition is "**Patient Refused Evaluation/Care (Without Transport)"**
    - A signed refusal is necessary/required.
    - Complete the **PD Medical Evaluation Treat and Release Checklist** (See *App 31 - Treat and Release Checklists)*.
- If transport is needed, request a transport unit respond. Disposition will be **"Patient Treated, Transferred Care to Another EMS Professional/Unit".**
    - DO NOT request a transport unit until determination for transport is made after evaluation.

Forms:
Forms are specialty documentation required for certain call-types.

- **Acute Coronary Syndrome (ACS)** – form is required when patient meets all criteria for acute coronary syndrome (see SWO C-03). Required when Primary or Secondary Impression is: Chest Pain/Discomfort.
- **Advanced Airway** – completed when intubation was attempted or successfully completed. Required when any Intubation or LMA is added to the Flowchart.

Continued next page

- **Burns** – form for patient with diverse burns more than a single localized injury
- **Cincinnati Stroke Scale** – completed when patient presents with stroke-like symptoms (see SWO M-04). Required when Primary or Secondary Impression is: Stroke.
- **CPR – Cardiopulmonary Resuscitation** – form completed when CPR is performed on patient during the process of the call. Required when the Primary or Secondary Impression is: Cardiac Arrest or Traumatic Circulatory Arrest.
- **Motor Vehicle Collision** – completed as part of documentation for an MVA.
- **Obstetrical** – completed when patient complaint is labor with or without delivery.
- **Spinal Immobilization Screening Tool** – completed when patient is evaluated for spinal immobilization and immobilized or cleared in the field. See SWO App 17 for further guidance.
- **CDC 2011 Trauma Criteria** – completed as part of a significant trauma injury call. Required when Trauma or Medical & Trauma is selected on Narrative page under Clinical Impression - Medical/Trauma.
- **VAN Stroke Assessment** - completed when patient presents with stoke-like symptoms (see SWO M-04) to assess for large-vein occlusion. Required when Primary or Secondary Impression is: Stroke.
- **Studies section forms** - specialty forms for studies/research being performed with anonymous ACCESS data. If required for reporting, specialized training will be offered prior to use.

Tips for Charting

This is a brief list of charting suggestions.

- Consider concise, potent sentences that are complete and provide for easy, smooth reading.
- Avoid excessive use of the word “patient” as in “patient said”, “patient did”, “patient this”, and “patient that”.
- Reread the narrative portion of the chart prior to locking chart to pick-up errors in spelling or grammar and ensure that the chart’s meaning is clear. Attempt to read the document as would a reviewer not on the scene.
- Accept feedback gracefully. Feedback (QA/QI) is useful and necessary in maintaining a high-performance level.
- Check ESO dashboard every day you work. Respond to QA messages quickly and correct report issues immediately. Complete/accurate charts are essential for correct billing, court-ordered record requests and patient personal record requests. Requests cannot be met until charts are reviewed and completed.
- Remember, questions about your care usually have nothing to do with the care itself, but the manner in which it was charted.
- IF IT ISN’T WRITTEN, IT DIDN’T HAPPEN

Protocol
G-10

EMS INCIDENT DOCUMENTATION

BLANK PAGE

Protocol
G-11

SECTION: G-11

TITLE: Emergent Inter-facility Transfers

Date: November 1, 2018

EMERGENT INTERFACILITY TRANSFERS

GENERAL COMMENTS:
The purpose of the protocol is to provide guidance for Emergent Inter-facility Transfers IFT). **For the purposes of this protocol, IFT applies only to high acuity areas of a hospital, such as a cath lab, Emergency Department, ICU, OR, or other critical care department.** These are typically patients who would be otherwise be transferred by specialty or contracted teams, such as HEMS, Critical Care Transport (CCT) or high risk Maternal/Neonatal teams.

It ***does not*** apply to nursing homes, skilled nursing facilities, outpatient clinics, rehab hospitals, Birthing Centers, Long Term Care facilities or similar healthcare settings.

This protocol also does not apply to situations where ACP/ACCESS is simply providing transport and assisting a specialty team (i.e. specialty team or flight team) in the transport of these patients where the specialty team retains patient care and responsibility.

Inclusion Criteria: The following patients are included under this protocol

- Patients who are at increased morbidity or mortality due to time sensitive and emergent conditions, who are being transferred to a higher level of care.
- Other forms of transportation are not appropriate, safe, or available in a timely fashion.

Exclusion Criteria: The following patients are excluded under this protocol

- Patients who are not at increased morbidity or mortality due to time sensitive emergency
- Stable patients being transferred to ICU (no immediate intervention planned)
- Patients who are being discharged home or to a lower level of care
- Patients who merely require a specialty form of transport, such as bariatric transport, but who otherwise are not high acuity patients.
- Patients who will remain in the care of a specialty team, and ACCESS/ACP is simply providing transportation.

Protocol

G-11

EMERGENT INTERFACILITY TRANSFERS

Procedure:

Transport Requirement: Patient's may be transported emergently from one facility to another if:

- The appropriate EMTALA paperwork is in hand
- The transporting and receiving physician is clearly identified
- The patient is deemed stable enough for transport.
    - If the patient is not stable enough for transport, they should be stabilized as much as possible prior to transport, recognizing that definitive care and complete stabilization may only be possible at the receiving facility.

Medical Control

- Current SWO's will apply to these patients unless otherwise specifically noted.
- If the transported requires medications or doses not covered under the SWOs, *or the IFT medication list*, these shall be documented in the form of a direct medical control order from the physician. The specific order and physician shall be documented both in the PCR narrative and flow chart.
- The attending paramedic shall confirm the best method to contact the transferring physician if needed for additional orders.
- If contact with the transferring physician is unsuccessful or not feasible, then normal medical control procedures apply. *See Protocol G-02: Medical Direction*

Staffing Requirements

- In general these patients should be transferred with at least two providers in attendance, at least one of which should be an ACCESS/ACP Paramedic. In rare cases *after* assessment of the patient and consideration of the clinical presentation, the transporting medic may elect to transport the patient without the assistance of an additional provider "in back".
    - The second provider may come from the facility or within the ACCESS/ACP system.

Equipment Requirements:

- The sending facility shall make equipment (Such as mechanical ventilators, CPAP, BiPAP, IV Pumps) available as required; the attending paramedic may transfer the patient to ACCESS/ACP equipment, or a combination of either.
  - The decision should be made in the best interest of the patient, not simply for convenience of the facility or the Paramedic.
  - The attending paramedic has an inherent responsibility to make sure they are comfortable with the equipment used.
  - *Even when familiar with the equipment*, the attending paramedic shall (at a minimum) briefly review the functions, current settings, and anticipated/contingency settings of any equipment used.

Contraindications/Special Considerations: These patients and situations are exceptionally complex and high risk and require special accommodations prior to transport.

- **Patient's with life sustaining equipment**: Patients requiring life sustaining equipment such as ECMO, trans venous pacers, balloon pump support, multiple specialty ventilators, or specialty gasses present special challenges. ***These patients will only be transferred with the appropriate additional staff to manage those specific devices (i.e. Perfusionist, Respiratory Therapist, etc.)***
- **Patient's with CPR in progress**: These patients will only be transferred with mechanical CPR device in place.
- **Inclement weather/unsafe driving conditions:** Although these patients are "emergent", the attending paramedic and the operator of the vehicle may decide to choose the best mode of transportation (i.e. lights and sirens) based on the conditions at hand.

The attending paramedic may defer transport, request additional guidance or assistance, or contact a supervisor at any time for clarification on this policy.
If the attending paramedic believes the transport is unsafe or outside their scope of practice the provider should contact the on-duty EMS Battalion Chief immediately for clarification.

PHYSICIAN PEARLS:
This protocol is designed for a very small subset of calls that carry a substantially elevated clinical and organizational risk. Providers should undertake these calls with a heightened state of clinical vigilance and attention to detail. The goal is to reduce complications, improve mortality and morbidity, while avoiding adverse events though a standardized approach to these calls.

EMERGENT INTERFACILITY TRANSFERS

Protocol G-11

Protocol
C-01

SECTION: C-01

TITLE: Adult Cardiac and Respiratory Arrest

REVISED: NOVEMBER 01, 2019

ADULT CARDIAC/RESPIRATORY ARREST

Attention to “the basics” during cardiac arrest is equally important (if not more important than) as ALS drug therapies.

BLS-Specific Care

- Perform high performance Cardiopulmonary Resuscitation (AKA “Pit Crew”, see appendix 30)
    - For an **unwitnessed arrest**: Perform approximately 2 minutes/200-220 compressions of good, sustained, and effective CPR prior to defibrillation or AED attachment
    - For a **witnessed arrest**, or after approximately 2 minutes/200-220 compressions of good, effective and sustained CPR: AED use per AHA guidelines and manufacturer recommendations
    - Emphasis on minimizing interruptions and maximizing the compression fraction of high quality compressions.
    - Apply LUCAS Chest Compression system (if/when available) as described in appendix 30.
- Careful use of BVM, airway adjuncts. Ventilations should occur over 1-2 seconds
- Reduce interruptions of compressions, particularly the “peri-shock pause” as much as possible.
- Avoid hyperventilation/hyperinflation
- Notify responding ALS unit ASAP

AEMT/O.M. Specific Care

- Supra-glottic Airway as appropriate
- Obtain peripheral vascular access
    - IV: 200-500 ml crystalloid solution. Repeat PRN

ALS-Specific Care

- Advanced airway management as appropriate
- Rhythm-specific therapy *(see appropriate protocols)*
- Epinephrine
    - IV/IO: 1 mg 1:10,000 IVP every 3-5 minutes,
- Consider underlying causes of cardiac arrest and treat accordingly.

Consider as appropriate:

Anti-arrhythmic therapy: (For maintenance infusions, see protocol C-09 – "Post-ROSC Care")

- Lidocaine (Xylocaine)
  - IV/IO: 1.0 to 1.5 mg/kg IV bolus, can repeat in 3-5 minutes not to exceed 3 mg/kg or 300 mg in 30 minutes (not including infusion)

- Amiodarone
  - IV/IO 300 mg initial dose.
  - Consider repeat x1 150 mg 3-5 min.

- Magnesium Sulfate
  - IV/IO: 2 g every 5 minutes,
  - 1st line for Torsades or refractory V-Fib/Pulseless V-Tach.
  - Administer in conjunction with lidocaine if hypomagnesemia suspected.
  - Consider for refractory VF/pulseless VT.

Sedation for CPR induced consciousness (Confirm continued pulseless-ness):

- Ketamine:
  - IV/IO 1-2 mg/kg for CPR induced consciousness. May repeat if needed in 5-10 minutes.

Other specific therapy:

- Sodium bicarbonate for known hyperkalemia, suspected acidosis, TCA toxicity, and prolonged resuscitation.
  - IV/IO: 1 mEq/kg repeated in 10 minutes (if still in arrest) at 0.5 mEq/kg. Minimum initial dose is 50 mEq.
  - Follow TCA recommendations if TCA overdose is suspected
  - Consider dilution of Bicarb if given IO

- Calcium chloride for suspected hyperkalemia, calcium channel blocker OD, or suspected hypocalcemia
  - IV/IO: 500-1000 mg IVP
  - Administer sodium bicarbonate at 1 mEq/kg afterward for suspected hyperkalemia. **Flush line thoroughly between medications**

- Narcan (naloxone) for suspected narcotic overdose *with cardiac arrest*
  - IV/IO: 2 mg repeated PRN

- Dextrose 50% for hypoglycemia
  - IV/IO: 12.5-50 g
  - (Consider dilution of Dextrose if given IO or through small veins)

Physician Pearls: Outside of the POST/Comfort One/DNR situations *(see Appendix 26),* once ALS intervention is initiated; Medical Control should be called prior to ceasing efforts. In addition, BLS interventions, an advanced airway, and at least 20 minutes of rhythm-appropriate therapy should have been performed prior to considering termination of efforts.

Use waveform ETCO2 as a gauge for effectiveness of resuscitation as well as monitoring CETT placement.

Protocol
C-02a

SECTION: C-2a

TITLE: Adult Cardiopulmonary Arrest – BLS and AEMT Algorithms

REVISED: NOVEMBER 01, 2019

ADULT CARDIOPULMONARY ARREST – BLS/AEMT

Box #1:

If adequate CPR is being performed upon arrival :

1. Confirm cardiopulmonary arrest.
2. Transition to high performance Cardiopulmonary Resuscitation (AKA "Pit Crew", see appendix 30) while applying AED pads
3. Move on to, **"Box 4."**

Box #2:

Sudden, witnessed arrest in the presence of EMS:

1. Perform high performance Cardiopulmonary Resuscitation (AKA "Pit Crew", see appendix 30) only long enough to apply AED pads.
2. Move on to, **"Box 4."**

Box #3:

If inadequate CPR, or no CPR at all, is being performed upon arrival:

1. Initiate/Perform high performance Cardiopulmonary Resuscitation (AKA "Pit Crew", see appendix 30)
2. During CPR:
   a. Apply AED pads
3. Move on to, **"Box 4," after** approximately 2 minutes/200-220 compressions CPR completed

Box #4:

1. **Place patient on firm surface with good workable space as soon as possible/feasible-**
2. **AED Analysis of Rhythm and check blood glucose**

Shock Advised:	**NO Shock Advised/No Pulse**	**NO Shock Advised/ has Pulse (ROSC)**
a) Clear patient. **a) Shock @ manufacturer's recommendation.** **b)** Immediately resume HP-CPR without pause for rhythm check. **c)** OPA/NPA and BVM as appropriate **d)** Advanced airway management as appropriate (AEMT) **e)** Vascular Access as appropriate (AEMT)	**a)** No shock indicated. **b)** Immediately resume HP-CPR. **c)** OPA/NPA and BVM as appropriate **d)** Advanced airway management as appropriate (AEMT) **e)** Vascular Access as appropriate(AEMT)	**a)** Provide hemodynamic support **b)** Evaluate for POST-arrest/TTM care **c)** Advanced airway management as appropriate (AEMT) **d)** Vascular Access as appropriate(AEMT) **e)** Update ALS **f)** Monitor closely for re-arrest

Protocol

C-02a

ADULT CARDIOPULMONARY ARREST – BLS/AEMT

Continue the high performance Cardiopulmonary Resuscitation (AKA “Pit Crew”, see appendix 30) sequence until:

1. Transfer to a higher level of care occurs.
2. Patient regains a pulse
    a. Initiate supportive care (i.e. oxygen via non-rebreather or BVM assisted breaths if necessary.)
3. Resuscitative efforts are terminated (See Appendix 26 “IN-FIELD DEATH/POST/DNR”)

Protocol
C-02b

SECTION: C-02b

TITLE: Adult Cardiopulmonary Arrest – ALS algorithms

REVISED: NOVEMBER 01, 2019

ADULT CARDIOPULMONARY ARREST – ALS

Box #1:

If adequate CPR is being performed upon arrival :

1. Confirm cardiopulmonary arrest.
2. Transition to high performance Cardiopulmonary Resuscitation
3. (AKA "Pit Crew", see appendix 30) while applying Defib pads
4. Move on to, **"Box #4."**

Box #2:

Sudden, witnessed arrest in the presence of EMS:

1. Perform high performance Cardiopulmonary Resuscitation
2. (AKA "Pit Crew", see appendix 30) only long enough to apply Defib pads.
3. Move on to, **"Box #4."**

Box #3:

If inadequate CPR, or no CPR at all, is being performed upon arrival:

1. Initiate/Perform high performance Cardiopulmonary Resuscitation
2. (AKA "Pit Crew", see appendix 30)
3. During CPR:
   a. Apply Defib pads
   b. Prepare/establish Airway Management and/or vascular access
   c. Medications/Interventions without interruption of high performance CPR
4. Move on to, **"Box #4," after** approximately 2 minutes/200-220 Compressions completed

Box #4:

Rhythm Check

1. **Place patient on firm surface with good workable space as soon as possible/feasible-**
2. ****Pre-charge Monitor to manufacturer's recommendation *prior* to pause**
3. **Assess blood glucose**

VF/Pulseless VT:

a) **Shock @ manufacturer's recommendation.**
b) Immediately resume HP-CPR without pause for rhythm check.
c) Advanced airway management as appropriate
d) Vascular Access as appropriate

Asystole/PEA:

a) No shock indicated.
b) Immediately resume HP-CPR.
c) Advanced airway management as appropriate
d) Vascular Access as appropriate

ROSC:

a) Provide hemodynamic support
b) Evaluate for POST-arrest/TTM protocol
c) Advanced airway management as appropriate
d) Vascular Access as appropriate
e) Monitor closely for re-arrest

Protocol
C-02b

ADULT CARDIOPULMONARY ARREST – ALS

Box #5:
Rhythm Check

1. ****Pre-charge Monitor to manufacturer's recommendation prior to pause**

VF/Pulseless VT:	Asystole/PEA:	ROSC:
a) **Shock @ manufacturer's recommendation.** **b)** Immediately resume HP-CPR without pause for rhythm check. **c)** Advanced airway management as appropriate *Medication Administration During CPR* **d)** Epinephrine **e)** Antiarrhythmic **f)** **Additional pharmacologic therapies as indicated**	**a)** No shock indicated. **b)** Immediately resume HP-CPR. **c)** Advanced airway management as appropriate *Medications Administration During CPR* **d)** Epinephrine **e)** **Additional pharmacologic therapies as indicated**	**a)** Provide hemodynamic support **b)** Evaluate for POST-arrest/TTM care **c)** Advanced airway management as appropriate **d)** Vascular Access as appropriate **e)** Monitor closely for re-arrest

Box #6:
Treat possible Causes

Search for & treat possible contribution factors:

a) **H**ypovolemia
b) **H**ypoxia
c) **H**ydrogen ion (acidosis)
d) **H**ypo-/hyperkalemia
e) **H**ypothermia
f) **T**oxins
g) **T**amponade, cardiac
h) **T**ension Pneumothorax
i) **T**hrombosis (coronary or pulmonary)

Return to Box #5

*** HP-CPR refers to "High Performance CPR" (AKA Pit Crew CPR) as described in *Appendix 30.***

Continue this sequence until:

a) Transport/transfer of care is complete.
b) Resuscitative efforts are terminated. (See Appendix 26 "IN-FIELD DEATH/POST/DNR"
c) A rhythm/condition change occurs.

If a rhythm/condition change occurs, treat according to its respective algorithm/protocol.

MEDICATION ADMINISTRATION DURING CPR:

Vasopressors (for all cardiac arrest rhythms unless contraindicated)

- Epinephrine
  - IV/IO: 1 mg 1:10,000 IVP every 3-5 minutes,
    or

Consider as appropriate:

Anti-arrhythmic therapy:

- Lidocaine (Xylocaine)
  - IV/IO: 1.0 to 1.5 mg/kg IV bolus, can repeat in 3-5 minutes **not to exceed 3 mg/kg or 300 mg in 30 minutes (not including infusion)**

- Amiodarone
  - IV/IO 300 mg initial dose.
  - Consider repeat x1 150 mg 3-5 min.

- Magnesium Sulfate
  - IV: 2 g every 5 minutes,
  - 1st line for Torsades or refractory V-Fib/Pulseless V-Tach.
  - Administer in conjunction with lidocaine if hypomagnesemia suspected.
  - Consider for refractory VF/pulseless VT.

Sedation for CPR induced consciousness (Confirm continued pulseless-ness):

- IV/IO Ketamine: 1-2 mg/kg for CPR induced consciousness. May repeat if needed in 5-10 minutes.

Other specific therapy:

- Sodium bicarbonate for known hyperkalemia, suspected acidosis, TCA toxicity, and prolonged resuscitation.
  - IV: 1 mEq/kg repeated in 10 minutes (if still in arrest) at 0.5 mEq/kg. Minimum initial dose is 50 mEq.
  - Follow TCA recommendations if TCA overdose is suspected
  - Consider dilution of Bicarb if given IO
- Calcium chloride for suspected hyperkalemia, calcium channel blocker OD, or suspected hypocalcemia
  - IV, IO: 500-1000 mg IVP
  - Administer sodium bicarbonate at 1 mEq/kg afterward for suspected hyperkalemia. **Flush line thoroughly between medications**
- Narcan (naloxone) for suspected narcotic overdose with cardiac arrest
  - IV,IO: 2 mg repeated PRN
- Dextrose 50% for hypoglycemia
  - IV/IO: 12.5-50 g

(Consider dilution of Dextrose if given IO or through small veins)

Physician Pearls: Outside of the Comfort One/DNR situations *(see Appendix 26),* once ALS intervention is initiated; Medical Control should be called prior to ceasing efforts.

Protocol

C-02b

ADULT CARDIOPULMONARY ARREST – ALS

In addition, BLS interventions, an advanced airway, and *at least* 20 minutes of rhythm-appropriate therapy should have been performed prior to considering termination of efforts.

Use waveform ETCO2 as a gauge for effectiveness of resuscitation as well as monitoring CETT placement.

Protocol
C-03

SECTION: C-03

PROTOCOL TITLE: GENERAL CARDIAC CARE/ACS

REVISED: May 01, 2022

GENERAL CARDIAC CARE/A.C.S.

GENERAL COMMENTS: The community standard of care for AMI is rapid catheterization. Key components to rapid catheterization are: rapid assessment of the patient, early 12-lead EKG acquisition, and swift transmission of all pertinent data to the appropriate hospital to facilitate decreased door-to-cath time. In the case of likely MI (manifested by 12-lead changes, unstable angina patterns, or failure to respond to treatment), care should be provided with this goal in mind.

BLS SPECIFIC CARE:

- Basic BLS care and assessment including oxygen administration and v/s every 5 minutes
- AED at patient side; pads may be placed if patient appears in extreme distress (do not turn AED on unless pulses are lost)
- Consider assisted ventilations with signs of severe respiratory distress
- ***Assistance*** *with administration of patient's prescribed sublingual nitroglycerin (NTG.):*
    - Determine how many doses the patient has already self-administered
    - If the patient has not already administered/received a total of 3 doses, EMT-B may assist patient with sublingual administration of up to a total of 3 doses, waiting 5 minutes between doses
    - **DO NOT** administer if:
        - Patient's systolic BP < 100 mm Hg
        - The patient's medication has expired
        - The patient has taken a total of 3 doses prior to EMS arrival
        - The patient presents with altered mental status
        - The patient has taken medications for erectile dysfunction in the preceding 24 hours

Pharmacologic Therapy:

- Aspirin
    - Four (4) x 81 mg chewable tabs (324 mg total)
    - Administer even if patient has received normal daily dose within the past 24 hours
    - **DO NOT** administer if:
        - Patient history of aspirin allergy
        - Recent history of GI or other internal bleeding/disorders
        - Under 18 years of age

Protocol C-03

GENERAL CARDIAC CARE/A.C.S.

AEMT/O.M. SPECIFIC CARE:

Obtain/Assist with 12 Leads (if feasible, indicated, and available):

- The following patients should have a 12 lead ECG obtained.
  - Any non-trauma patient with primary complaint of chest pain
  - Any patient with concern for cardiac etiology for their complaint (not limited to AMI)
  - Any patient with syncope
  - Patients with a primary complaint of shortness of breath **with any of the following factors:**
    - Diabetic
    - Over the age of 50
    - Altered mental status or dementia
    - History of heart disease
- 12-lead ECGs will only be transmitted for the following:
  - STEMI
  - On-line medical direction consult regarding the12-lead ECG

Vascular Access

- IV access (to a max of 3 attempts) or IO access if needed due to severity of underlying injury or illness, otherwise consider deferring until arrival of ALS providers
  - **IV:** crystalloid solution at a TKO rate, may administer 200-500 ml if S/S of dehydration are present, repeat PRN, max total dose 2 liters
  - Withhold fluids and maintain IV at TKO rate if patient is hemo-dynamically stable or signs and symptoms of fluid overload are present
- *Limit fluid administration unless symptomatic, hypotensive, and with clear lung sounds*
- In acute onset, an end goal of 2 x IV is desirable to facilitate cath lab/thrombolytic care.
  - Preference is to avoid the right wrist as an IV site.
  - *Preference* is to have at the minimum 1 single lumen IV established using a 20g or larger.

ALS SPECIFIC CARE:

Nitrates *(See physician PEARLS*):**

- NTG Spray: For discomfort suspicious ACS/Angina/STEMI
    - **SL:** 0.4 mg SL spray/tab, repeat every 3-5 minutes PRN
    - Hold for systolic BP < 100 mm Hg, or Viagra use (or similar drug) within previous 24 hours
    - Use with caution in suspected right-sided MI
- NTG Paste: Initiate if NTG is successful in reducing discomfort
    - **TD:** 0.5-1.5 inches applied topically (TD) to non-hairy area of trunk.
    - Hold for systolic BP < 100 mm Hg, or Viagra use (or similar drug) within previous 24 hours
    - Use with caution in suspected right-sided MI
    - Wipe off if hypotension develops

Analgesics and/or Sedatives:

- Discontinue or do not administer if:
    - Signs and symptoms of hypoperfusion are present or develop
    - Respiratory rate, SpO_2 and/or mental status diminishes
    - Contact OLMC to exceed maximum doses
    - The paramedic MAY reduce the dose of any analgesic/sedative to achieve needed results
- Morphine sulfate: For discomfort suspicious of cardiac origin. Use with caution in patients with unstable angina.
    - **IV/IM/IO:** 0.1 mg/kg initial dose, given slowly over 2 min, may repeat every 10 minutes PRN with 0.05 mg/kg, max single dose 10 mg, max total dose 20 mg
        - Hold for B/P <90
- Fentanyl: Use if morphine allergy
    - **IV/IO/IM/IN:** 1 mcg/kg given slowly over 2 min (with the exception of IN route), may repeat every 10 minutes PRN, max single dose 100 mcg, max total dose 200 mcg
- Dilaudid: Use if morphine allergy
    - **IV/IM:** 0.5 mg slow IV push over 2 minutes, may repeat every 10 minutes PRN, max total dose 2 mg

Antiemetics: *See Protocol M-08: Adult Vomiting/Severe Nausea/Vertigo*

Protocol C-03

GENERAL CARDIAC CARE/A.C.S.

PHYSICIAN PEARLS:

Transmission of the 12 lead to a STEMI center *will* precipitate activation of the STEMI program. If a 12 lead is to be transmitted for other purposes (such as medical control consult) , prompt notification to the receiving hospital should be made BEFORE transmission to prevent inappropriate activation.

Nitroglycerine is of uncertain mortality benefit and has risks of hypotension. Therefore, it should not be used in undifferentiated chest pain (chest pain that is not suspected of cardiac origin).

Nitroglycerin should be limited to:

- Patients with suspected ACS based on history and exam of symptoms suspicious of cardiac origin
- Patients with a history of coronary artery disease (CAD), angina, or previous heart attack, as indicated by medications or reported history
- Suspected ACS with EKG changes (ST Depression, T wave inversion)
- Patients with a history of angina, and current presentation is similar to previous angina discomfort

The primary concern with nitroglycerine use is iatrogenic hypotension relative to the myocardial demand, which may increase mortality and morbidity.

Even if pain is resolved with less than 3 SL NTG spray, consider following with transdermal NTG paste (as long as hemodynamic status is maintained). Use nitrates with caution in patients with a suspected right ventricular infarction.

Regarding 12 leads, remember that many patients will have atypical presentations, including: female patients, diabetics, the elderly, and those with a history of hyperdynamic drug use. Many recent studies also suggest that women and younger patients are under-triaged for cardiac events. The provider should keep a high index of suspicion for ACS/STEMI and assess (*i.e. apply a 12-lead*) accordingly.

12-lead ECG transmission is a crucial component of decreasing “E to B” (Emergency 911 to Balloon) time. All 12-lead ECGs shall be transmitted to the receiving hospital whenever there is a suspected STEMI or a physician consult on an ECG.

If the 12-lead is interpreted as an ST segment elevation MI, the receiving facility shall be informed of an incoming STEMI patient as soon as possible.

SECTION: C-04

PROTOCOL TITLE: S.T.E.M.I. Protocol

REVISED: May 01, 2022

Protocol C-04

S.T.E.M.I. PROTOCOL

GENERAL COMMENTS:

The 911 response to STEMI is to reduce time from the door at the Emergency Department (ED) and the Coronary Cath Lab. This protocol directly supplements the *Adult General Cardiac Care/ACS Protocol C-3*

BLS SPECIFIC CARE: *See Adult General Cardiac Care/ACS Protocol C-3*

Obtain or assist with acquisition of 12 lead ECG if feasible.

- Obtain the following information for data input to 12 lead monitor
  - Age
  - Birth gender
- Obtain patients PMH including but not limited to:
  - Meds/Allergies
  - POST/DNR/DNI status

AEMT/O.M. SPECIFIC CARE: *See Adult General Cardiac Care/ACS Protocol C-3*

ALS SPECIFIC CARE: *See Adult General Cardiac Care/ACS Protocol C-3*

- Refer to General Cardiac/ACS protocols C-3
- Confirm STEMI with 12-lead and transmit
  - Contact receiving hospital with “CODE STEMI” alert
  - Unit ID
  - Stable vs Unstable (hemodynamic)
  - Age
  - Gender
  - Name of Cardiologist (if available)
  - STEMI confirmed in leads:_____ (Confirm 12-lead transmissions)
  - Other information as appropriate
  - ETA
  - Stay on Hospital frequency
  - POST/DNR/DNI
- Apply defib pads prophylactically.

Protocol C-04

S.T.E.M.I. PROTOCOL

PHYSICIAN PEARLS:

Transmission of the 12 lead to a STEMI center *will* precipitate activation of the STEMI program. If a 12 lead is to be transmitted for other purposes (such as medical control consult) , prompt notification to the receiving hospital should be made BEFORE transmission to prevent inappropriate activation.

In the ACCESS system, rapid and accurate prehospital interpretation of the 12 lead ECG is the cornerstone of STEMI detection. To that end, the expectation is:

- Scene times will be kept to a minimum, ideally less than 10 minutes.
- Initial 12 lead should be done on scene within the above 10 minute parameter.
- Digital transmission with secondary verbal notification and confirmation is the default method of activating the STEMI system.
- Primary verbal notification is permissible when the ability to transmit is delayed, has failed, or is otherwise impractical. Verbal notification will include the same information as required for transmission of the EKG (Name, DOB, Cardiologist, etc.).
- **STEMI patients are inherently unstable.** Therefore, providers should apply defib pads prophylactically. In addition, the patients should remain on the EKG monitor as well to the ER bedside, and resuscitation equipment kept ready *and nearby* when the patient is being transferred from the cot to the ER or cath lab.

The ACCESS system uses the 2013 European Society of Cardiology /ACCF /AHA / World Heart Federation's *Task Force for the Universal Definition of Myocardial Infarction* criteria for STEMI*:*

Clinical presentation suggestive of ACS AND:

- New ST elevation at the J point in at least 2 contiguous leads of:
  - >2mm *in men* leads V2-V3 or
  - > 1.5 mm *in women* in leads V2-V3 and/or
  - > 1 mm in *other contiguous chest leads* or the limb leads
- New or presumed new Left Bundle Branch Block; or
- ST Depression in > 2 precordial leads V1-V4 may indicate transmural posterior injury/infarction
- **Right sided EKG:** ST elevation from the J Point of approximately 1/3 QRS height measured from the J point in V4R alone, or in two contiguous leads.

Citations:

O'Gara PT, Kushner FG, Ascheim DD, Casey DE Jr, Chung MK, de Lemos JA, Ettinger SM, Fang JC, Fesmire FM, Franklin BA, Granger CB, Krumholz HM, Linderbaum JA, Morrow DA, Newby LK, Ornato JP, Ou N, Radford MJ, Tamis-Holland JE, Tommaso CL, Tracy CM, Woo YJ, Zhao DX. *2013 ACCF/AHA guideline for the management of ST-elevation myocardial infarction: a report of the American College of Cardiology Foundation/American Heart Association Task Force on Practice Guidelines*. J Am Coll Cardiol 2013;61:xxx–xxx, doi:10.1016/j.jacc.2012.11.019.

Protocol
C-05

SECTION: C-05

TITLE: Adult Wide-Complex Tachycardia

REVISED: NOVEMBER 01, 2019

ADULT WIDE-COMPLEX TACHYCARDIA

This protocol includes ventricular tachycardia with a pulse, Torsades with a pulse, and wide-complex tachycardias of unclear origin. When possible, a 12-lead may be helpful in determining rhythm origin.

BLS-Specific Care *See Adult General Cardiac Care and ACS Protocol C-3*

AEMT/O.M. SPECIFIC CARE: *See Adult General Cardiac Care/ACS Protocol C-3*

ALS-Specific Care *See Adult General Cardiac Care and ACS Protocol C-3*

Cardioversion for hemodynamically UNSTABLE patients

- Settings for manual synchronized cardioversion :

Rhythm	ZOLL	Physio Control LP12/15	Philips MRx
Atrial Flutter	75j, 120j,150j,200j	100j, 200j, 300j, 360j	100j, 150j, 200j,
Atrial Fibrillation	75j, 120j,150j,200j	100j, 200j, 300j, 360j	100j, 150j, 200j,
V-Tach w/ pulse	75j, 120j,150j,200j	100j, 200j, 300j, 360j	100j, 150j, 200j
SVT	75j, 120j,150j,200j	100j, 200j, 300j, 360j	100j, 150j, 200j

    - Ensure "**SYNC**" button is pressed between each desired synchronized shock
- If synchronization is not obtained, proceed with unsynchronized cardioversion at the same settings
- Sedation/Analgesia prior to cardioversion is highly desirable, but not mandatory. If IV access cannot be obtained for prompt sedation, then cardioversion may be performed without sedation
    - *See Sedation for Painful Procedures M-15 for medications and doses*
    - Use Midazolam (Versed) for sedation in cardioversion.

Antiarrhythmics:

- Amiodarone
    - LOADING DOSE - IV/IO:150 mg IV infusion over 10 minutes.
        - May repeat **once** as needed. (max dose loading dose of 300 mg).
        - Convert to maintenance infusion once complete.
    - MAINTENANCE INFUSION: IV/IO: 1 mg/min
        - To Mix: 450 mg/250 cc, infuse via infusion pump.

Protocol
C-05

ADULT WIDE-COMPLEX TACHYCARDIA

- Lidocaine
  - 1.0-1.5 mg/kg slow IV bolus followed by additional doses of 0.5-0.75 mg/kg every 5minutes **not to exceed 3 mg/kg or 300 mg in 30 minutes (not including infusion).**
  - If ectopy resolves, can set up a maintenance Infusion.
    - (Be sure to rebolus @ 0.5-0.75 mg/kg in first 8-10 minutes of infusion to maintain therapeutic levels of lidocaine)
  - **Maintenance Infusion**: 2-4 mg/minute titrated for effect (Start @ 2 mg/min & add 1 mg/min for each additional 1 mg/kg IV bolus)
    - 1 mg/kg bolus = 2 mg/min.
    - 1.5-2 mg/kg total bolus = 3 mg/min.
    - 2.5-3 mg/kg total bolus = 4 mg/min.

Adenosine (Adenocard): Consider Adenosine for **suspected SVT with aberrancy**. Use Lidocaine or Amiodorone instead of Adenosine in cases of **known VT**

- IV: 6 mg **rapid IVP**
- Repeat at 12 mg in 3-5 minutes two times PRN (total 30 mg)
- Follow each dose with a flush of at least 20-60 ml

- For hemodynamically <u>STABLE</u> patients presenting with wide complex tachycardia, antidysrhythmic therapy is indicated.

- Magnesium sulfate IV/IO:
  - First line agent in treatment of hemodynamically stable polymorphic wide complex tachycardia (torsades de pointes.)
  - Also indicated in treatment of refractory VF/VT, wide complex tachycardia in the presence of suspected hypomagnesmia and life threatening ventricular dysrhythmias due to suspected digitalis toxicity
    - IV/IO: 2 g every 5 minutes, 1st line for Torsades or refractory V-Fib/Pulseless V-Tach.
    - Do not give faster than 1 g/minute
    - **Repeat PRN every 5 minutes to a max of 8 grams**

Consider sedation prior to cardioversion if it will not cause unnecessary delays.

- **DO NOT** administer sedation if:
  - Systolic BP < 90 mmHg
  - Low respiratory rate, SpO2 and/or diminished mental status

Protocol
C-06

SECTION: C-06

PROTOCOL TITLE: Adult Narrow Complex Tachycardia

REVISED: November 1, 2017

Adult Narrow Complex Tachycardia

GENERAL COMMENTS: This protocol includes Supraventricular Tachycardia (SVT), Atrial Tachycardia, Atrial Fibrillation with a rapid ventricular response, and Atrial Flutter with a rapid ventricular response. When possible, a 12 lead may be helpful in determining origin of the rhythm.

BLS SPECIFIC CARE: *See Adult General Cardiac Care/ACS Protocol C-3*

AEMT/O.M. Specific Care: *See Adult General Cardiac Care/ACS Protocol C-3*

ALS SPECIFIC CARE: *See Adult General Cardiac Care/ACS Protocol C-3*

Vagal Maneuvers

- Valsalva Maneuver/Modified Valsalva Maneuver.
- Carotid Sinus Massage (CSM) or Carotid Sinus Pressure (CSP)

Cardioversion for Unstable patients

- Settings for manual synchronized cardioversion :

Rhythm	ZOLL	Physio Control LP12/15	Philips MRx
Atrial Flutter	75j, 120j,150j,200j	100j, 200j, 300j, 360j	100j, 150j, 200j,
Atrial Fibrillation	75j, 120j,150j,200j	100j, 200j, 300j, 360j	100j, 150j, 200j,
V-Tach w/ pulse	75j, 120j,150j,200j	100j, 200j, 300j, 360j	100j, 150j, 200j
SVT	75j, 120j,150j,200j	100j, 200j, 300j, 360j	100j, 150j, 200j

- Insure "**SYNC**" button is pressed between each desired synchronized shock
- If synchronization is not obtained, proceed with unsynchronized cardioversion at the same settings
- Sedation/Analgesia prior to cardioversion is highly desirable, but not mandatory. In event IV access cannot be obtained for prompt sedation, then cardioversion may be performed.
    - See the Sedation for Painful Procedures protocol M-15 for medications and doses.
    - Use Midazolam (Versed) for sedation with cardioversion.

Protocol

C-06

Adult Narrow Complex Tachycardia

Antiarrhythmic:

- Adenosine (Adenocard) Use Lidocaine or Amiodarone instead if KNOWN VT. **DO NOT** administer to irregular tachycardia's
    - IV: 6 mg RAPID IVP
    - Repeat at 12 mg in 3-5 minutes two times PRN (total 30 mg)
    - Follow each dose with a flush of at least 20-60 ml

- Diltiazem (Cardizem):
    - IV: 10 mg slow over 2 minutes. Repeat every 10-15 minutes PRN rate control. **MAX 40 mg.**
    - Hold for WPW
    - ACCESS uses a smaller dose to avoid hypotension and other adverse effects. Higher doses may be used on medical control order

For hemodynamically <u>STABLE</u> patients presenting with symptomatic narrow complex tachycardias, vagal maneuvers and antidysrhythmic therapy are indicated.

Protocol
C-07

SECTION: C-07

TITLE: Adult Bradycardia

REVISED: May 01, 2022

ADULT BRADYCARDIA

General Comments: The 2020 AHA ECC guidelines define adult bradycardia as a heart rate < 50 bpm in adults other than well trained *asymptomatic* athletes. Providers should differentiate between asymptomatic and symptomatic, and stable vs. unstable.

BLS-SPECIFIC CARE: *See Adult General Cardiac Care/ACS Protocol C-3*

AEMT/O.M. Specific Care: *See Adult General Cardiac Care/ACS Protocol C-3*

ALS-SPECIFIC CARE: *See Adult General Cardiac Care/ACS Protocol C-3*

For hemodynamically **STABLE** patients presenting with *asymptomatic* bradycardias, supportive care and observation is recommended.

For hemodynamically **STABLE** patients presenting with *symptomatic* bradycardias, pharmacologic therapy is indicated.

Atropine sulfate:
- Hold (not indicated) for complete and high degree heart blocks
- IV/IO: 1.0 mg as needed every 3-5 minutes
- Maximum total dose 3 mg

For hemo-dynamically **UNSTABLE** patients presenting with *symptomatic* bradycardia:

Cardiac Pacing: Perform immediate transcutaneous pacing (TCP)
- Start at 80 ppm and 30 mA, titrate to mechanical capture
- *Consider* administering Atropine 1.0 mg IV/IO while preparing TCP (nothing should delay TCP in an unstable patient)
- *Consider* sedation/analgesia with transcutaneous pacing if it will not cause unnecessary delays and patients hemodynamic status allows.

Sedation: Consider sedation
- **DO NOT** administer if:
  - Systolic BP < 90 mmHg
  - Low respiratory rate, SpO_2 and/or diminished mental status

- Midazolam (Versed) IV/IM/IO:
  - IV/IO/IM: 0.5-2.5 mg slow IV push every 5-10 minutes (max dose 5 mg)
  - IN: 2.5 mg every 10 minutes (max dose of 5 mg)

Analgesia: Consider Analgesia
- **DO NOT** administer/discontinue administration if:

    - Systolic BP < 90 mmHg
    - Respiratory rate, SpO_2 and/or mental status diminishes
  - Fentanyl IV/IO/IM/IN
    - 1 mcg/kg initial dose (max initial dose 100 mcg)
    - Give slowly over 2 minutes (with the exception of IN route)
    - May repeat every 10 minutes as needed (max total dose of 200 mcg)

- Morphine sulfate IV/IM/IO
    - 0.1 mg/kg as initial dose (max initial dose 10 mg)
    - Give slowly over 2 min
    - May repeat every 10 minutes as needed with 0.05 mg/kg (max dose of 20 mg)

- *Dilaudid IV/IM:*
    - *Adult Only: 0.5 mg slow IV push over 2-3 minutes. Repeat every 10 minutes PRN max of 2 mg.*

Vasopressors: For bradycardia or hypotension unresponsive to other therapies, chronotropic drug infusions are recommended *as an adjunct to pacing*. Titrated to maintain adequate HR, MAP>65 or SBP >100. A provider must choose the most appropriate vasopressor for the situation.

- *Epinephrine Infusion***:**
    - IV/IO: 0.05-1 mcg/kg/min, titrate for effect
    - **To Mix**: 1 mg epinephrine in 250 cc NS bag
    - An IV pump is required

- *Dopamine Infusion:*
    - IV/IO: 2-20 mcg/kg/min, titrate for effect
    - Start at 5 mcg/kg/min
    - **To Mix:** 400mg in 250cc for a 1600mcg/ml
    - An IV pump is required

SECTION: C-08

TITLE: Congestive Heart Failure/Pulmonary Edema

REVISED: November 1, 2017

Protocol C-08

Congestive Heart Failure/Pulmonary

GENERAL COMMENTS: This protocol is intended for CHF/Pulmonary edema in the normotensive or hypertensive patient. For CHF with Hypotension, see Protocol M-3, "Adult Hypotension and Shock"

BLS SPECIFIC CARE: *See Adult General Cardiac Care/ACS Protocol C-3*

- Titrate oxygenation and ventilation to 94-98% SPO2
- Follow up vitals every 5 minutes or sooner.
- Obtain 12 lead (if feasible/Available) . STEMI patients should be transported to appropriate PCI capable facilities.
- Consider assisted Positive Pressure Ventilation with a BVM for severe distress until CPAP is available.

AEMT/O.M. SPECIFIC CARE: *See Adult General Cardiac Care/ACS Protocol C-3*

Respiratory Support (if appropriate and available)

- *Consider Assisted/Intermittent Positive Pressure Ventilation*
- *CPAP: See also Appendix 6*
  - *Medical Control Required if BP less than 90 systolic.*
  - *Initial setting at 5 cmH2O, MAX: 10 cmH2O*

ALS SPECIFIC CARE: *See Adult General Cardiac Care/ACS Protocol C-3*

CPAP: See also Appendix 6

- *Medical Control Required if BP less than 90 systolic.*
- *Initial setting at 5 cmH2O, MAX: 10 cmH2O*
- *Coaching will be required to reduce anxiety*
- *If coaching is unsuccessful, then consider low dose sedation. See the Sedation for Painful Procedures protocol M-15 for medication and doses.*

Nitrates ***(** See physician PEARLS)***:

- **NTG Spray**: For patients in respiratory distress, signs of severe pulmonary edema,
  - SL: 0.4 mg SL spray/tab every 3-5 minutes PRN
  - Hold for B/P <100, or Viagra use (or similar drug) within previous 24 hours.
  - Use with caution in suspected right-sided MI
- **HIGH DOSE NTG SPRAY:** For patients in extreme respiratory distress, signs of severe pulmonary edema, with associated HTN (SYSTOLIC B/P > 200 mm HG).
  - SL: 0.8 mg SL (0.4 mg spray/tab x2) every 5 minutes PRN
  - Hold for Viagra use (or similar drug) within previous 24 hours.
  - Return to normal dosing when B/P drops below 200 mm Hg.

- **NTG Paste**: Initiate if NTG is successful in reducing discomfort
    - TD: 0.5-1.5 inches applied topically (TD) to non-hairy area of trunk.
    - Hold for B/P <100, or Viagra use (or similar drug) within previous 24 hours. Use with caution in suspected right-sided MI
    - Wipe off if hypotension develops

PHYSICIAN PEARLS:

The primary concern with nitroglycerine use is iatrogenic hypotension relative to the myocardial demand, which may increase mortality and morbidity. If precipitous drop is noted, use subsequent doses judiciously.

SECTION: C-09

TITLE: POST-ARREST CARE

REVISED: November 1, 2019

Protocol C-09

GENERAL COMMENTS: This protocol is intended for patients in the post-arrest period of care. Post ROSC care focuses on hemodynamic support, STEMI detection, prevention of hyperthermia, airway control, and prevention of re-arrest.

BLS SPECIFIC CARE: *See Adult General Cardiac Care/ACS Protocol C-3*

- Titrate oxygenation and ventilation to 94-98% SPO2
- Follow up vitals every 5 minutes or sooner.
- Obtain post-ROSC 12 lead. STEMI patients should be transported to appropriate PCI capable facilities.
- Leave LUCAS in place on standby

AEMT/O.M. SPECIFIC CARE: *See Adult General Cardiac Care/ACS Protocol C-3*

ALS SPECIFIC CARE: *See Adult General Cardiac Care/ACS Protocol C-3*

General Care

General sedation and Airway Management: Secure the airway using means best determined by good clinical decision making.

- See "*Appendix 6: Medication Assisted Intubation" as appropriate.*
- *Consider intubation as needed*

Screen for STEMI:

- Acquire 12 lead. (The acquisition of a 12-lead EKG should not significantly delay treatment or transport)
- If STEMI suspected, consider transport to facility with "24-hour cardiac cath lab capabilities". (See *Hospital Destination protocol G-3*)

Sedation and Paralytics:

- Midazolam (Versed) – may be used to prevent shivering
  - IV/IO/IM: 0.5-2.5 mg slow IV push every 5-10 minutes (max dose 5 mg)
  - IN: 2.5 mg every 10 minutes (max dose of 5 mg)

- Vecuronium (Norcuron): Use only when patient shivering is witnessed (to prevent heat production**)**
  - **ADMINISTER ONLY AFTER ENDOTRACHEAL TUBE** type airway is **SECURED** and placement confirmed with **SPO_2** and **CONTINUOUS $ETCO_2$**
  - IV/IO: 0.1mg/kg, repeated PRN

- Rocuronium Bromide (Zemuron): Paralytic agent used *alternatively* to Vecuronium. Use only when patient shivering is witnessed (to prevent heat production**)**
  - **ADMINISTER ONLY AFTER ENDOTRACHEAL TUBE** type airway is **SECURED** and placement confirmed with **SPO_2** and **CONTINUOUS $ETCO_2$**
  - IV/IO 1mg/kg repeated PRN

Anti-arrhythmic therapy:

- Lidocaine (Xylocaine): To be initiated if V-fib/V-Tach resolves after administration of lidocaine.
    - **Maintenance Infusion**: 2-4 mg/minute titrated for effect (Start @ 2 mg/min & add 1 mg/min for each additional 1 mg/kg IV bolus)
        - 1 mg/kg bolus = 2 mg/min.
        - 1.5-2 mg/kg total bolus = 3 mg/min.
        - 2.5-3 mg/kg total bolus = 4 mg/min.
    - Always give full initial dose, but reduce all subsequent doses by ½ for elderly (>70) or with impaired hepatic function.

- Amiodarone: To be initiated if V-fib/V-Tach resolves after administration of Amiodarone
    - **Loading dose:** A loading dose of 150 mg/10 minutes may also be considered if max 300 mg bolus has not been administered.
    - **Maintenance Infusion**: Consider 1 mg/minute titrated for effect.

Hypotension: *See Adult Hypotension and Shock Protocol M-03*
Target Systolic Blood Pressure : >/= 100 mm/Hg

Vasopressors: titrate to a blood pressure of 100 mm/Hg systolic.

- Dopamine infusion
    - IV/IO: 2-20 mcg/kg/min
    - Start at 5 mcg/kg/min

- Epinephrine infusion
    - IV/IO: 0.05-1 mcg/kg/min

- Norepinephrine Infusion
    - IV/IO: 0.01- 2 mcg/kg/min
    - Start at 0.1 mcg/kg/min.

PHYSICIAN PEARLS:

Ensure early notification to receiving facility for expeditious coordination of care.

If Vecuronium/Rocuronium is administered, ensure versed is provided for patient sedation.

Cooling/TTM has been removed from the post-ROSC care. Continued research has shown that prehospital cooling largely ineffective and problematic without invasive controls. Instead providers will focus on prevention of hyperthermia.

Protocol
M-01

SECTION: M-01

PROTOCOL TITLE: GENERAL MEDICAL CARE

REVISED: December 01, 2022

GENERAL MEDICAL CARE

GENERAL COMMENTS: This is a general protocol for non-specific medical complaints, including SOB of non-specific etiology. When possible, this protocol should supplement other, more specific, protocols based on clinical assessments and judgment.

BLS SPECIFIC CARE:

- Basic BLS care and assessments and V/S every 15 minutes, unless unstable, then reassess and V/S every 5 minutes
- Oxygen administration titrated for SpO2 < 95% or for patients with cardiac, respiratory, neurologic, or as needed
- Assess blood glucose level as appropriate
- Position patient as appropriate and maintain airway patency
- Maintain body temperature to a goal of normothermia
- Keep patient in safe and calm environment

In addition to standard medical history, in case of ingestion/overdose obtain:

- Name of ingested substance
- Quantity ingested
- Time of ingestion
- Has vomiting occurred

AEMT/O.M. Specific Care

Obtain/Assist with 12 Leads (if feasible, indicated, and available):

- The following patients should have a 12 lead ECG obtained.
    - Any non-trauma patient with primary complaint of chest pain
    - Any patient with concern for cardiac etiology for their complaint (not limited to AMI)
    - Any patient with syncope
    - Patients with a primary complaint of shortness of breath **with any of the following factors:**
        - Diabetic
        - Over the age of 50
        - Altered mental status or dementia
        - History of heart disease
- 12-lead ECGs will only be transmitted for the following:
    - STEMI
    - On-line medical direction consult regarding the12-lead ECG

Vascular Access

- IV access (to a max of 3 attempts) or IO access if needed due to severity of underlying injury or illness, otherwise consider deferring until arrival of ALS providers
    - IV: Crystalloid solution at a TKO rate. May administer 200-500 ml if S/S of dehydration are present, repeat as needed to a maximum of 2 liters
    - Withhold fluids and maintain IV at TKO rate if patient is hemo-dynamically stable or signs and symptoms of fluid overload are present

Respiratory Support (if appropriate and available)

- *Consider* Assisted/Intermittent Positive Pressure Ventilation
- *Consider* Placement of SGA
- CPAP: See also *Appendix 6*
    - **Medical Control Required if BP less than 90 systolic.**
    - Initial setting at 5 cmH2O, **MAX: 10 cmH2O**

ALS SPECIFIC CARE:

Airway Management: Secure the airway using means best determined by good clinical decision making.

- See "Appendix *2: Advanced Airway Support Supplement " for* guidelines for current and anticipated clinical needs

Cardiac Monitoring: Apply cardiac monitor as necessary

- 12-lead ECG's will only be transmitted for the following:
    - STEMI
    - On-line medical direction consults, regarding 12-lead ECG

Non-Traumatic Blood Loss: For Severe Blood Loss w/in 3 hours of onset:

- **Tranexamic Acid (TXA):**
    - IV/IO: 2 gram cc /250 cc over 10 minutes. Does not need pump.

Protocol
M-02

SECTION: M-02

PROTOCOL TITLE: Adult Reactive Airway Emergencies

REVISED: November 1, 2017

GENERAL COMMENTS: It is imperative that the provider attempt to differentiate between a true reactive airway disorder and other respiratory emergencies such as CHF and treat appropriately.

BLS SPECIFIC CARE: *See adult General Medical Care Protocol M-1*

Bronchodilators

- Nebulizer
    - Albuterol 2.5 mg / Atrovent 0.5 mg nebulized
        - May use DuoNeb™ preparation for initial nebulizer
    - Repeat as needed with Albuterol 2.5 mg
    - Do not dilute
- *As an alternative*: May assist the patient with their prescribed "rescue inhaler." Use a spacer if the patient is prescribed one and has it available
    - Assisted Inhaler: 2 puffs or a specific number of puffs as prescribed
    - Repeat every 5-10 minutes to a maximum of 6 puffs or as prescribed
    - Hold for HR >150/min
- *As an alternative*, *As an alternative*, the patient (or his family) may be allowed to use their own nebulized medication
    - Hook up oxygen in lieu of a room air "condenser" and run at 6-8 LPM with the patients Hand Held Nebulizer (HHN). The patient (or family) must prepare it themselves
    - The patient must prepare it themselves

AEMT/O.M. Specific Care: ***See adult General Medical Care Protocol M-1***

Respiratory Support (if appropriate and available)

- *Consider* Assisted/Intermittent Positive Pressure Ventilation
- CPAP: See also *Appendix 6*
    - **Medical Control Required if BP less than 90 systolic.**
    - Initial setting at 5 cmH2O, **MAX: 10 cmH2O**

ADULT REACTIVE AIRWAY

Protocol

M-02

ADULT REACTIVE AIRWAY

ALS SPECIFIC CARE: *See adult General Medical Care Protocol M-1*

Bronchodilators

- Magnesium Sulfate for refractory patients *in extremis*.
    - Magnesium Sulfate: IV/IO (for severe episodes)
        - IV/IO: 2 g over 5 minutes, repeat as needed.
        - Do not give faster than 1 g/minute.
        - To Mix: 2 g /250 ml using a 15 gtt set. Run at equivalent of 3000 ml/hour. Titrate for effect. **Max 4 grams**.
- Epinephrine: IM: 1:1,000 (for severe episodes)
    - 0.3-0.5 mg IM for severe refractory bronchospasm
    - Use Epinephrine with caution on patients over 65 or with cardiac history

Steroidal Therapy

- Solu-medrol (methylprednisolone): IV/IO *** (for severe episodes.)
    - IV/IO/IM: 125 mg
    - Hold for fever, new onset productive cough, suspicion of CHF etiology

PHYSICIAN PEARLS:

- It is important to note, “not all asthma wheezes” and “not all that wheezes is asthma.” The history and physical is key.
- Magnesium Sulfate (IV/IO) and Epinephrine (IM/SQ) should be used only on severe patients who are refractory to initial treatments

Regarding CPAP:

- If CPAP is not otherwise available, and the patient has a C-PAP or a Bi-PAP device, and if the ambulance is equipped with an inverter or other means to power device is available, use of the patient’s own C-PAP /Bi-PAP is a viable option in addition to other therapies
- Advise receiving hospital as soon as possible so they can prepare for the patient’s arrival
- Do not remove CPAP until hospital therapy is ready to be placed on the patient
- Success is highly dependent upon patient tolerance and the provider’s ability to coach the patient. Instruct patient to inhale through nose and exhale through mouth as long as possible
- Most patients will improve in 5-10 minutes. If there is no improvement within this time, assess for other causes and problems. Re-evaluate for intubation
- CPAP may be the treatment of choice for a patient in respiratory failure with a DNR order

Protocol
M-03

SECTION: M-03

PROTOCOL TITLE: Adult Hypotension and Shock

REVISED: May 01, 2022

ADULT HYPOTENSION /SHOCK

GENERAL COMMENTS: *Hypotension is defined as a symptomatic blood pressure less than 90 mm/Hg.* This protocol includes shock and hypotension from a myriad of causes. Follow a more specific protocol if appropriate (i.e., dehydration or allergic reaction). Fluid administration should be performed with caution in CHF patents.

BLS SPECIFIC CARE: *See Adult General Medical Care Protocol M-01*

AEMT/OM CARE: *See Adult General Medical Care Protocol M-01*

ALS SPECIFIC CARE: *See Adult General Medical Care Protocol M-01*

- Assess and treat underlying cause of shock, if known
- Administer fluid bolus
  - IV/IO :500 - 1000 ml
  - Repeat as necessary for persistent hypotension to a maximum of 2 liters
  - *Caution!* Avoid repeat fluid boluses in cases of suspected cardiogenic shock with rales present

Vasopressors: Titrated to maintain adequate HR, MAP>65 or SBP >100. A provider must choose the most appropriate vasopressor for the situation.

- **"Push Dose" Epinephrine:** Epinephrine 1:100,000 as a bridge to vasopressor infusions in Persistent/Refractory Hypotension.
  - **To Mix:** 1 ml (0.1 mg) of 1:10,000 Epinephrine ("Cardiac Arrest Epi") in a 9 ml NaCL Flush for a 10 mcg/cc concentration. **LABEL SYRINGE.**
  - **IV/IO:** Initial dose of 20 mcg (2 ml) followed by 5 mcg (0.5 ml) repeated 2-3 minute as needed for hypotension until infusion is established.

- Epinephrine
  - **IV/IO Infusion:** 0.1-1 mcg/kg/min
  - First line agent for treatment of persistent hypotension during anaphylactic shock

- Nor Epinephrine
  - **IV/IO Infusion:** IV/IO: 0.01- 2 mcg/kg/min
  - Start at 0.1 mcg/kg/min

- Dopamine
  - **IV/IO Infusion:** 2-20 mcg/kg/min
  - Start at 5 mcg/kg/min

Physician PEARLS

- Push dose epinephrine is a temporizing measure and a bridge to more definitive interventions (i.e. infusions). It is not a replacement for an infusion.
- The use of Push dose epinephrine does not mandate that the provider continue with an epinephrine infusion. The provider may chose the vasopressor infusion (i.e. Nor-Epinephrine or Dopamine) most appropriate for the patients pathological condition.

Protocol
M-04

SECTION: M-04

PROTOCOL TITLE: Adult CVA

REVISED: November 1, 2018

General Comments: Acute stroke care is rapidly evolving. Current research and guidelines suggest that while select patients may benefit from intervention out to 24 hours, the sooner the patient receives appropriate care, the better the outcomes. Therefore Stroke Care is focused around early recognition and transport to an appropriate facility (*See Protocol G-02: Hospital Destination*). All level of providers are essential in this process.

BLS SPECIFIC CARE: *See adult General Medical Care Protocol M-1*

- Assess patient's ability to swallow and cough, maintain airway through suction
- Assess blood glucose
- Determine time of onset of symptoms or time "last seen normal"
- Minimize on-scene time. Perform only essential procedures on-scene and defer others until transport has been initiated
- Perform appropriate Stroke Assessments (*Appendix 13*).
    - Document as appropriate.
    - Relay possible acute stroke findings to the transporting EMS unit.
- Facilitate rapid notification of "Brain Attack"/"Code Stroke" and transport to an appropriate medical facility

AEMT/O.M. SPECIFIC CARE: *See adult General Medical Care Protocol M-1*

- In acute onset (**less than 24 hours**), an end goal of 2 IV lines is desirable to facilitate CATH-lab/thrombolytic care.
    - *Preference* is to have at the minimum 1 single lumen IV established using a 20g or larger *in the right AC*.
- Correct hypoglycemia if necessary

ALS SPECIFIC CARE: *See adult General Medical Care Protocol M-1*

- Be prepared to treat seizures (*See Protocol M-05 Adult Seizure Activity*)
- Treat Nausea and/or vomiting as needed (*See Protocol M-08 Adult Vomiting/Severe Nausea/Vertigo*)

ADULT CVA

Protocol

M-04

ADULT CVA

Physician Pearls

Uncorrected hypoglycemia can present as a stroke. Treat Hypoglycemia judiciously, while avoiding hyperglycemia if possible.

Lowering BP in the face of a hemorrhagic CVA can be catastrophic.

There are few pre-hospital *interventions* which affect the outcome of stroke, but prehospital *assessment and detection* of stroke (followed by appropriate transport) can be lifesaving.

The most important thing we can do is expeditiously transport the patient to the closest appropriate facility (see Destination Protocol)

The second most important is to determine the time of onset of the patient's stroke symptoms. Interview the family, staff, and bystanders to determine when the patient was last known to be normal (for the patient). This is the single most important piece of information for ER providers. If an acute stroke is suspected the receiving facility shall be informed of an incoming CODE STROKE/BRAIN ATTACK patient as soon as possible.

Consider atypical presentation of stroke, such as vertigo/ataxia with a cerebellar stroke.

Protocol
M-05

SECTION: M-05

PROTOCOL TITLE: Adult Seizure Activity

REVISED: 01May2018

ADULT SEIZURE ACTIVITY

BLS SPECIFIC CARE: *See Adult General Medical Care Protocol M-01*

- Administer oxygen (high flow in the presence of neurological deficits or altered mental status)
- Place patient in recovery position; prevent accidental harm
- Anticipate brief combativeness or agitation during the post ictal phase
- Screen for probable causes
- Ensure the environment is safe for the patient
- If patient is female, determine if she is pregnant or has recently delivered
- Assess blood glucose

AEMT/ O.M. SPECIFIC CARE: *See Adult General Medical Care Protocol M-01*

ALS SPECIFIC CARE: *See Adult General Medical Care Protocol M-01*

Anticonvulsant Therapies (for the actively seizing patient):

- Diazepam (Valium)
  - **IV/IO:** 2-10 mg, repeat every 5-10 minutes PRN, max total dose 20 mg
  - **PR/IM:** 5-10 mg, repeat every 5-10 minutes PRN, max total dose 20 mg
- Midazolam (Versed)
  - **IV:** 0.5-2.5 mg, repeat PRN, max total dose 5 mg
  - **IN:** 5 mg (2.5 mg each nare), max total dose 5 mg
  - **IM:** 5 mg (If no vascular access)
- Lorazepam (Ativan)
  - **IV/IO:** 1-2 mg, may repeat at 10 min, max total dose 4 mg
  - **IM:** 1-2 mg (If no vascular access)

Additional Therapies:

- Dextrose (if hypoglycemia is present)
  - **IV/IO:** 25 g administered slowly through the distal port of a free flowing IV line
- Glucagon (If hypoglycemia present and unable to obtain IV access)
  - **IM:** 1 mg (U)

Protocol

M-05

ADULT SEIZURE ACTIVITY

PHYSICIAN PEARLS:
IM Versed is absorbed quicker than IM Valium. Consider using Versed when there is no vascular access.

Complete a detailed neurological assessment as patient condition allows.

<u>If unable to control seizures after max dose of any single benzodiazepine, call medical control to continue with another benzodiazepine.</u>

Protocol
M-06

SECTION: M-06

PROTOCOL TITLE: ADULT HYPOGLYCEMIA

REVISED: June 01, 2019

ADULT HYPOGLYCEMIA

GENERAL COMMENTS: Symptomatic hypoglycemia is defined as BG < 60 mg/dl with an altered LOC.

BLS SPECIFIC CARE: *See adult General Medical Care Protocol M-1*

If hypoglycemia is confirmed by glucometry: (BG < 60 mg/dl **with** symptoms):

- If the patient can hold a cup or plate without assistance, and can swallow on command, encourage the patient to consume simple and complex carbohydrates or oral glucose. Attempt to document volume of food/liquid ingested. If grams of sugar are known, document this as well
- Oral Glucose dosing and follow-up:
    - If simple and complex carbohydrates are not readily available or not feasible
    - Only if patient retains an intact, self-maintained airway, and can swallow on command
    - 15-45 g of glucose paste administered orally. The EMT may mix this in a liquid to make it more palatable for the patient
    - One (1) tube (24 g) PO self-administered by patient
    - Repeat if BG remains < 60 mg/dl with symptoms after 5 minutes
    - Re-assess BG every 5 minutes until BG >/= 80 with a normal mental status
- Treat and released only after ALS (Paramedic) evaluation
    - Complete Diabetic Treat and Release checklist. Contact Medical Control if indicated.
    - ALS provider shall co-sign chart of a lower level provider primarily caring for patient.
    - Complete necessary ESO charting/attachments

AEMT/O.M. Specific Care : ***See adult General Medical Care Protocol M-1***

- Dextrose (D50% or D10%)
    - 12.5- 25 g administered slowly through the distal port of a free flowing IV line. Rebolus PRN to maintain normoglycemia.
- Glucagon IM: (If unable to obtain IV access)
    - IM: 1 mg administered if IV access is not available
    - Vomiting may occur following administration

Protocol
M-06

ADULT HYPOGLYCEMIA

ALS SPECIFIC CARE: *See adult General Medical Care Protocol M-1*

PHYSICIAN PEARLS:

All treat and release procedures for hypoglycemic patients shall be overseen and co-signed by the lead responding ALS provider.

While the care of a hypoglycemic patient may be undertaken by any EMS provider with the appropriate skills and scope of practice for the situation, it is the desire of the medical directors that an ACCESS ALS provider (a paramedic) oversee the refusal process to ensure than any underlying concerns or pathologies (i.e. stoke, infection, self-care) are addressed and considered. Therefore all treat and release procedures for these patients(including hypoglycemia treat and release checklists) shall be co-signed by the lead responding ALS provider as appropriate.

It is important to rule out other causes for altered mental status. This particularly includes, but is not limited to:

- Stroke
- Overdose/Medication error
- Closed head injury from falls or other causes.
- Sepsis

An inadequate amount of glucose for heat production, combined with profound diaphoresis, many hypoglycemic patients are at risk for hypothermia. Keep patient warm.

Patients who are consuming beta-blockers, or oral diabetic medications, that experience hypoglycemia are at a greater risk for relapse. These patients should have a responsible party with them after release.

Diabetics ages <12 and >65 tend to be more difficult to regulate.

The absence/presence of SZ during hypoglycemia should be assessed, and if present transport should be strongly encouraged.

Difficulty in maintaining normoglycemia after resuscitation with dextrose should be assessed and transport strongly encouraged.

Protocol
M-07

SECTION: M-07

PROTOCOL TITLE: ADULT HYPERGLYCEMIA

REVISED: November 1, 2017

GENERAL COMMENTS: Symptomatic hyperglycemia is defined as BG >250mg/dl with signs of severe dehydration, altered LOC, or shock.

BLS SPECIFIC CARE: *See adult General Medical Care Protocol M-1*

AEMT/O.M. SPECIFIC CARE: *See adult General Medical Care Protocol M-1*

- Administer IV fluids aggressively per Protocol M1

ALS SPECIFIC CARE: *See adult General Medical Care Protocol M-1*

- Treat unstable dysrhythmias and vital signs as necessary and as per specific protocols
    - In the presence of DKA, continuous EKG monitoring is essential to detect rhythm disturbances and changes associated with accompanying electrolyte imbalances and acidosis
        - Primary electrolyte disturbance is due to hyper/hypokalemia
            - Can precede malignant dysrhythmias
    - Obtain 12-lead EKG
        - Due to possibility of precipitating/accompanying AMI
    - Re-administer 200-500 ml crystalloid fluid boluses as needed
        - Reassess patient and BG following each bolus

PHYSICIAN PEARLS:

Hyperglycemic emergencies in patients with diabetes can generally be broken into two categories: Diabetic Ketoacidosis (DKA) and Hyperosmolar Hyperglycemic State (HHS), also known as Hyperosmolar Hyperglycemic Non-ketotic Coma (HHNC).

ADULT HYPERGLYCEMIA

ADULT HYPERGLYCEMIA

Protocol M-07

Protocol
M-08

SECTION: M-08

PROTOCOL TITLE: Adult Vomiting/Severe Nausea/Vertigo

REVISED: December 01, 2022

ADULT VOMITING/NAUSEA/VERTIGO

GENERAL COMMENTS: Nausea and vomiting are general complaints that can have any number of underlying causes. Care should be taken to screen for significant pathology and treat accordingly. An emphasis on a complete neurologic exam is paramount.

BLS SPECIFIC CARE: *See adult General Medical Care Protocol M-1*

Antiemetics:

- Zofran (Ondansetron)
  - **ODT:** 4 mg
  - Repeat one time in 10 minutes, if needed

AEMT/O.M. SPECIFIC CARE: *See adult General Medical Care Protocol M-1*

ALS SPECIFIC CARE: *See adult General Medical Care Protocol M-1*

Antiemetics:

- Zofran (Ondansetron)
  - **IV/IM/IO:** 4 mg
  - Repeat one time in 10 minutes, if needed
- Benadryl (diphenhydramine) IV/IM/IO:
  - **IV/IM/IO:** 25-50 mg
- Droperidol (Inapsine)
  - **IV/IO:** 0.625 mg – 1.25 mg, repeat every 5-10 minutes PRN, max total dose 5 mg
  - **IM:** 2.5 mg, repeat once in 5-10 minutes PRN, max total dose 5 mg
  - Hold for history/suspicion of prolonged QT syndrome, Torsade de Pointes, or EPS/Dystonia.

PHYSICIAN PEARLS:

Care should be given when administering medications with sedative properties to patients who may have consumed alcohol or are receiving other CNS depressants.

Nausea can mask many pathologies. All providers are responsible to investigate and consider differential pathologies when giving anti-emetics.

Protocol
M-08

ADULT VOMITING/NAUSEA/VERTIGO

BLANK PAGE

Protocol
M-09

SECTION: M-09

PROTOCOL TITLE: Dehydration and Rehab

REVISED: November 1, 2017

Adult Dehydration and Rehab

GENERAL COMMENTS: The treat and release portion of this protocol is intended for recreational events, sport/athletic calls and similar scenarios. In general the EMT/Paramedic should not apply it to other patients without careful consideration.
If a patient has an altered mental status, marked hyperthermia, or other priority symptom(s), then follow other more appropriate protocols.

BLS SPECIFIC CARE: *See adult General Medical Care Protocol M-1*

Oral Re-hydration:

- Obtain orthostatic V/S and assessments
- Obtain a temperature, if possible. Cool as needed
- Initiate oral re-hydration if feasible (water, ½ strength Gatorade or similar drink, no caffeine) until minimum 1000 ml (1 liter, approx 32 ounces) and signs and symptoms resolve for a minimum of 15-20 minutes
- Encourage rest, and cooling of body temperature to a normothermic level

Criteria for release without medical control contact (need all 3)

- BP and HR:
    - Systolic: < 160 and > 90
    - Diastolic: < 100
    - HR: <100 per minute
- Subjective and Objective findings:
    - All initial complaints are resolved for 15-20 minutes
    - All complaints on initial contact have been completely assessed
    - No priority s/s(e.g.: chest discomfort, SOB, altered mental status)
    - No ALS care required
- Documentation:
    - Further treatment/transport offered and declined, refusal is signed

AEMT/O.M. SPECIFIC CARE: *See adult General Medical Care Protocol M-1*

- Consider feasibility of oral hydration (if patient is stable) instead of IV access

ALS SPECIFIC CARE: *See adult General Medical Care Protocol M-1*

Adult Dehydration and Rehab

Protocol M-09

Protocol
M-10

SECTION: M-10

PROTOCOL TITLE: Adult Allergic/Anaphylaxis

REVISED: June 15, 2021

ADULT ALLERGY / ANAPHYLAXIS

GENERAL COMMENTS: This protocol covers allergic, anaphylactic, and anaphylactoid reactions of all severities.

BLS SPECIFIC CARE: *See adult General Medical Care Protocol M-1*

Epi Pen Protocol (If optional Module not completed)

- Confirm prior to administration
  - Is Epi-Pen prescribed to the patient (Right Patient?)
  - Is it an Epi-Pen of the correct dose (Right Dose?)
    - Patient weight < 30 kg (66 lbs)? Use Epi-Pen Junior:
      - IM: 0.15 mg 1:1,000 epinephrine
    - Patient weight > 30 kg (66 lbs)? Use Epi-Pen Adult:
      - IM: 0.3 mg 1:1,000 epinephrine
  - Is the Epi-Pen an intramuscular (IM) auto injector (Right route?)
  - Is the Epi-Pen expired?
- Re-evaluate patient's sign and symptoms every 5 minutes following administration. Evaluate for presence adverse effects of epinephrine.
  - Chest pain
  - Headache
  - Palpitations
  - Anxiety/tremors
- Repeat in 10 minutes if no improvement

If signs of bronchospasm are present, consider bronchodilators:

- *Option 1:* Nebulizer Treatment
  - Albuterol 2.5 mg (0.83% in 3 cc)
  - Ipratropium Bromide (Atrovent) 0.5 mg (0.02% in 2.5 cc)
  - May repeat as needed using Albuterol only. May use equivalent solutions of above medications such as *DuoNeb* as available
- *Option 2:* Assist the patient with his prescribed "rescue inhaler." Use a spacer if the patient is prescribed one and has it available
  - Assisted Inhaler: 2 puffs or a specific number of puffs as prescribed by patient's MD
  - Repeat every 5-10 minutes or as prescribed by patient's MD
  - Hold for HR >150/min
- *Option 3:* As an alternative, the patient may be allowed to use his/her own prescribed nebulized medication. Use oxygen in lieu of a room air "condenser" and run at 6-8 lpm with the patient's hand-held nebulizer (HHN). The patient must prepare it him/herself

Protocol

M-10

ADULT ALLERGY / ANAPHYLAXIS

AEMT/O.M. SPECIFIC CARE: *See adult General Medical Care Protocol M-1*

IV Fluid Resuscitation

- Treat hypotension aggressively with IV crystalloid up to max of 1000 cc. Hold for s/s of CHF/pulmonary edema or CHF History

Sympathomimetic

- Epinephrine 1:1000
  - IM: 0.3 mg
  - Repeat x 1 in 10 minutes if s/s do not significantly improve

ALS SPECIFIC CARE: *See adult General Medical Care Protocol M-1*

IV Fluid Resuscitation

- Treat hypotension aggressively with IV crystalloid PRN. Hold for s/s of CHF/pulmonary edema or CHF History

Sympathomimetics

- Epinephrine Infusion for persistent hypotension and/or severe refractory s/s
  - IV/IO: 0.05-1 mcg/kg/min titrate for via infusion pump
  - To Mix: 1 mg epinephrine in 250 cc NS bag

- Epinephrine Neb *(for laryngeal edema only)*
  - 3 mg (3 ml) mixed with 3 ml NS for 6ml total epinephrine 1:1,000 nebulized

Antihistamines

- Benadryl (Diphenhydramine)
  - IV, IM, IO: 25-50 mg
  - PO: (If available) 25-50 mg (for mild cases)

- Pepcid (Famotidine) May be used in conjunction with Benadryl based on availability
  - IV, IO: 20 mg Slow admin Every 12 hours. *May* dilute to 100 or 250 cc and administer over 15 minutes.
  - PO: (If available) 20-40 mg (for mild cases)

CAUTION: All patients receiving inhaled beta agonists and/or anticholinergic medications should be observed for a least one-hour following treatment for return of symptoms.

ALS evaluation is indicated if Epi administered either PTA or by EMS, and transport strongly encouraged. Refusals require medical control contact.

PHYSICIAN PEARLS:

Epinephrine Auto injector: EMTs can administer the epinephrine Auto-Injector if it has been prescribed to the patient. In addition, EMTs may administer an auto injector that HAS NOT been prescribed to the patient IF they have successfully completed additional training as required by the Department of Health and Welfare, Bureau of EMS and the ACCESS Medical Directors.

Epi IM admin Optional Module: EMTs can administer the epinephrine via IM injection after drawing it from a vial, glass amp, or other container if they have successfully completed additional training as required by the Department of Health and Welfare, Bureau of EMS and the ACCESS Medical Directors.

H2 Antagonists: H2 antagonists are adjunctive therapies to Benadryl (with or without epinephrine) in anaphylaxis & allergic reactions. It is not a stand-alone intervention. If Benadryl is given for anaphylaxis & allergic reactions, an H2 antagonist should also be given unless contraindicated. **PEPCID is IV/IO ONLY.**

Common Presentations: The most common symptoms were urticaria and angioedema, occurring in approximately 80% of patients. The next most common manifestations were respiratory symptoms, such as upper airway edema, dyspnea, and wheezing.
Gastrointestinal symptoms occur most commonly in food-induced anaphylaxis but can occur with other causes as well. Oral pruritus is often the first symptom observed in patients experiencing food-induced anaphylaxis. Abdominal cramping is also common, but nausea, vomiting, and diarrhea are frequently observed as well.
Cardiovascular symptoms of dizziness, syncope and hypotension were less common, *but it is important to remember that cardiovascular collapse may occur abruptly without the prior development of skin or respiratory manifestations.*

A comment about FATAL and FOOD based reactions: It is commonly believed that all cases of anaphylaxis present with cutaneous manifestations, such as hives or mucocutaneous swelling. In fact, as previously mentioned, up to 20% of anaphylactic episodes may not involve these signs and symptoms on presentation for emergency care.
Moreover, a survey of children with food-induced anaphylaxis showed that 80% of fatal reactions were not associated with cutaneous manifestations. In one study (Sampson et al) many cases of fatal food-induced anaphylaxis occurred in a biphasic clinical pattern. In these, mild oral and gastrointestinal symptoms occurred within 30 minutes of food ingestion. These symptoms resolved, only to be followed 1–2 hours later by severe respiratory symptoms and hypotension.
Put simply, the many fatal reactions do not present with "skin signs".

Individuals at greater risk for a fatal reaction include those with asthma, atopic dermatitis (eczema), a prior anaphylactic history, and those who deny symptoms and therefore delaying treatment with epinephrine.

Protocol
M-11

SECTION: M-11

PROTOCOL TITLE: Adult Pain Control

REVISED: May 01, 2022

ADULT PAIN CONTROL

GENERAL COMMENTS: Pre-hospital EMS is committed to the relief of pain and suffering in patients with acute painful conditions. Given the circumstances, complete resolution of pain may be an unachievable goal. It is therefore an acceptable goal to make pain more tolerable until definitive care can be rendered.

Documentation of pain level, sedation, level of consciousness, vital signs, and maintenance of vital functions (i.e. airway and respiratory drive) is essential before and after analgesic administration, and monitoring needs to be constant for changes in condition.

ALS Providers should consider decreased dosage or prolong administration intervals of sedative or analgesic medications in higher risk populations such as altered mental status, traumatic head injury, hypotension, recent use/administration of other sedative/analgesic medications, elderly, or known/suspected hypersensitivity.

BLS SPECIFIC CARE: *See adult General Medical Care Protocol M-1*

- Treat underlying injury or illness as appropriate
- Consider use of splinting, elevation, ice packs, padding, breathing techniques, good communication or the use of family members to assist in calming or alleviating pain

AEMT/O.M. SPECIFIC CARE: *See adult General Medical Care Protocol M-1*

ALS SPECIFIC CARE: *See adult General Medical Care Protocol M-1*

Analgesics

DO NOT administer/discontinue administration if:

- Systolic BP < 90 mmHg
- Respiratory rate, SpO_2 and/or mental status diminishes

Consider use of anti-emetics with administration of analgesics especially in the setting of trauma or known sensitivity.

Protocol M-11

ADULT PAIN CONTROL

If unable to control pain after max dose of any single analgesic, call medical control to continue with another analgesic.

- Fentanyl IV/IO/IM/IN
    - 1 mcg/kg initial dose (max single dose 100 mcg)
    - Give slowly over 2 minutes (with the exception of IN route)
    - May repeat every 10 minutes as needed
    - **max total dose of 200 mcg**
- Morphine sulfate IV/IM/IO
    - 0.1 mg/kg as initial dose (max initial dose 10 mg)
    - Give slowly over 2 min
    - May repeat every 10 minutes as needed with 0.05 mg/kg
    - **Max total dose of 20 mg**
- Dilaudid IV/IO
    - 0.5mg slow IV push over 2-3 minutes
    - May repeat every 10 minutes as needed
    - **Max total Dose 2 mg**

- Ketamine Hydrochloride IV/IM/IO
    - IV/IO 0.2 mg/kg (Max single Dose 30 mg)
        - Dilute to at least 10 ml and give slowly over 2 minutes
    - May repeat every 20 minutes as needed

    Or
    - IM: 0.5 mg/kg
        - repeated every 30 minutes PRN
        - Max single dose 50 mg

PHYSICIAN PEARLS:

When possible, IV/IO route is preferred method of administration due to ability to titrate dosage.

Providers at all levels should take a multi-faceted approach to pain control. Pain is often complex and multidimensional, and thus treatment should be individualized for each patient. Providers must be aware of the pharmacology and possible complications with every analgesic in the protocols.

Protocol
M-12

SECTION: M-12

PROTOCOL TITLE: Adult Heat Emergencies

REVISED: November 01, 2020

General Comments: Normothermia is 95.1 – 100.3. Hyperthermia is technically temperatures in excess of this range, although classification of severity is based on clinical symptoms rather than absolute ranges.
This protocol is for patients who have suspected heat injury due to environmental, situational, or toxicological reasons, and should be used only with caution in those with fever and hyperthermia from other causes (i.e. Fever).

BLS SPECIFIC CARE: *See adult General Medical Care Protocol M-1*

- Remove from cause of heat injury to a cool place and promote heat loss as appropriate.
- Encourage rest, and cooling of body temperature to a normothermic level
- Obtain a full set of vital signs. V/S's should include temperature
- Evaluate for presence of orthostatic hypotension
- Initiate oral re-hydration if feasible (water, Gatorade or similar drink, no caffeine) until minimum 1000 ml (1 liter, approx 32 ounces) and signs and symptoms resolve for a minimum of 15-20 minutes.
- Position patient as appropriate
    - Move patient to a cool area if possible
- Obtain temperature, core temp if unresponsive
    - Initiate *passive cooling* for temperature < 103 F or 39.5 C
    - initiate *active cooling* for significant hyperthermia for temperature > 103 F or 39.5 C
- Consider orthostatic vital signs
- Criteria for release without medical control contact
    - Subjective and objective findings:
        - All initial complaints are resolved for 15-20 minutes. If patient is presenting without complaint in a rehab situation, minimal monitoring time for cooling is 15-20 minutes
        - All complaints on initial contact have been completely assessed
        - No priority S/S (chest discomfort, SOB, altered mental status)
        - *No ALS care is required*
    - Objective Findings (need all 3)
        - RR < 20 Minute
        - Systolic :< 160 and > 100
        - Diastolic: < 100
        - HR: <110 per minute
        - Able to ambulate at baseline
- Documentation
        - Further transport is offered and declined, a refusal is signed

ADULT HEAT EMERGENCIES

Protocol

M-12

ADULT HEAT EMERGENCIES

AEMT/O.M. SPECIFIC CARE: *See adult General Medical Care Protocol M-1*

- Consider feasibility of oral hydration (if patient is stable) instead of IV access
- Treat hypotension aggressively with IV crystalloid up to 1000 ml. Hold for s/s of CHF/pulmonary edema or CHF History

ALS SPECIFIC CARE: *See adult General Medical Care Protocol M-1*

- Assess and treat underlying disorder

PHYSICIAN PEARLS:

In healthy, stable and alert patients, gradual oral rehydration is generally considered equivalent or even superior to IV rehydration.

Protocol
M-13

SECTION: M-13

PROTOCOL TITLE: Adult Cold Emergencies

REVISED: November 01, 2020

GENERAL COMMENTS: Normothermia is 95.1 – 100.3. Hypothermia is defined as a body temperature less than 95 degrees Fahrenheit. It is further sub-categorized as follows:

- Mild hypothermia is 34-35 °C / 93-95 °F
- Moderate Hypothermia is 30-34 °C / 86-93 °F
- Severe hypothermia is < 30 °C / 86 °F

BLS SPECIFIC CARE: *See Adult General Medical Care Protocol M-01*

- Handle gently
- Do not re-warm cold, injured extremities if there is a chance of refreezing prior to arrival at definitive care
- Obtain a temperature (core temperature if unresponsive)
- For mild hypothermia, increase heat production through exercise, and calorie/fluid replacement
- For moderate and severe hypothermia, treat gently and keep horizontal

Begin passive re-warming:

- Heat packs to critical areas
- Rewarm trunk prior to extremities

Cardiac arrest treatment for moderate to severe hypothermia:

- CPR as normal; check for pulse for at least 30 seconds
- One (1) shock, then hold until temperature is > 30 °C / 86 °F
- Keep horizontal and avoid rough treatment, but do not delay critical interventions
- Active re-warming

Fight heat loss:

- Radiation (55-65%): Cover with warm blankets. Cover the head (not the face)
- Conduction (15%): Separate the patient from cold surfaces
- Convection (15%): REMOVE WET CLOTHING
- Evaporation (15%): Cover with warm blankets. Cover the head (not the face)
- Obtain core body (i.e. rectal) temperature as necessary
- Handle patient gently; at core body temperatures less than 30°C (86°F) rough handling can precipitate lethal cardiac dysrhythmias
- Remove patient from cold environment if possible; remove wet clothing and insulate against further heat loss
- Do not attempt to re-warm cold, injured extremities if there is a chance of the extremity refreezing prior to arrival at definitive care

BLS continued…

- Use of an AED for patients in cardiopulmonary arrest:
  - Shock as indicated
  - Continue CPR and obtain core body (rectal) temperature.
  - If core body temperature >30C/86F, administer further shocks as indicated
  - If core body temperature < 30 °C/ 86 °F, withhold further shocks
    - Focus on CPR and re-warming

AEMT/O.M. SPECIFIC CARE: *See Adult General Medical Care Protocol M-01*

- If available, administer warm IV fluids

ALS SPECIFIC CARE: ***See Adult General Medical Care Protocol M-01***

- Assess and treat underlying disorder
- Obtain BGL

Severe Pain:

- Refer to "Adult Pain Control Protocol M-11" in SWO

Cardiac arrest treatment for moderate to severe hypothermia:

- (1) One total shock, then hold until temperature is > 30 °C / 86 °F
- Keep horizontal and avoid rough treatment, but do not delay critical interventions
- Active re-warming
- Temp < 30 °C / 86 °F: withhold medications
- Temp > 30 °C / 86 °F: increase intervals between meds
- Sinus bradycardia may be physiologic in severe hypothermia; therefore, cardiac pacing and medications are usually not indicated
- Focus treatment on re-warming and rapid transport of patient
- For cardiopulmonary arrest associated with hypothermia see the algorithms

Protocol

M-13

ADULT COLD EMERGENCIES

Box #1:

If adequate CPR is being performed upon arrival:

1. Confirm cardiopulmonary arrest
2. Transition to high performance cardiopulmonary resuscitation (CPR) (aka "Pit Crew" CPR, see Appendix 30) while applying defib pads
3. Move on to **"Box #4"**

Box #2:

Sudden, witnessed arrest in the presence of EMS:

1. Perform high performance cardiopulmonary resuscitation (AKA "Pit Crew", see appendix 30) only long enough to apply defib pads
2. Move on to **"Box #4"**

Box #3:

If inadequate CPR, or no CPR at all, is being performed upon arrival:

1. Initiate/perform high performance cardiopulmonary resuscitation (AKA "Pit Crew", see appendix 30)
2. During CPR:
   a. Apply defib pads
   b. Prepare/establish airway management and/or vascular access
   c. Medications/interventions without interruption of high-performance CPR
3. Move on to, **"Box #4," after** approximately 2 minutes/200-220 compressions completed

Box #4:

Rhythm Check

1. **Place patient on firm surface with good workable space as soon as possible/feasible**
2. ****Pre-charge Monitor to manufacturer's recommendation *prior* to pause**
3. **Assess blood glucose level**

VF/Pulseless VT:	Asystole/PEA:	ROSC:
a) **Shock @ manufacturer's recommendation**	**a)** No shock indicated	**a)** Provide hemodynamic support
b) Immediately resume HP-CPR without pause for rhythm check	**b)** Immediately resume HP-CPR	**b)** Evaluate for POST-arrest/TTM protocol
c) Advanced airway management as appropriate	**c)** Advanced airway management as appropriate	**c)** Advanced airway management as appropriate
d) Vascular access as appropriate	**d)** Vascular access as appropriate	**d)** Vascular Access as appropriate
		e) Monitor closely for re-arrest

Protocol

M-13

ADULT COLD EMERGENCIES

Core Body Temperature < 30 °C (86 °F)	Core Body Temperature > 30 °C (86 °F):
a) Continue HP-CPR, check rhythm every 200-220 compressions (approx. 2 min)	a) Continue HP-CPR, check rhythm every 200-220 compressions (approx. 2 min)
b) Withhold further shocks if VF/VT present until temp > 30° C (86 °F)	b) Provide electrical therapy as indicted by rhythm**
c) Withhold IV/IO/CETT medications until temp > 30 °C (86 °F)	c) Administer appropriate IV/IO/CETT medications for presenting rhythm (i.e. VF/VT, PEA, asystole) as indicated, but at longer than standard intervals**
d) Active external rewarming; prevent further cooling	d) Active external rewarming; prevent further cooling
e) Infuse warm NS fluid boluses. (43 °C / 109 °F)	e) Infuse warm NS fluid (43 °C / 109 °F)
f) Transport, and focus efforts upon raising core body temperature > 30 °C	f) Transport, and focus efforts upon raising core body temperature > 35 °C (95 °F).

**** Medications and electrical therapy as found in protocols C-01, C-02a, C-02b**

Box #7:

Treat (Other) Possible Causes

Search for & treat possible contribution factors:

a) **H**ypovolemia
b) **H**ypoxia
c) **H**ydrogen ion (acidosis)
d) **H**ypo-/hyperkalemia
e) **H**ypothermia
f) **T**oxins
g) **T**amponade, cardiac
h) **T**ension Pneumothorax
i) **T**hrombosis (coronary or pulmonary)

Return to Box #5

PHYSICIAN PEARLS:
If the patient's core temperature falls below 32 °C, a characteristic J-wave (aka Osborn wave) may occur. The J wave occurs at the junction of the QRS complex and the ST segment. Also noticeable are T wave inversion and prolongation of the PR, QRS, and QT intervals.

EKG IN HYPOTHERMIA

Hypothermic patients also exhibit "cold diuresis." Peripheral vasoconstriction initially causes central hypervolemia, to which the kidneys respond by putting out large amounts of dilute urine. Alcohol and cold-water immersion worsen this process. Therefore, hypothermic patients may also be dehydrated.

HYPOTHERMIA: STAGES

Normal Cold Response (98.6-95.1 ºF)
- Feel cold
- Shivering
- Vasoconstriction

Mild hypothermia (34-35 °C / 93-95 °F)
- Maximum shivering at 35 °C (95°F)
- Cold, pale skin (vasoconstriction)
- Pulse and BP are normal or elevated
- Faster breathing
- Mild confusion, slurred speech, unsteady gait
- Amnesia

Moderate (30-34 °C / 86-93 °F) to Severe Hypothermia (< 30 °C/ 86 °F)
- Shivering stops
- Pulse slows (bradycardia)
- Breathing slows
- Risk of cardiac arrhythmia (AFib)
- Intense vasoconstriction; surface pooling promotes "afterdrop"
- Decreased LOC
- **Increased mortality in major trauma by 40-50%**

Severe Hypothermia (< 30 °C / 86 °F)
- Intense vasoconstriction - surface pooling promotes "afterdrop"
- As core temp drops, the risk of cardiac arrest increases dramatically
- Lethal cardiac dysrhythmias
- Non-cardiac pulmonary edema

Protocol

M-13

ADULT COLD EMERGENCIES

(Left Blank intentionally)

Protocol
M-14

SECTION: M-14

PROTOCOL TITLE: Behavioral Emergencies & Combative Patients

REVISED: November 1, 2021

ADULT BEHAVORIAL EMERGENCIES

GENERAL COMMENTS: Medical responses involving behavioral emergencies and combative patients are some of the most perilous emergencies EMS personnel will encounter. Many of these patients have multiple underlying pathologies, which are often exacerbated by or derived from illicit substance abuse. As such, these emergencies pose many challenges to the provider. Patient care shall be driven by appropriate clinical care, never at the convenience of Law enforcement, and should be focused on preventing/mitigating hyperthermia, agitated delirium, positional asphyxia, hypoxia, and physical self-harm.

BLS SPECIFIC CARE: *See Adult General Medical Care Protocol M-01*

- Assess for medical causes of altered LOC/violent behavior.
- Minimize noxious stimuli and create a low stimulus environment as feasible. Verbally deescalate as possible.
- Obtain a BG
- For actively agitated patients: provide oxygen as soon as possible consider blow-by for non-compliant patients.
- Involve law enforcement as early as possible for combative/violent patients requiring restraint or sedation.
- Restraints may be used for patient and/or rescuer safety when clinically appropriate.
    - Do not restrain any patient in the prone position.
    - Observe and prevent positional asphyxia, and monitor the airway and respirations closely
    - Any patient restrained with a device provided by Law Enforcement must have a LEO ride with the patient that can remove the device if needed.
    - If restrained, do not release restraints until at the hospital (unless required for essential patient care)
- Do not leave the patient unattended
- Allow for adequate heat dissipation
- *Any patient restrained should be closely monitored for decompensation with an mRass documented before and after restraint, sedation or anxiolysis.*

AEMT/O.M. SPECIFIC CARE: *See Adult General Medical Care Protocol M-01*

- IV access (to a max of 3 attempts) if needed due to severity of underlying injury or illness; otherwise, defer until arrival of ALS providers
- Assess BGL to rule out a hypoglycemic episode

Protocol M-14

ADULT BEHAVORIAL EMERGENCIES

ALS SPECIFIC CARE: ***See Adult General Medical Care Protocol M-01***

Patients who are being sedated, or who have an mRASS >+3 or < -3 should have enhanced monitoring, (EKG, ETC02, SP02, BGL, and Blood Pressure) to catch any early signs of decline. (Blood pressure every 5 minutes if possible). Exception to these standards should be clearly documented.

Sedation/Anxiolysis: *If removal of noxious stimulus and/or de-escalation fails to resolve episode (or is not practical), pharmacologic therapy may be indicated.*

- Diazepam (Valium)
  - **IV:** 2-5 mg, repeat every 5-10 minutes PRN, max total dose 20 mg
  - **IM:** 5-10 mg, repeat once in 20 minutes PRN, max total dose 20 mg
- Midazolam (Versed)
  - **IV/IM:** 0.5-2.5 mg, repeat every 5-10 min PRN, max total dose 5 mg
  - **IN:** 2.5 mg, may repeat once at 10 minutes, max total dose 5 mg
- Lorazepam (Ativan)
  - **IV/IO:** 0.5-2 mg, may repeat at 10 minutes, max total dose 2 mg
  - **IM:** 1-2 mg (If no vascular access), max total dose 2 mg
- Haloperidol (Haldol)
  - **IV/IM:** 2.0-5.0 mg, repeat PRN, max total dose 10 mg
  - Strongly consider co-administration of Benadryl
  - Caution with hyperthermia, seizure risks, and hyperdynamic drug use

Adjunctive Medications: These medications are given for their potentiation of other drugs effects or for the prevention/treatment of certain side effects (nausea, EPS, etc.) of drugs used in sedation.

- Benadryl (Diphenhydramine)
  - **IV/IM:** 25-50 mg

Protocol
M-14

ADULT BEHAVORIAL EMERGENCIES

Agitation/Sedation Scoring

The *Modified* Richmond Agitation Sedation Score (mRASS) should be used to estimate the need for continued sedation/ anxiolysis and/or restraint. Use of sedation/ anxiolysis is context specific and subject to clinical judgement. The goal during a behavioral emergency may be a mRASS of -2 to +2; whereas the goal for prehospital sedation in the mechanically ventilated patient may be a -4 or -5. *Providers should document an estimated mRASS before and after the application of restraint, sedation anxiolysis.*

Procedure for mRASS Assessment:

1. **Observe patient:**
   - **a.** Patient is alert, restless, or agitated. **(score 0 to +4)**
2. **Verbally stimulate the patient: If not alert, state patient's name and *say* to open eyes and look at speaker. Ask "Describe how you are feeling?"**
   - **a.** Patient awakens with sustained eye opening and eye contact. **(score –1)**
   - **b.** Patient awakens with eye opening and eye contact, but not sustained. **(score –2)**
   - **c.** Patient has any movement in response to voice but no eye contact. **(score –3)**
3. **Physically stimulate the patient: When no response to verbal stimulation, physically stimulate patient by shaking shoulder and/or rubbing sternum or similar appropriate and non-punitive action.**
   - **a.** Patient has any movement to physical stimulation. **(score –4)**
   - **b.** Patient has no response to any stimulation. **(score –5)**

Score	Term	mRASS Description
+4	Combative	No attention; overtly combative, physically violent, immediate danger to staff or self.
+3	Very agitated	Very distractible; repeated calling or touch required to get or keep eye contact or attention.; cannot focus; pulls or removes tube(s) or catheter(s); aggressive; fights environment not people
+2	Slightly agitated	Easily distractible; rapidly loses attention; resists care or uncooperative; frequent non-purposeful movement, attempting to get out of bed/cot/chair.
+1	Restless	Slightly distractible; pays attention most of the time; anxious, but cooperative; movements not aggressive nor vigorous.
0	Calm	Pays attention; makes eye contact; aware of surroundings; responds immediately and appropriately to calling name and touch
-1	Wakes Easily	Slightly drowsy; eye contact<10 sec; not fully alert, but has sustained awakening; eye-opening/eye contact to voice <10 seconds
-2	Wakes Slowly	Very drowsy; pays attention some of the time; briefly awakens with eye contact to voice >10 seconds
-3	Difficult to wake	Repeated calling or touch required to get or keep eye contact or attention; needs repeated stimuli (touch or voice) for attention, movement, or eye opening to voice (but no eye contact)
-4	Want stay Awake	Arousable but no attention; no response to voice, but movement or eye opening to physical stimulation
-5	Unarousable	No response to voice or physical stimulation

Protocol M-14

ADULT BEHAVORIAL EMERGENCIES

PHYSICIAN PEARLS:

General Principles:

- Providers should strive for the least restrictive methods of restraint for the situation while considering safety and clinical concerns.
- The management of behavioral emergencies is often time consuming.
- At minimum, the patient should be assessed for pain, delirium, and anxiety. Providers should use objective, validated scoring to assist in the clinical decision making and documentation of sedation and restraint.
- Other underlying causes of agitation should be investigated and treated as appropriate.

Pharmacological Considerations:

- The use of medications to restrain a patient can absolutely improve patient and provider safety but require constant vigilance and significant clinical judgement.
- Medications for "*Anxiolysis"* may be used for severe and refractory anxiety and emotional distress with or without the need for physical restraints.
- Medications for "*Sedation*" may also be used to facilitate and increase the safety of physical restraints in combative and violent patients, or other interventions such as mechanical ventilation
- Cautions with using medications for sedation/anxiolysis:
    - Patient may experience respiratory depression or loss of gag reflex
    - Occasionally, a paradoxical reaction results in increased agitation
    - Medication may potentiate the sedative effect of other CNS depressants
    - Mental status assessment and neurologic examination will be limited during sedation
- *ALS Providers may decrease the dosage or prolong the administration intervals of any medication with sedative properties when doing so would decrease adverse effects and still likely obtain the clinical goal.*

Assessment Considerations:

Among the most difficult tasks in providing care during an adult behavioral emergency is determining the etiologies of combative patients and treating accordingly, be it medical, toxicological, or traumatic in nature. Approximately two-thirds of behavioral emergency patients have a non-psychiatric (organic) etiology:

- Psychiatric (functional)
- Non-psychiatric (organic)
    - Medical (CVA, hypoglycemia, increased ICP, meningitis, etc.)
- Toxicological

Protocol
M-15

SECTION: M-15

TITLE: Sedation for Painful Procedures

REVISED: November 1, 2017

Sedation for Painful Procedures

GENERAL COMMENTS: This protocol is intended to provide guidance for sedation/patient comfort during brief painful procedures such as emergent need for relocation of injured extremity, cardioversion or other brief painful procedures.

Sedative medications should not be combined with opiate analgesics unless absolutely necessary as the combination of these medications can cause life threatening over sedation, hypotension, or other unpredictable results. Careful monitoring of patients should be employed with any administration of opiate or benzodiazepine medications.

ALS Providers should consider decreased dosage or prolong administration intervals of sedative or analgesic medications in higher risk populations such as altered mental status, traumatic head injury, recent use/administration of other sedative medications, elderly, or known/suspected hypersensitivity.

BLS SPECIFIC CARE: *See adult General Medical Care Protocol M-1*

ILS SPECIFIC CARE: *See adult General Medical Care Protocol M-1*

ALS SPECIFIC CARE: *See adult General Medical Care Protocol M-1*

***Adult** sedatives:*

- Versed
  - IV/IO/IM: 0.5-2.5 mg slow IV push every 5-10 minutes (max dose 5 mg)
  - IN: 2.5 mg every 10 minutes (max dose of 5 mg)

- Valium IV/IO/IM
  - 2-5 mg slow IV push every 5-10 minutes (max dose 10 mg)

***Pediatric** sedatives:*

- Versed
  - IV/IO/IM: 0.05-0.1 mg/kg slow IV push every 5-10 minutes (max dose 2.5 mg)
  - IN: 0.2 mg/kg every 5-10 minutes (max dose of 2.5 mg) (Not for use in children under 2 years of age)

Sedation for Painful Procedures

Protocol M-15

Protocol
M-16

SECTION: M-16

PROTOCOL TITLE: Epistaxis

REVISED: December 01, 2022

GENERAL COMMENTS: *This protocol is for non-traumatic, non-surgical epistaxis in the hemodynamically stable patient without other more concerning symptomology such as airway issues, stroke, shock, or hypertensive urgency/crisis.*

BLS SPECIFIC CARE: *See Adult General Medical Care Protocol M-01*

- Assess for other concerns and life threats
- Obtain full vitals
- Evacuate both nostrils or any poorly formed clots by blowing nose vigorously
- Place in head/tilt forward position to decrease bleeding in the airway.
- Apply nasal clamp
- Observe for 10 minutes, Obtain a second set of vitals. Document absence of adverse effects or airway compromise

AEMT/OM CARE: *See Adult General Medical Care Protocol M-01*

- Consider administration of Neo-Synephrine (age > 5 years)
    - Administer 1 spray *each* nostril
    - Apply Neo-Synephrine liberally to a gauze "Twist" and place up saturated gauze in each nare
    - Hold for:
        - Systolic BP > 180 mmHg
        - Diastolic BP . 110 mmHg
        - Pulse > 120/min
        - Altered LOC
        - Abnormal stroke assessment
        - Suspected foreign body/object insertion
        - Facial/Nasal trauma
        - Recent facial, sinus, or brain surgery (<14 days)
        - Presence of *active* Acute Coronary Syndrome (ACS) symptoms
        - Ulcers, burns, and cancer to the face/sinuses/upper airway
- Observe for 10 minutes, Obtain a second set of vitals. Document absence of adverse effects or airway compromise
- If Neo-Synephrine is used, complete *treat and release* process. See Epistaxis Treat and Release form (*Appendix 31*)

Epistaxis

Protocol M-16

Epistaxis

ALS SPECIFIC CARE: *See Adult General Medical Care Protocol M-01*

Consider Tranexamic acid (TXA)

- **Adults:**
  - IN: 250-500 mg each Nare Atomized
- **Pediatrics**
  - IN:10 mg/kg each Nare Atomized

Physician PEARLS

- Most nose bleeding is from an *anterior* source and may be easily controlled. ***Posterior*** epistaxis is a true emergency and may require advanced ED techniques such as balloon tamponade or interventional radiology.
  - Evaluate for posterior blood loss by examining the posterior pharynx for active bleeding.
  - Do not delay transport.
  - Be prepared for potential airway issues.
- ***Hypertensive urgency/crisis*** symptoms include visual disturbances, head ache, photosensitivity, altered LOC, in the setting of hypertension (SBP > 200 and DBP > 120) . These patients should be transported when possible.
- Patients using nasal cannula oxygen may have cannula placed in mouth while nares are clamped or compressed for nosebleed
- Administration of Neo synephrine or TXA *alone* does not require EKG monitoring, although other symptoms and presentations may.
- Recommended minimum documented exam:
  - Mental Status,
  - HEENT,
  - Lungs,
  - Neuro / Stroke exam
- Compress nostrils with clamp or fingers, pinching over fleshy part of nose, not bony nasal bridge.
- Anticoagulants and Anti-platelet aggregation agents may can contribute to bleeding and may require longer observation.
  - Anticoagulants include warfarin (Coumadin), apixaban (Eliquis), heparin, enoxaparin (Lovenox), dabigatran (Pradaxa), rivaroxaban (Xarelto).
  - Anti-platelet agents like aspirin, clopidogrel (Plavix), aspirin/dipyridamole (Aggrenox), and ticlopidine (Ticlid)

Protocol
M-17

SECTION: M-17

TITLE: Electrolyte Imbalances

REVISED: May 01, 2022

BLS-Specific Care: See adult General Medical Care Protocol M-1

AEMT/O.M. Specific Care: See adult General Medical Care Protocol M-1

- Obtain peripheral vascular access
  - IV: 200-500 ml crystalloid solution. Repeat PRN

ALS-Specific Care: See adult General Medical Care Protocol M-1

*Symptomatic Hyperkalemia: "*Symptomatic hyperkalemia" defined by the presence of EKG changes (Peaked T waves, QRS becomes prolonged **≥** 0.12 seconds, or prolonged QTc), ***AND*** a history suggestive of hyperkalemia, ***OR*** if hyperkalemia is confirmed via laboratory analysis.

- *Albuterol (High Dose)* for suspected hyperkalemia
  - Nebulizer: 5 mg (2 unit doses) nebulized
  - Re-evaluate EKG and may re-administer an additional 5 mg (2 unit doses) when complete. Max dose 20 mg.

- *Sodium bicarbonate* for suspected hyperkalemia
  - IV: 1 mEq/kg repeated in 10 minutes. Minimum initial dose is 50 mEq.
  - Consider dilution of Bicarb if given IO
  - **Not compatible in same line as Calcium Chloride.** Flush line thoroughly between medication

- **Calcium chloride for suspected hyperkalemia**
  - **IV, IO: 500-1000 mg IVP**
  - **Contact medical control for repeat doses**
  - **Not compatible in same line as Sodium Bicarbonate.** Flush line thoroughly between medications

Electrolyte Imbalances

Protocol M-17

Electrolyte Imbalances

Physician PEARLS

Use of albuterol has been shown to decrease serum potassium levels by 0.3 to 0.6 mEq/L within 30 minutes; the decrease lasts for at least 2 hours.

Use of Calcium solutions in Hyperkalemia is indicated for stabilization of the myocardium.

Protocol
OB-01

SECTION: OB-01

PROTOCOL TITLE: GENERAL OB Care

REVISED: November 1, 2017

GENERAL O.B. CARE

GENERAL COMMENTS: This is a general protocol for non-specific OB emergencies, including contractions of non-specific etiology and vaginal bleeding (other than post partum). When possible this protocol should supplement other, more specific protocols based on clinical assessments and judgment.

BLS SPECIFIC CARE: *See Adult General Care protocol M-1*

- Any pregnant patient with direct blunt trauma to the abdomen should be encouraged to seek medical evaluation
- In case of vaginal bleeding (second or third trimester) assess for imminent delivery of fetus or other tissue with **VISUAL** inspection of the perineum.
- Rapid transport to an ***appropriate*** facility
- All patients in second and third trimester who are transported in the supine position should be placed in the left lateral recumbent position
- If amniotic sac has ruptured, determine time of rupture and try to ascertain if meconium was present in the fluid (determine color, odor and consistency)
- IF ACTIVE LABOR and CROWNING:
    - Follow **Childbirth Procedure** (Appendix 23)
    - Expedite transport for:
        - <36 weeks gestation AND crowning
        - Abnormal fetal presentation
        - Severe vaginal bleeding
        - Multiple gestations
- IF ACTIVE LABOR and NO crowning:
    - Monitor, reassess. Document duration/frequency of contractions
    - Notify receiving facility

AEMT/O.M. SPECIFIC CARE: *See Adult General Care protocol M-1*

ALS SPECIFIC CARE: *See Adult General Care protocol M-1*

Protocol OB-01

GENERAL O.B. CARE

PHYSICIAN PEARLS:

Manual exams of the vagina are not done in the field. Do not delay transport with high risk deliveries. Remember that maternal blood volume increases up to 45% with a relative anemia developing by the increase in circulating plasma. Therefore a pregnant patient may lose up to 35% circulating volume prior to showing severe S/S shock. If the pregnant patient is showing s/s of shock, in severe respiratory distress, altered in her mental status, or otherwise in extremis, transport to a facility with emergent surgical capability.

General considerations:

- Blood pressure usually decreases by 10-15 mm Hg by end of first trimester
- Heart rate increases 10-15 beats per minute
- Signs and symptoms of shock are delayed in these patients
- Transport all second or third trimester patients on left side
- Manually displace the uterus of third trimester patients to left side during CPR
- Angioedema and swelling may reduce the size of the airway, be prepared to use a smaller size ET Tube. (AHA 2010 recommendations)
- If CPR is required, do so while another responder manually pulls (externally) the uterus to the left. **Remove any fetal monitors prior to defibrillation**

Key history:

- Gestational age
- Expected due date
- How many pregnancies (gravida)
- How many live births (para)
- How many abortions or miscarriages
- Pre-natal care
- Number of fetuses
- Recent trauma
- Last fetal movement felt
- Other identified problems
- OB/primary physician & hospital choice
- Amount and type of bleeding/discharge (if applicable)

* Do not delay transport in active labor situations to obtain history.

Protocol
OB-02

SECTION: OB-02

PROTOCOL TITLE: Pregnancy Induced Hypertension

REVISED: November 1, 2017

Pregnancy Induced Hypertension

BLS SPECIFIC CARE: *See General OB Care Protocol OB-1*

Seizure/Hypertension (Suspected Pre-eclampsia/Eclampsia)
- Refer to *Seizure protocol M-5*

In cases of suspected pre-eclampsia (patient not actively seizing) reduce/eliminate noxious environmental stimuli (light, noise, etc.)

AEMT/O.M. Specific Care: ***See General OB Care Protocol OB-1***

ALS SPECIFIC CARE: *See General OB Care Protocol OB-1*

- Assess and identify causes of complaints, treat as needed.

Suspected Pre-eclampsia/Eclampsia (Seizure, ALOC, or HTN)

Pre-eclampsia (hypertension, ALOC without seizure)

Magnesium sulfate (for severe signs and symptoms) contact medical control:

- IV/IO: 4 g over 20 minutes, repeat as needed.
- Do not give faster than 1 g/minute.
- To Mix: 4 g /250 ml using a 15 gtt set. Run at equivalent of 750 ml/hour. Titrate for effect. **Max 8 grams**.
- If seizures occur, run at eclampsia dosing.
- *Maintenance Infusion*: : 5 g/250ml NS, run at 100 ml/hr (2 g/hr)

Eclampsia: (active seizures)

Magnesium sulfate

- IV/IO: 4 g over 5 minutes, repeat as needed.
- Do not give faster than 1 g/minute.
- To Mix: 4 g /250 ml using a 15 gtt set. Run at equivalent of 3000 ml/hour. Titrate for effect. **Max 8 grams**.
- *Maintenance Infusion*: 5 g/250ml NS, run at 100 ml/hr (2 g/hr)

Benzodiazepines

Valium (diazepam)

- IV/IO: 2-10 mg every 5-10 minutes as needed to maximum 20 mg
- PR: 5-10 mg every 5-10 minutes as needed to maximum of 20 mg

Versed (midazolam)

- IV/IO: 0.5-2.5 mg every 5-10 minutes as needed to maximum of 5 mg
- IN (intranasal): 5mg (2.5 mg each nare) to maximum total dose 5 mg
- IM: 5mg to maximum dose 5 mg

PHYSICIAN PEARLS:

Signs and Symptoms

- Hypertension BP 140/90 or baseline increase of:
  - Systolic ↑30 mm/Hg and/or
  - Diastolic ↑15 mm/Hg
- SYSTEMIC edema: Starts at feet and moves up till it becomes systemic.
  - Severe frontal headache with photophobia.
- SEIZURES/ALTERED LOC
- Visual disturbances
- Hyperreflexia
- Epigastric or RUQ pain, jaundice
- Pulmonary edema, JVD. (Think CHF)
- Tachycardia, dysrhythmias
- Chest pain

S/S MAY OCCUR AS MUCH AS 2-3 WEEKS POST PARTUM

Remember, magnesium sulfate can cause respiratory depression/arrest with cardiovascular collapse, especially with rapid IV push.

A patient who is pregnant and seizing should be presumed to have eclampsia, a true medical emergency. Magnesium administration should be a priority in these patients. However, IN/IM benzodiazepines may be given first due to rapidity of administration. For crews with two ALS providers, one provider should administer IN/IM benzodiazepine while the other provider establishes IV access for Magnesium.

Do not delay IN/IM administration of Midazolam for an actively seizing patient with difficult IV or IO access.

Protocol
OB-3

SECTION: OB-3

PROTOCOL TITLE: POST PARTUM BLEEDING

REVISED: June 15, 2021

POST PARTUM BLEEDING

GENERAL COMMENTS: This is a protocol for control of potentially life-threatening bleeding after delivery of the fetus(s). This is generally defined as *estimated* post-partum blood loss in excess of 350-500 cc. These supplements, not replaces, other general protocols for treatment.

BLS SPECIFIC CARE: *See General OB Care Protocol OB-1*

- **Maternal post-partum care:**
  - Allow baby to suckle at mother's breast if possible.
  - Expect blood loss of up to 350-500 ml with normal deliveries

- **Fundal Massage**: If the uterus has not contracted following delivery, provide firm but gentle uterine massage
  - Place one hand directly above pubis symphysis and the other at the fundus (top) of the uterus (Anterior /Posterior Technique
  - Cup the uterus between the two hands and massage until complete contraction occurs.
  - Complete contraction has occurred when the uterus has assumed a woody hardness and has compressed to the size of a grapefruit
- If hypotensive, See Adult Hypotension and Shock protocol M-3

AEMT/O.M. Specific Care: *See General OB Care Protocol OB-1*

ALS SPECIFIC CARE:

- Assess and identify causes of complaints, treat as needed
- Maintain patent airway as necessary to include endotracheal intubation when appropriate

Uterotonics: Administer Utero-tonics in addition to/simultaneously with other interventions.

- **Oxytocin (Pitocin)**
  - IV/IO: Mix 10 U in 250 ml of NS administered at a rate to control uterine contractions. Typically, infused 10u/250 ml over 5 to 10 minutes;
  - Repeat if needed up to 20 units.
  - IM (if IV/IO is unavailable) 10 U IM.
- **Other Uterotonics:** When responding to a obstetric or other health care center, EMS providers may permit the licensed providers (i.e. Physicians, Nurse Midwives, Licensed Midwives, Registered Nurses) to administer a uterotonic such as *Misoprostol (Cytotec, Misodel)* in addition to/ or in place of Pitocin if needed.

Protocol

OB-3

POST PARTUM BLEEDING

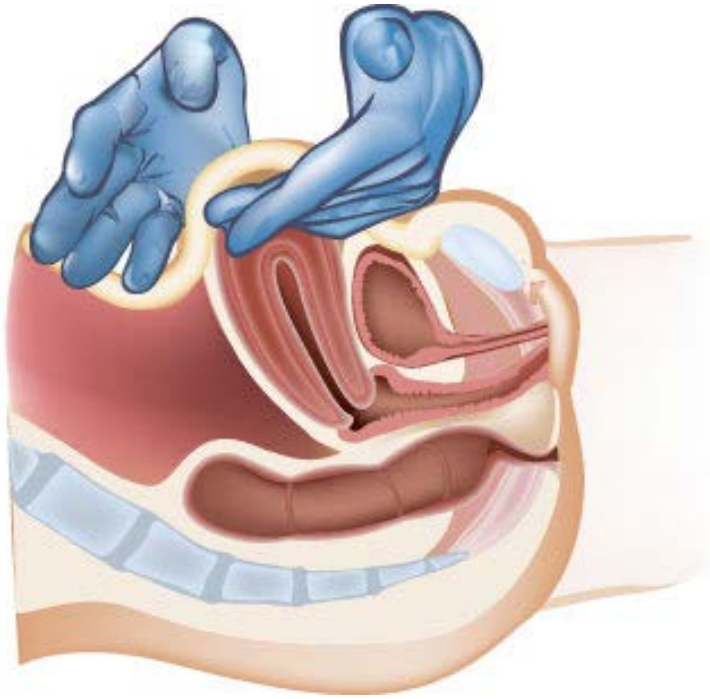
Suspected severe blood loss with either SBP <u>≤</u> 90 mm Hg and/or HR <u>≥</u> 110/min, and/or suspected blood loss <u>≥</u> 350-500 cc.

- Tranexamic Acid (TXA) if within 3 hours of onset:
    - IV/IO: 2 grams/250cc over 10 minutes. Does not need a pump

PHYSICIAN PEARLS:

- If 350-500 cc (or more) blood loss, Act ASAP
    - Intervene immediately, within 5 minutes of hemorrhage
    - Two handed external fundal massage is preferred, but one-handed methods are permissible.
- While both would be ideal, uterotonic (i.e. Oxytocin) administration takes priority over TXA administration.
- Mothers should get skin to skin contact and nursing to promote uterine contraction if feasible.

Two Handed external fundal massage



Protocol
T-01

SECTION: T-1

PROTOCOL TITLE: GENERAL TRAUMA CARE

REVISED: December 1, 2022

GENERAL COMMENTS: When possible, this protocol should supplement other, more specific protocols based on clinical assessments and judgment.

BLS SPECIFIC CARE:

- Basic BLS care and assessments and v/s every 5 minutes
- Follow *Appendix 17: Selective Spinal Immobilization* protocol in regard to spinal care.
- Follow *Hospital Destination Protocol* (G-3)
- Priority Trauma Patients with respiratory related complaints should receive high flow oxygen, regardless of oxygen saturation.
- Maintain patent airway as necessary and assist ventilations as needed
- Open injuries to the neck, chest, upper abdomen or deep vascular structures should be covered with an occlusive dressing when possible. Apply occlusive dressings to sucking chest wounds
    - Seal on either 3 or 4 sides is acceptable.
- Coordinate resources to insure prompt arrival of ALS care to the patient. Update responding ALS and receiving hospital as needed
- Pregnant trauma patients: Transport in left lateral recumbent, or tilt backboard as needed
- Control bleeding aggressively, including the use of pressure dressings, wound packing, and tourniquets as needed
- Stabilize impaled objects and leave in place unless compromising the airway
- Assess blood glucose level as indicated
- Splint extremity injuries as needed
    - Traction (Sager) splint as needed for fractures to the proximal third and mid-shaft of femur
    - Splints, sling and swath, etc., where applicable, for other long-bone fractures and joint dislocations
    - Assess neuromuscular function **before and after** splinting
- Provide pelvic stabilization and splinting as needed for suspected pelvic fractures.
- Conserve body heat /Prevent hypothermia

Protocol T-01

GENERAL TRAUMA CARE

AEMT/O.M. Specific Care:

Vascular Access

- IV access (to a max of 3 attempts) or IO access if needed due to severity of underlying injury or illness, otherwise consider deferring until arrival of ALS providers
    - IV: Crystalloid solution at a TKO rate. May administer 200-500 ml if S/S of dehydration are present, repeat as needed to a maximum of 2 liters
    - Withhold fluids and maintain IV at TKO rate if patient is hemo-dynamically stable or signs and symptoms of fluid overload are present
    - 2-3 Large bore lines are indicated with major trauma patient's

Respiratory Support (if appropriate and available)

- *Consider* Assisted/Intermittent Positive Pressure Ventilation
- *Consider* Placement of SGA

ALS SPECIFIC CARE:

Airway Management: Secure the airway using means best determined by good clinical decision making.

- See "*Appendix 2: Advanced Airway Support Supplement" for* guidelines for current and anticipated clinical needs

Suspected Tension Pneumothorax

- Needle chest decompression

Ocular Trauma

- Tetracaine 1-3 gtts (hold for penetrating or open globe injury)

Severe Blood Loss for non-compressible/refractory bleeding with SBP ≤ 90 mm Hg (or age specific blood pressure for pediatrics) and/or HR ≥ 110/min, and/or suspected blood loss ≥ 500 cc.

- Tranexamic Acid (TXA) if within 3 hours of injury:
- Adults:
    - IV/IO: 2 gram/250 cc over 10 minutes. Does not need a pump
- Pediatrics
    - IV/IO: 15 mg/kg in 250 cc over 10 minutes. Does not need a pump. 1 GM max.

Post Tonsillectomy Hemorrhage

- Adults:
    - NEB: 500 mg Nebulized. Repeat once PRN
- Pediatrics
    - NEB: 10 mg/kg Nebulized

PHYSICIAN PEARLS:

Early Notification: Early notification of the receiving hospital is *essential* in priority trauma patients.

Basics of Trauma Care: While not specifically mentioned above, aggressive management of the airway, respiratory functions, and prevention of shock/ hypothermia are cornerstones of solid trauma care.
In addition, rapid transport, good scene management with minimized scene times (ideally < 10 minutes), and coordination with receiving trauma center are also important.

Trauma destination: *See G-03 Hospital Destination Protocol and Appendix 16: Trauma Priority Criteria*

Hypothermia: Heat loss and hypothermia is one of the most often neglected parts of prehospital trauma care. Prevent accordingly.

Post Tonsillectomy Hemorrhage: Hemorrhage after tonsillectomy can be classified as primary (within 24 hours – 2 weeks of surgery) or secondary (24+ hours after surgery). Hemorrhage is rare, occurring in about 1-4 % of surgeries, and is more common in older teens and adults than in children. It is considered significant if it is active/diffuse bleeding, is bright red, causes hypotension or causes *any* respiratory distress. Significant post-tonsillectomy hemorrhage is considered both an airway *and* a surgical emergency.

BLANK PAGE

Protocol
T-02

SECTION: T-02

PROTOCOL TITLE: Orthopedic Injuries

REVISED: November 1, 2017

ORTHOPEDIC INJURIES

BLS SPECIFIC CARE: *See General Trauma Care Protocol T-1*

General Comments

- Consider that injuries may be distracting from more subtle signs of spinal injury. Assess accordingly
- Follow Hospital Destination Protocol for major trauma
- Do not delay transport for splinting in unstable patients

Long Bone Orthopedic Injuries

- Splint, position and/or ice as needed
- Traction splints as indicated for femur fractures

Suspected Pelvic Injuries

- Consider Pelvic Immobilization

Clavicle and Shoulder Injuries

- Consider Sling and/or swath

AEMT/O.M. Specific Care: *See General Trauma Care Protocol T-1*

ALS SPECIFIC CARE: *See General Trauma Care Protocol T-1*

Orthopedic Injuries

- All angulated long bone fracture/dislocations with neurological or vascular compromise should be reduced as soon as possible
- Patellar dislocations may be reduced following patellar reduction guidelines at the paramedic's discretion
    - All patellar reductions should be encouraged to seek X-rays and physician evaluation

PHYSICIAN PEARLS:

EARLY NOTIFICATION OF THE RECEIVING FACILITY IS ESSENTIAL IN SIGNIFICANT TRAUMA CASES

Protocol

T-02

ORTHOPEDIC INJURIES

Protocol
T-03

SECTION: T-03

PROTOCOL TITLE: Burn Trauma

REVISED: November 1, 2017

BURN TRAUMA

GENERAL COMMENTS: Burns should be evaluated by the depth of burn, the presence of co-morbid factors, location of burns, and BSA using the rule of 9's. In addition to normal burn care, many problems may be anticipated by assessing for the presence of co-morbid factors.

BLS SPECIFIC CARE: *See General Trauma Care Protocol T-1*

Basic Burn Care

- Patients with burns to the trunk, face, any airway passage involvement whatsoever or the presence of any co-morbid factors, should receive supplemental oxygen regardless of oxygen saturation. Assist ventilations as needed
- Keep burned area as clean as possible (aseptic)
- Prevent hypothermia
- Facial burns: Raise patient's head 30 degrees when possible to decrease swelling
- Extremity burns: Remove all jewelry; elevate extremity if possible

Assess Burns

- Assess for abuse, attempted suicide, etc
- Toxic / HazMat exposure
- In the presence of blast injury, electrical burns or other major trauma mechanism, follow Selective Spinal Immobilization Appendix 18
- Stop the burning process
- Maintain patent airway as necessary
    - Severe burns to the face and neck may be indicative of imminent airway occlusion
- Supplemental high flow oxygen
- Assisted ventilations if necessary to maintain adequate SpO_2
- Cover burns with dry sterile dressings
- Burns less than 10% TBSA may be cooled with water or saline
- Conserve body heat; burns covering a large percentage of body surface area can predispose patients to developing hypothermia
- Assess total body surface area (TBSA) burned
    - See, "Estimating Burn Area (Using Rule of 9's)," charts under, "Key Considerations"
    - Use pediatric Rule of 9's for patients < 4 years of age

Protocol

T-03

BURN TRAUMA

AEMT/O.M. Specific Care: *See General Trauma Care Protocol T-1*

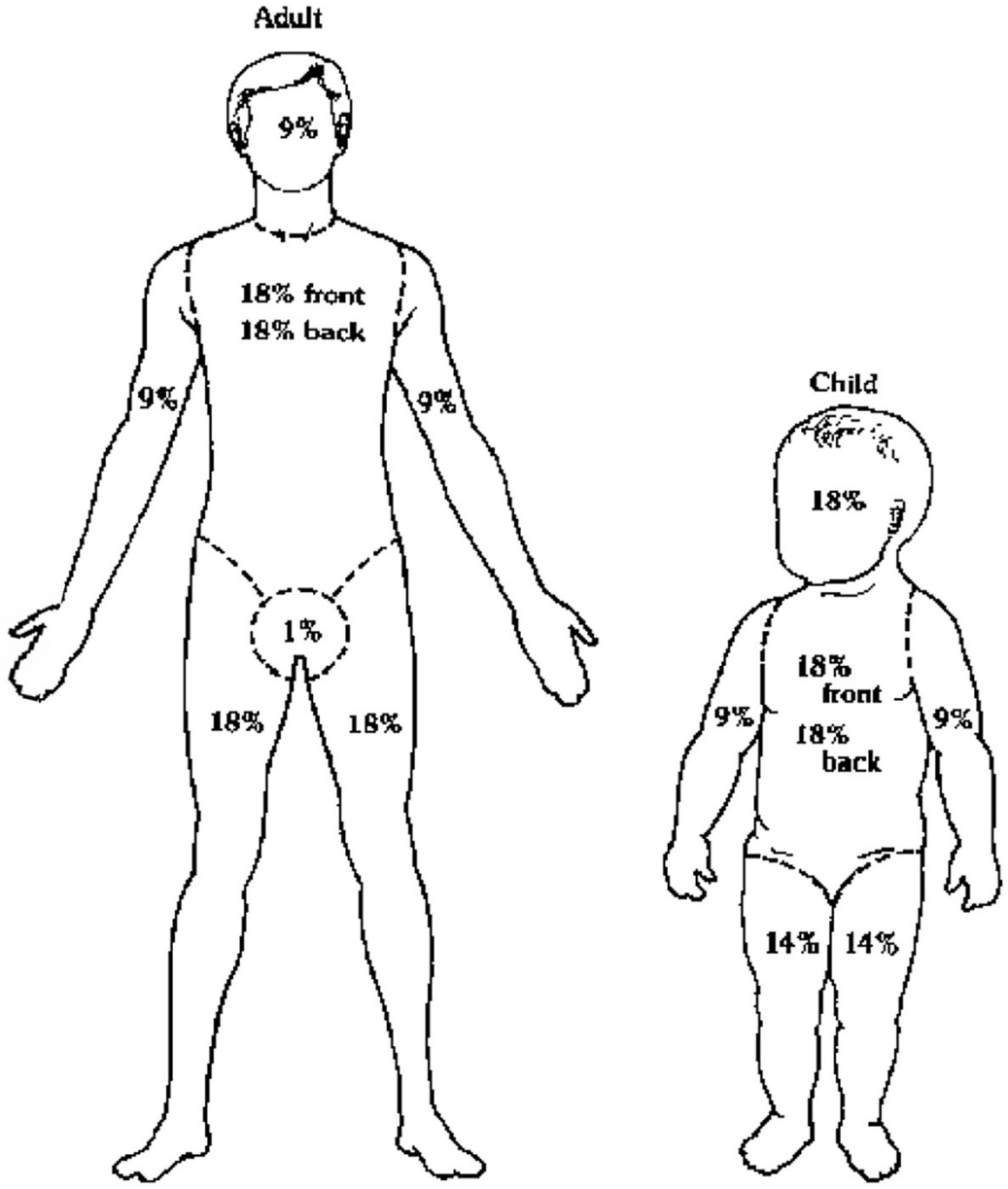
- IV Fluids:
  - Age <5yo: 125mL/hr
  - Age 6-13: 250mL/hr
  - Age >14: 500mL/hr

ALS SPECIFIC CARE: *See General Trauma Care Protocol T-1*

- Have a high index of suspicion and a low intubation threshold when treating burn patients with possible airway involvement
- Burns are extremely painful! Strongly consider pain management see (Adult Pain Control M-11or Pediatric Pain Control PM-07) protocols for Analgesics

Protocol
T-03

BURN TRAUMA



Rules of Nine	Patient> 14 yrs	5-14 yrs	Infants to 5 yrs
Head	9%	14%	18%
Each arm (front & back)	9%	9%	9%
Each leg (front & back)	18%	16%	14%
Chest and Abdomen	18%	18%	18%
Back	18%	18%	18%
Groin	1%	1%	1%

Protocol

T-03

BURN TRAUMA

PHYSICIAN PEARLS:

Co-Morbid Factor	Considerations
Hypotension	Transport to trauma center. Hypotension is rare in acute burns, assess for hidden cause such as toxic exposure, occult hemorrhage, MI, or other cause
Age (<12, >55)	Transport to trauma center. Due to generally thinner skin in these age groups, it is easy to underestimate severity of burns
Circumferential	Transport to trauma center
High risk areas	Burns to genitalia, hands, feet, or face should be transported to trauma center
Suspected inhalation injuries	Singed nasal hairs, stridor, sooty airways, hoarse voice or history of enclosed space indicate a potential for CO poisoning or airway injury, Transport to trauma center, consider aggressive and early airway management
Co existing major trauma	Transport to trauma center
Electricity (lightning)	While arrest is common, many patients will restore organized cardiac activity even with simple CPR, but will require prolonged respiratory support. Does not require a trauma center.
Electricity (other)	Transport to trauma center. Cardiac monitoring and 12 lead evaluation as available. Consider path of damage
Hx of renal failure or burns older than 36 hours	Do not use Succinylcholine (Anectine)
Blast injury	Immobilize, assess for baro-trauma, and watch for secondary devices

Protocol
T-04

SECTION: T-04

PROTOCOL TITLE: Crush Injuries

REVISED: November 1, 2017

GENERAL COMMENTS: This protocol covers isolated extremity crush injury with entrapment.

BLS SPECIFIC CARE: *See General Trauma Care Protocol T-1*

- Assess for the "Six P's
- Place (but do not tighten) tourniquet on the entrapped extremity. If this is
- not possible, have the tourniquet standing by.
    - Follow *Appendix 18: CAT Tourniquet or other similar device*
- Be prepared for significant bleeding and sudden cardiac arrest when patient is freed, especially in prolonged incidents

AEMT/O.M. SPECIFIC CARE: *See General Trauma Care Protocol T-1*

Vascular Access

- IV access (to a max of 3 attempts) with 2 large bore lines preferred.
- IV: Crystalloid solution at a TKO rate.
    - May administer 200-500 ml if S/S of dehydration are present, repeat as needed to a maximum of 2 liters If the patient has been entrapped for more than 1 hour, fluid therapy 20 ml/kg rapid IV bolus (up to 2 liters) using normal saline
    - Withhold fluids and maintain IV at TKO rate if patient is hemo-dynamically stable or signs and symptoms of fluid overload are present
    - Ongoing fluid therapy 5 ml/kg/hr (300 to 500 ml/hr). Increase as needed for hypotension

Respiratory Support (if appropriate and available)

- *Consider Assisted/Intermittent Positive Pressure Ventilation*
- *Consider Placement of SGA*

CRUSH INJURIES

Protocol

T-04

CRUSH INJURIES

ALS SPECIFIC CARE: *See General Trauma Care Protocol T-1*

For Crush Injuries of major extremities with active entrapment greater than 2 hours:

- Sodium Bicarbonate
    - IV: 1 meq/kg IV (minimum 50 meq for adults) given *IMMEDIATELY PRIOR TO RELEASE FROM ENTRAPMENT*
    - OPTIONAL INFUSION: 50-100 meq/1000 cc, run at 150 cc/hr, titrated for effect
- **Calcium Chloride (for crush injuries with hyperkalemia changes on EKG)**
    - IVP (Slow): 500-1000 mg,
    - **DO NOT GIVE IN SAME LINE AS BICARB INFUSION.**

Protocol
T-04

PHYSICIAN PEARLS:

Victims entrapped and crushed due to heavy objects, (e.g. fallen debris from a structural collapse) present a unique challenge. These crushing objects place prolonged and continuous pressure on the extremities resulting in skeletal muscle death (rhabdomyolysis) with release of its cellular contents (myoglobin) into the plasma.

These adverse effects are known as Acute *Crush Syndrome*. After the skeletal muscle injury occurs and the crushing object is removed, the accumulated cellular toxins (myoglobin) and electrolytes (potassium) are released into circulation and may cause lethal cardiac arrhythmias, acute renal failure and sudden death. The systemic effects of Acute Crush Syndrome only occur after the object is removed and the injured extremity is reperfused. Removal of the object causes a massive fluid shift into the injured muscle, resulting in acute hypovolemia and hypotension.

Large volumes of NS (avoid LR) must be given to the patient intravenously both before and after the patient is released. The addition of a buffering agent, such as sodium bicarbonate, to the IV solution can help prevent the myoglobin deposition in the renal tubules and may counteract hyperkalemia as well.
A tourniquet may slow the spread of toxins from the injured extremity, and result in improved outcomes as well as preventing catastrophic blood loss.

Sodium bicarbonate should not be used in crush injuries of short duration (less than 30 minutes). *Its use is indicated when evidence of distal ischemia is present. These signs are commonly known as the six "Ps."*

- *Pain*
- *Pallor*
- *Pulselessness*
- *Paralysis*
- *Paresthesia*
- *Poikilothermia (cool to touch)*

Trauma patients are very susceptible to heat loss. Preservation of body heat is critical

CRUSH INJURIES

Protocol

T-04

CRUSH INJURIES

Protocol
T-05

SECTION: T-05

TITLE: Traumatic Cardiac/Respiratory Arrest

REVISED: January 01, 2018

Traumatic Cardiac / Respiratory Arrest

This protocol supplements protocol C-1 Adult Cardiac Arrest or PC-1 Pediatric Cardiac/respiratory arrest as appropriate.

BLS-Specific Care: *See General Trauma Care Protocol T-1*

- Initiate Basic cardiac arrest care (See protocol *C-1 Adult Cardiac Arrest* or PC-1 Pediatric Cardiac/respiratory arrest as appropriate). Perform high performance Cardiopulmonary Resuscitation (AKA "Pit Crew", see *appendix 30*)
- Consider underlying causes of Traumatic cardiac arrest and treat accordingly **simultaneously with chest compressions**. These interventions may include:
    - Bleeding control
    - Pelvic Binding
    - Tourniquet application even in the absence of severe bleeding. (bleeding may be minimal due to arrest state)
    - Careful use of BVM, airway adjuncts and suction. Ventilations should occur over 1-2 seconds
- Notify responding ALS unit ASAP.
- Consider and apply cervical collar as appropriate (see *appendix 17: Selective Spinal Restriction*)

AEMT/O.M. Specific Care: ***See General Trauma Care Protocol T-1***

- Consider underlying causes of Traumatic cardiac arrest and treat accordingly **simultaneously with chest compressions**. In addition to the above interventions, this may include:
    - Immediate Supra-glottic Airway as appropriate
    - Fluid Resuscitation: IV: 20 cc/kg ml crystalloid solution. Re-evaluate pulses after each bolus and repeat PRN to a maximum of 60 cc/kg.

ALS-Specific Care: ***See General Trauma Care Protocol T-1***

- Consider underlying causes of Traumatic cardiac arrest and treat accordingly **simultaneously with chest compressions**. In addition to the above interventions, this may include:
    - Rapid and early advanced airway management as appropriate
    - Bilateral needle chest decompression

- **Epinephrine,** Rhythm-specific, other Pharmacological therapy**:** *Use of Epinephrine and other medications should be prioritized secondary to correcting the underlying causes of traumatic cardiac arrest, such as Tension Pneumothorax, hypovolemia, life threatening bleeding, and other "H's and T's".*

Protocol
T-05

Traumatic Cardiac / Respiratory Arrest

Physician Pearls:
Traumatic cardiac arrest carries a very high mortality, but in those where ROSC can be achieved, neurological outcome in survivors appears to be similar to other causes of cardiac arrest.

The American College of Surgeons and the National Association of EMS physicians recommend withholding resuscitation in situations where death is inevitable or established and in trauma patients presenting with apnea, pulselessness and without organized ECG activity (asystole). However, neurologically intact survivors initially presenting in this state have been reported. These are patients who survived but whom otherwise may have not.

We therefore recommend the following approach: *Consider* withholding resuscitation in traumatic cardiac arrest in any of the following conditions:

- No signs of life within the preceding 15 min (down time best estimate) AND asytolic.
- Massive trauma incompatible with survival (e.g. decapitation, penetrating heart injury, loss of brain tissue).
- See appendix 26: IN-FIELD DEATH/POST/DNR for further guidance.

If CPR has been initiated *inappropriately* as outlined above, personnel may discontinue CPR without on-line Medical Control.

Outside of the guidelines above (see Appendix 26), In all cases where CPR efforts have been appropriately initiated, Paramedic consultation with the on-line Medical Control physician is **required** prior to discontinuation.

- In addition, BLS interventions, an advanced airway, needle chest decompression, bleeding control, and at least 20 minutes of rhythm-appropriate therapy should have been performed prior to considering termination of efforts
- If a patient's ETCO2 remains less than 11 mm Hg, despite 20 minutes of rhythm-appropriate therapy with an advanced airway placement, needle chest decompression (if appropriate), and bleeding control interventions, then efforts are likely futile. Conversely, higher ETCO2 may be cause to consider ongoing resuscitation efforts. Clinical judgement is essential in determining whether to continue resuscitation.

Use waveform ETCO2 as a gauge for effectiveness of resuscitation as well as monitoring ETT placement.

Continuous use of a LSB, scoop stretcher, or similar device in an extrication/patient movement function is permissible to minimize scene time. Similarly, providers should not wait for arrival of the LUCAS to initiate transport.

Immediate resuscitative efforts in traumatic cardiac arrest focus on treatment of reversible causes, ***which occur simultaneously with chest compressions as early as possible***. These causes (*and possible interventions*) include:

- Hypoxia
  - Basic and advanced airway management at appropriate.
- Tension Pneumothorax
  - Bilateral needle chest decompression
- Cardiac Tampanade
- Hypovolemia/Uncorrected Bleeding.
  - Aggressive bleeding control, tourniquet use, and would packing.
  - Judicious fluid resuscitation

As a general rule, cardiac arrest patients should have their airway managed without induction agents (RSI/MAI), however if ROSC occurs anticipate the need for IV sedation and analgesia.

A substantial portion of traumatic cardiac arrest are caused by tension pneumothorax. *If there is suspected trauma (blunt or penetrating) to the trunk of the patient*, and unless the possibility of tension pneumothorax can be reliably and rapidly excluded, bilateral decompression should be performed.

Special Trauma Situations:
Pediatrics: The therapeutic priorities during traumatic cardiac arrest are the same in children as in adults.

Pregnancy: Patients in the second half of pregnancy (uterine fundus above the umbilicus) should be resuscitated in the left lateral tilt position at least 15 degrees to minimize uterocaval compression. An long spine board or similar device may facilitate this. As an alternative, constant uterine displacement may be employed if sufficient manpower is on scene.

The 'medical' arrest in the trauma setting: Patients without obvious major injury or those involved in low energy mechanisms should be suspected of having had a primary cardiac arrest prior to injury. In such situations it would be appropriate to follow standard resuscitation algorithms (see Protocol C-1).

Traumatic Cardiac / Respiratory Arrest

Protocol T-05

Protocol
T-06

SECTION: T-06

TITLE: Intimate Partner and Sexual Violence

REVISED: November 1, 2020

INTIMATE PARTNER AND SEXUAL VIOLENCE

This protocol is intended to provide supplementary guidance in domestic assault, strangulation, sexual assault, intimate partner violence and similar ***clinical*** situations. The patient does not need to meet the legal definition of a domestic or intimate partner for this clinical protocol to apply. This protocol does not apply to "Hanging" injuries or other neck injuries in other contexts.

BLS-Specific Care: *See General Trauma Care Protocol T-1*

- Ensure the safety of both providers and if possible, the victim from immediate danger of further assault or violence.
- ***All*** cases of suspected domestic assault, strangulation, sexual assault, intimate partner violence and similar situations should involve Law Enforcement either at the scene or as soon as practical for the situation.
- **Treat life threatening conditions as appropriate.**
- Treat *minor* soft tissue wounds with dry sterile gauze as appropriate. Avoid irrigation, ointments, or other interventions if at all possible as this may destroy DNA evidence.
- Spinal Motion Restriction is not mandatory but should be considered based on protocol and specifics of situation. (see *appendix 17: Selective Spinal Restriction*). Spinal Motion Restriction precludes transport to alternative destination.
- Patient's should be screened for priority symptoms. **Priority Symptoms include:**
    - Pregnancy
    - Altered level of consciousness
    - Loss of consciousness or reported seizure during or after the event
    - Vision Changes during or after the event
    - Loss of bowel or bladder control (Implies loss of consciousnesses)
    - Difficulty Swallowing
    - Difficulty Speaking
    - Difficulty breathing
    - New onset neurological deficit
    - Petechial hemorrhage/subconjunctival hemorrhage
    - Generalized or diffuse abdominal pain.
    - Gross swelling/deformity of the neck
- Patients ***with*** priority symptoms should be strongly encouraged and facilitated for ED evaluation.
- Patients ***without*** priority symptoms may be transported directly by ambulance to alternative destinations or resources (i.e. other than the ER) as appropriate and permitted by protocol.

AEMT/O.M. Specific Care: ***See General Trauma Care Protocol T-1***

ALS-Specific Care: ***See General Trauma Care Protocol T-1***

Protocol
T-06

INTIMATE PARTNER AND SEXUAL VIOLENCE

Physician Pearls:

All **strangulation** patients shall be overseen and co-signed by the lead responding ALS provider.
All **alternative destination referrals** shall be overseen and co-signed by the lead responding ALS provider.

Basic Principles:

- Consider that patients of any gender identity /sexual orientation can be victims.
- **Assessment:**
  - Physical Exam and subjective assessments should be injury and risk assessment focused.
  - Recognition, assessment, and treatment of life-threatening conditions remain a priority.
  - Many sexual assault victims will have minor vaginal or rectal bleeding**. Providers should be vigilant for significant bleeding, diffuse abdominal pain, and other symptoms of major internal trauma (I.E. Foreign Body Insertion).**
  - Active signs of airway compromise, an altered level of consciousness, hemodynamic instability or other priority symptoms should be preferentially transported to an age appropriate trauma center.
  - In the absence of reported/suspected active significant bleeding, there is rarely a need for inspection of genitalia or other sensitive areas in the prehospital setting.
- **Victim Services and Support:**
  - When practical, allow the patient to retain a sense of control. For example, offer the patient simple choices (to sit up or recline on the stretcher, for example).
  - If the patient has an on scene support person (who is not a suspected perpetrator or otherwise a disruptive influence) , EMS may transport this person with the patient if possible and the patient desires.
- **Evidence preservation:** While evidence collection should be left to forensic experts such as SANE (sexual Assault Nurse Examiners) professionals or law enforcement, evidence should be preserved if possible.
  - No food or drink should be given to the patient. Oral assault may have occurred. Patient should avoid brushing teeth or gargling until evidence has been collected by the forensic examiner
  - Avoid the use of plastic bags if possible, with the exception of biohazard bags for bodily fluids (i.e. Vomit, blood, etc)
  - Document the transfer of any belongings, clothes or other items as appropriate in the PCR to maintain chain of custody. This includes if the patient retains their belongings.
- **Treatment of minor injuries:**
  - Minor soft tissue trauma (i.e. Bite wounds, abrasions) should be covered with dry sterile gauze. wounds with dry sterile gauze as appropriate. Avoid irrigation, ointments, or other interventions if possible as this may destroy DNA evidence. Treat significant injuries as required.
- **Transport to alternative destination**
  - Transport to alternative destination will be based on screening criteria.
  - Transport should ideally be in an EMS Ambulance but may be in the vehicle the attending provider deems most appropriate under the circumstances, such as an EMS suburban or LE vehicle. The mode of transport shall be documented.

- **Documentation Considerations**
  - "Rape" is a legal determination. The use "Sexual Assault" or other medical descriptions re more appropriate.
  - "Choked" is a lay term, the use "strangulation" or other medical descriptions as appropriate.
  - Document pertinent findings to include considerations in the screening protocol.
  - Document the specific presence or absence of priority symptoms, including those mentioned in screening. Document voluntary disclosures to include fear of being killed, being threatened with a weapon, or loss of memory of the events of assault.

INTIMATE PARTNER AND SEXUAL VIOLENCE

Protocol T-06

Protocol
R-01

SECTION: R-01

PROTOCOL TITLE: Toxicological Emergencies

REVISED: November 1, 2017

TOXICOLOGICAL EMERGENCIES

GENERAL COMMENTS: This is a general protocol for non-specific toxicological emergencies, including altered LOC of unclear origin.

When possible this protocol should supplement other, more specific protocols. Care should be used to rule out more specific causes, such as closed head injury, CVA, sepsis, and diabetic emergencies.

BLS SPECIFIC CARE:

- Scene safety:
  - Insure law enforcement is on scene for traditional overdoses
  - Wear appropriate PPE including respiratory and topical skin protection
  - Request HAZMAT for suspected toxic exposure, such as meth labs, chemical mishaps, and topical poisons
- Basic BLS assessments and V/S every 15 minutes unless unstable, then reassess and V/S every 5 minutes
- Assess a Blood Glucose. Treat as appropriate. See *Adult Hypoglycemia Protocol (M-06)*
- All toxicological emergencies should receive ALS evaluation.
- Patients with respiratory complaint or abnormality should receive supplemental oxygen, regardless of oxygen saturation. Assist ventilations as needed
- Restraints may be used for patient and/or rescuer safety. See the *Behavioral Emergencies and Combative Patients Protocol (M-14).*
- Monitor temperature

AEMT/O.M. Specific Care:

Vascular Access

- IV access (to a max of 3 attempts) or IO access if needed due to severity of underlying injury or illness, otherwise consider deferring until arrival of ALS providers
  - IV: Crystalloid solution at a TKO rate. May administer 200-500 ml if S/S of dehydration are present, repeat as needed to a maximum of 2 liters
  - Withhold fluids and maintain IV at TKO rate if patient is hemo-dynamically stable or signs and symptoms of fluid overload are present

Respiratory Support (if appropriate and available)

- *Consider* Assisted/Intermittent Positive Pressure Ventilation
- *Consider* Placement of SGA

ALS SPECIFIC CARE:

- *Airway Management:* Secure the airway using means best determined by good clinical decision making.
  - See " *Appendix 6: Medication Assisted Intubation" for* guidelines for current and anticipated clinical needs
- Assess and identify causes of complaints, treat as needed
- All potential overdose patients should have basic ECG assessment done
- Follow appropriate seizure protocol for seizure activity
- Restraints and /or sedation may be used for patient and/or rescuer safety. See the *Behavioral Emergencies and Combative Patients Protocol (M-14).*

PHYSICIAN PEARLS:

Many of these patients will have multiple underlying pathologies, which will pose many challenges to overcome. Patient care should be focused on recognition of risks, preventing/mitigating hyperthermia, agitated delirium, positional asphyxia, hypoxia, and physical self-harm. Provider safety is of primary importance, injuries are decreased with prudent planning and police involvement.

Comment on agents used in sedation:

- Consider using lower initial doses of sedatives when alcohol is involved

ALS Providers may decrease the dosage, or prolong the administration intervals of any medication with sedative properties when doing so would decrease adverse effects and still likely obtain the clinical goal.

It is important to rule out other causes for altered mental status. This particularly includes, but is not limited to:

- Hypoglycemia
- Stroke
- Medication error
- Closed head injury from falls or other causes.
- Sepsis

Protocol
R-02

SECTION: R-02

PROTOCOL TITLE: Opioid Overdose

REVISED: December 01, 2022

GENERAL COMMENTS: The goal in treating an opioid overdose patient is generally not to wake the patient, but to maintain breathing and the airway. While difficult, this is especially important as opiates are often mixed with hyperdynamic substances and other drugs at the street level, and the opioid may be masking or suppressing other toxic effects. The provider should always consider that there may be other causes for altered mentation.

The Opiate Toxidrome consists of:

- Altered mental status
- Miosis
- Unresponsiveness
- Shallow respirations
- Slow respiratory rate
- Decreased bowel sounds
- Hypothermia
- Hypotension

BLS SPECIFIC CARE: *See Protocol M-1, PM-1, PM-9*

- Oxygenation: Initiate basic airway/oxygenation/ventilation maneuvers prior to opioid antagonists. Some opiate overdose patients will respond well to simple assisted ventilations.
- Narcan (naloxone)
  - **IM/IN:** 2-4 mg*. Repeat as needed to a maximum of 10 mg if IV access is unavailable
  - *Some IN preparations of naloxone are supplied in 4 or 8 mg applicator packages. These may be used if available.
  - If patient has obviously aspirated, consider bypassing Narcan and manage airway if required.
- Do not delay basic care (i.e. Airway positioning, ventilations, or CPR) waiting for Naloxone availability or for Naloxone to take effect.
- Physical restraints as necessary

AEMT/O.M. Specific Care: *See Protocol M-1, PM-1, PM-9*

- Narcan (naloxone)
  - **IV/IO:** 0.1-2 mg slowly. Repeat as needed every 1-2 minutes to a maximum of 10 mg via the IV route.
  - If patient has obviously aspirated, consider bypassing Narcan and manage airway to include advanced airways if required.

ALS SPECIFIC CARE: *See Protocol M-1, PM-1, PM-9*

- Attempt to identify co-morbid factors and other medical issues, including poly-pharmacy involvement.
  - Initiate EKG monitoring and obtain a rhythm strip.
- If patient has obviously aspirated, consider bypassing Narcan administration and intubate as required
- Naloxone Infusions: for recurrent somnolence or sedation
  - Re-administer bolus of 0.1-2mg naloxone and initiate infusion
  - IV/IO 0.1-10 mg/hour, titrated for effect.
  - To mix: 4 mg/250 cc.

OPIOID OVERDOSE

Protocol R-02

OPIATE OVERDOSE

The physician medical directors direct that suspected opioid overdose patients who are contacted by ACCESS system providers***, even if the overdose has resolved***, should be strongly encouraged for transport for evaluation whenever possible.

PHYSICIAN PEARLS:

Need for Transport: The physician medical directors direct that suspected opioid overdose patients who are contacted by ACCESS system providers, even if the overdose has resolved, should be strongly encouraged for transport for evaluation whenever possible. If the patient refuses, these cases should be documented thoroughly.

Clinical Goal: The goal of naloxone administration is to reverse respiratory depression and hypoxia while avoiding combativeness and agitation. Use the *lowest dose* possible to restore spontaneous respirations but avoid precipitating withdrawal

PPE: EMS Provider risk of accidental airborne exposure is negligible when basic BSI/PPE (i.e. Gloves, eye protection, mask) is worn.

Route: Low dose naloxone titrated carefully via the IV route is preferable over large boluses IM or IN. Consider focusing on airway and respiratory support while IV access is established.

Naloxone infusions: Not every patient will need a naloxone infusion. Naloxone infusions are an option for patients who are re-sedating after initial naloxone administration. Naloxone infusions should be preceded by a supplementary bolus of IV/IO Naloxone, and then initiated at a rate equivalent to the initial dose required to maintain respiratory effort. I.E. if 1 mg was initially required for restoration of respirations, the dose may be initially set at 1 mg/hour to maintain that state.

The lower dose ranges of Naloxone (0.1-0.4 mg) is intended to avoid the rapid reversal of a narcotic induced coma. Rapid Reversal may lead to vomiting, combativeness, seizures and rarely even cardiac arrest. These adverse events can be minimized with airway management, slow administration and small titrated doses of naloxone.

Many Opiates have a longer bioavailability than Narcan, therefore assess for re-sedation. Re-administer Narcan if needed and consider initiating infusion as needed.

Certain opioids, such as Imodium, can cause EKG changes and QT prolongation. EKG monitoring is indicated.

Protocol
R-03

SECTION: R-03

PROTOCOL TITLE: Hyperdynamic Crisis/Overdose

REVISED: 01MAY18

HYPERDYNAMIC CRISIS/OVERDOSE

GENERAL COMMENTS: Also known as sympathomimetic toxicity, this protocol includes cocaine, methamphetamine, amphetamine, and MDMA (ecstasy) overdose. It may apply to other stimulants as well. Patient care should be focused on preventing/mitigating hyperthermia, agitated delirium, positional asphyxia, hypoxia, and physical self-harm. With true hyperdynamic crisis (tachycardia, agitation, hyperthermia, and/or hypertension), treatment with benzodiazepines is indicated in addition to rhythm specific therapy.

BLS SPECIFIC CARE: *See Protocol M-01, PM-01, PM-09*

- Provide for a calm, low-stimulus environment
- Allow for adequate heat dissipation
- Attempt to identify polypharm involvement, comorbid factors, and other medical issues
- If pediatric patient, determine patient's color category on length based resuscitation tape (ACCESS Pediatric Tape.)
- Utilize physical restraints as necessary
- Obtain patient's temperature, and cool/warm as necessary
- Position patient as appropriate

AEMT/O.M. SPECIFIC CARE: *See Protocol M-01, PM-01, PM-09*

ALS SPECIFIC CARE: *See Protocol M-01, PM-01, PM-09*

Benzodiazepines for hyperdynamic crisis, Acute Coronary Syndrome (ACS), as well as sedation.

Do not administer/discontinue administration if:

- Systolic BP < 90 mmHg
- Respiratory rate, SpO_2 and/or mental status diminishes

See Adult Behavioral Emergencies M-14 for benzodiazepine dosing:

- Valium (diazepam)
- Versed (midazolam)
- Ativan (lorazepam)

Protocol
R-03

HYPERDYNAMIC CRISIS/OVERDOSE

Antiemetics:

Zofran (ondansetron)

IV /IM/IO:

- Adult: 4 mg, may repeat once at 15 minutes, max total dose of 8 mg
- Pediatric: 0.1 mg/kg, max total dose of 4 mg

For drug induced ACS with ST changes, refer to protocol C-03, "General Cardiac Care/ACS".

PHYSICIAN PEARLS:

The Hyperdynamic (stimulant) Toxidrome generally consists of:

- Restlessness
- Excessive speech and
- Excessive motor activity
- Tremor
- Insomnia
- Tachycardia
- Hypertension
- Hyperthermia
- Hallucinations
- Seizures

Management of agitated or combative patients: Use of sedatives (benzodiazepines) is highly recommended for even moderate agitation from hyperdynamic drug use. Sedation may decrease heat production and cardiac toxicity, increase provider safety, and improve overall outcomes.

MDMA, and the more toxic drug PMA, have both amphetamine and hallucinatory like effects. The stimulant effects of MDMA/PMA, which enable users to perform physical exertion (like dancing) for extended periods, may also lead to dehydration, tachycardia, and hypertension. MAOIs may potentiate toxic effects. While any hyperdynamic drug can be dangerous, MDMA and PMA are especially worrisome as they have been known to cause a marked increase in body temperature (malignant hyperthermia) leading to rapid onset of muscle breakdown, DIC, renal failure, seizures, and cardiovascular system failure.

Symptomatic tachycardias refractory to benzodiazepines:
Lidocaine is the anti-arrhythmic of choice for refractory, monomorphic ventricular tachycardia (VT). Magnesium sulfate remains the anti-arrhythmic of choice for polymorphic VT (Torsades); however, it should be used with caution when hypotension is present.

Pacing VT: While large broad spectrum studies have not been performed, overdrive pacing at a rate of 100-120 PPM has been reported to terminate drug induced polymorphic VT (Torsades) refractory to other therapies. The AHA lists this intervention as *class indeterminate*; therefore it is not yet a standard intervention. Contact medical control for guidance.

Drug induced Acute Coronary Syndromes (ACS): The AHA notes that: *"…cardiac catheterization studies have shown that nitroglycerine and phentolamine reverse cocaine induced vasoconstriction,"* and *"Therefore, nitroglycerine and benzodiazepines are first line agents."*

HYPERDYNAMIC CRISIS/OVERDOSE

Protocol R-03

Protocol
R-04

SECTION: R-04

PROTOCOL TITLE: TCA Overdose

REVISED: March 1, 2020

GENERAL COMMENTS: Tricyclic Antidepressants (TCA's) are a leading cause of death in intentional overdoses. Aggressive care at onset of S/S is essential, as the patient can decompensate quickly. Early s/s includes widening of the QRS, tachycardia, hypotension and altered LOC.

BLS SPECIFIC CARE: *See Protocol M-1, PM-1, PM-9*

- Trendelenburg for hypotension
- If pediatric patient, determine patient's color category on length based resuscitation tape (ACCESS Pediatric Tape)

AEMT/O.M. SPECIFIC CARE: *See Protocol M-1, PM-1, PM-9*

- Aggressively treat hypotension with IV crystalloid solution

ALS SPECIFIC CARE: *See Protocol M-1, PM-1, PM-9*

- Continuous EKG monitoring is mandatory, 12 lead is recommended as stability permits.

Specific Pharmacological Therapy

- Sodium Bicarbonate for hypotension, arrhythmia, QRS >100 ms
    - IV: 1 meq/kg IV (min 50 mEq)
    - Re-bolus in 5-10 min at 1 meq/kg if s/s persist
    - OPTIONAL INFUSION: 50-100 mEq/1000 ml,
        - IV/IO: run at 150 ml/hr, titrated for effect

Anti-Arrhythmic

- Magnesium Sulfate *(for Torsades in conjunction with Sodium Bicarbonate)*
    - IV: 2 g given SLOWLY. Take 2 g (4ml), dilute to 20 ml to make 10% solution. Do not give faster than 1 g/minute.
- Lidocaine (Xylocaine) *for Ventricular Tachycardia REFRACTORY to Sodium Bicarbonate*
    - IV: 1-1.5 mg/kg every 3-5 minutes to a max of 3 mg/kg.
    - Maintenance Infusion 2-4 mg/minute titrated for effect, to be initiated if ectopy resolves. Must rebolus with lidocaine in 5-10 minutes after initiation of drip to reach therapeutic levels (unless max bolus dose has been reached)
    - Always give full initial dose, but reduce all subsequent doses by ½ for elderly (>70) or with impaired hepatic function

TCA OVERDOSE

Protocol

R-04

TCA OVERDOSE

Vasopressors: Titrated to maintain adequate HR, MAP>65 or SBP >100. A provider must choose the most appropriate vasopressor for the situation.

- Norepinephrine (Vasopressor of choice in TCA overdoses)
  - **IV/IO Infusion:** IV/IO: 0.01- 2 mcg/kg/min
  - Start at 0.1 mcg/kg/min
- Epinephrine
  - **IV/IO Infusion:** 0.05-1 mcg/kg/min
- Dopamine
  - **IV/IO Infusion:** 2-20 mcg/kg/min
  - Start at 5 mcg/kg/min

Protocol
R-04

PHYSICIAN PEARLS:

ALL TCA OVERDOSES SHOULD BE EVALUATED AT A HEALTHCARE FACILITY

Procainamide and Amiodarone are contraindicated, as are other drugs that widen the QRS.

Vasopressors: Due to dopamine blockade, as well as catecholamine depletion, Nor-epinephrine and epinephrine are considered a more effective vasopressors than dopamine, although fluids should be aggressively administered first.

Toxicity

In adults,

- 10-20 mg/kg is considered a moderate to serious exposure where coma and cardiovascular symptoms are expected
- Approximately 35 mg/kg is thought to be a lethal dose without medical intervention

In children,

- Doses of greater than 3.5 mg/kg seem to increase the risk of asymptomatic EKG changes
- Ingestions greater than 1.5 mg/kg should be referred to an Emergency Department

The drug overdose history correlates reasonably well with the clinical outcome. Generally, at less than 10 mg/kg, few fatalities are found; 35 mg/kg is the approximate LD50; and 50 mg/kg, death is likely (Spiker and Biggs 1976). Patients have survived ingestions of 10 g of amitriptyline (Burks et al 1974), but overdoses as small as 500 mg have been fatal. (Manoquerra Weaver 1977).

EKG screening: Boehnert and Lovejoy in NEJM, 1985 Studied 49 patients with known first generation cyclic antidepressant overdose and found that QRS widening was an excellent predictor of complications from elevated TCA levels.

- QRS>100 msec, 1/3 of patients had seizures
- QRS>160 msec, 1/2 of patients had ventricular dysrhythmia's
- Bundle branch blocks, usually right, are also common, appearing early and persisting late
- *Persistent tachycardia is usually the first sign of toxicity*

TCA OVERDOSE

Protocol
R-04

TCA OVERDOSE

BLANK PAGE

Protocol
R-05

SECTION: R-05

PROTOCOL TITLE: Organophosphate/Carbamate/Nerve Agent Exposure

REVISED: November 1, 2017

GENERAL COMMENTS: *This protocol covers organophosphate, carbamates and nerve agent poisonings.*

BLS SPECIFIC CARE: *See Protocol M-1, PM-1, PM-9, R-1*

- Scene Safety:
  - Take Personal Protective Precautions
  - Request HAZMAT if any risk of provider contamination
- Remove patient's clothes and soap/water decontamination at a minimum
- Oxygenation: Supplemental oxygen as needed
- If pediatric patient, determine patient's color category on length based resuscitation tape (ACCESS Pediatric Tape)
- Attempt to identify offending agent if safety permits

AEMT/O.M. SPECIFIC CARE: *See adult General Toxicological Care Protocol R-1*

- Use Buretrol administration set on medical patients less than 8 years of age

ALS SPECIFIC CARE: *See adult General Toxicological Care Protocol R-1*

Antimuscarinic

- Atropine: Repeat as necessary until drying of secretions noted. No maximum dose.
  - Adult (>10yo):
    - IV/IO/IM: 1-2 mg
    - CETT: 2-4 mg
  - Pediatric (2-10yo):
    - IV/IO: 1mg
    - CETT: 2mg
  - Pediatric (<2yo):
    - IV/IO/IM: 0.02 mg/kg (max 1mg)
    - CETT: 0.03 mg/kg

ORGANOPHOSPHATE EXPOSURE

Bronchodilators:

- Adult and pediatric:
  - For first treatment, combine one albuterol (2.5 mg/3 ml) nebule and one Atrovent (0.5 mg/2.5 ml) nebule in reservoir of oxygen driven nebulizer unit and administer at 10 LPM
  - If Atrovent is contraindicated, use 2 albuterol nebula's (one for pediatric patients) for first treatment.
  - Repeat as needed with albuterol treatments only

Anticonvulsants:

For severe signs and symptoms and/or seizure activity associated with nerve agent, organophosphate or carbamate exposure/ingestion: See age appropriate Seizure Protocol Adult M-5 or Pediatric PM-4

- **Auto-Injectors:**

  DuoDote Auto-Injector: (ATNAA: Antidote Treatment Nerve Agent Auto-Injector)*

  - 2.1 mg atropine in 0.7 ml and 600 mg pralidoxime chloride in 2 ml delivered intramuscularly through a single needle
  - For patients exhibiting mild to severe signs and symptoms of nerve agent or organophosphate poisoning
  - Adult:
    - For mild cases of exposure/ingestion:
    - Administer 1 auto-injector
    - If, after 10-15 minutes, severe symptoms do not develop, no additional treatment is required
    - If, at any time after the first dose, severe symptoms develop, rapidly administer 2 more auto-injectors.
  - Peds:
    - For mild symptoms: no treatment
    - For severe symptoms: administer 1 auto-injector
  - For severe cases of exposure/ingestion:

- Administer 3 auto-injectors in rapid succession
- No more than 3 auto-injectors should be administered to any one patient

PHYSICIAN PEARLS: Organophosphates irreversibly bind to cholinesterase, causing the phosphorylation and deactivation of acetylcholinesterase. The accumulation of acetylcholine at the neural synapse causes an initial overstimulation, followed by exhaustion and disruption of postsynaptic neural transmission in the central nervous system (CNS) and peripheral nervous systems (PNS). If the organophosphate /cholinesterase bond is not broken by pharmacologic intervention within 24 hours, large amounts of cholinesterase are destroyed, causing long-term morbidity or death. Carbamate poisoning exhibits a similar clinical picture to organophosphate toxicity. However, unlike organophosphates, carbamate compounds temporarily bind cholinesterase for approximately 6 hours with no permanent damage. Carbamates have poor CNS penetration and cause minimal CNS symptoms.
Administer both the Atropine AND the 2-Pam to symptomatic patients with organophosphate exposure. 2-Pam is not necessary for KNOWN/ ISOLATED carbamate exposure.
Decontamination and containment

- Separate patient from causative agent. Most exposures are to liquid solutions; decon hair and folds of skin. Decon for at least 15 minutes with water and detergent.
- Decontamination takes precedence over ALS interventions.
- Decontamination should be done by qualified personnel.
- Clothes should be removed on scene, bagged by personnel wearing appropriate equipment, and left for appropriate disposal. **DO NOT** transport in ambulance or to hospital where they may contaminate other providers.
- Patient should be transported in a “patient envelope” or similar device.

Mnemonics for nerve agent/organophosphate/Carbamate exposure

ORGANOPHOSPHATE EXPOSURE

Protocol

R-05

ORGANOPHOSPHATE EXPOSURE

"S.L.U.D.G.E".
Salivation (excessive production of saliva)
Lacrimation (excessive tearing)
Urination (uncontrolled urine production)
Defecation (uncontrolled bowel movement)
Gastrointestinal distress (cramps)
Emesis (excessive vomiting)

"B.A.M."
Breathing Difficulty (wheezing)
Arrhythmias (Bradycardia, ventr. Arrhythmias, AV Blocks.)
Miosis (pinpoint pupils)

"Three C's" of CNS effects
Confusion
Convulsions
Coma

"D.U.M.B.E.L.S." (Muscarinic)
Diarrhea
Urination
Miosis
Bradycardia/Bronchospasm/Bronchorrhea
Emesis
Lacrimation
Salivation, Secretion, Sweating

Days of the Week (Nicotenic)
Mydriasis
Tachycardia
Weakness
Hypertension, Hyperglycemia
Fasciculations

Protocol
R-06

SECTION: R-06

PROTOCOL TITLE: Calcium Channel Blocker/Beta Blocker OD

REVISED: JUNE 15, 2021

GENERAL COMMENTS:

BLS SPECIFIC CARE: *See Protocols R-1, M-1, PM-1, PM-9*

AEMT/O.M. SPECIFIC CARE: *See adult General Toxicological Care Protocol R-1*

ALS SPECIFIC CARE: *See adult General Toxicological Care Protocol R-1*

- Apply cardiac monitor and multi-function electrode (MFE) pads
- 12-lead EKG
- Contact OLMC at earliest indication of calcium channel blocker overdose

ANTIDOTES

- **Calcium Chloride (for Calcium Channel Blocker Only)**
    - IVP (Slow): 500-1000 mg
- **Glucagon**
    - IV,IM: 1-2 mg, repeated every 5 minutes as needed

Do not use diluents (e.g. propylene glycol) supplied with single use kits. Use saline Instead

Cardiovascular Agents:

In conjunction with fluids and glucagon

- Atropine sulfate:
    - Not indicated for complete and high degree heart blocks
    - Adult:
        - 0.5 mg IV/IO as needed every 3-5 minutes.
            - Maximum total dose 3 mg
    - Pediatric:
        - 0.02 mg/kg IV/IO
            - Minimum dose: 0.1 mg
            - Maximum child dose: 0.5 mg
            - Repeat every 3-5 minutes as needed

Cardiac pacing for patients not promptly responsive to pharmacological therapy

- **Adult and Pediatric:** Start at 80 ppm and 80 mA.
    - Consider sedation/analgesia per protocol with trancutaneous pacing if it will not cause unnecessary delays

Calcium Channel Blocker/BETA BLOCKER

Protocol
R-06

Calcium Channel Blocker/BETA BLOCKER

Vasopressors:

For bradycardia or hypotension unresponsive to other therapies

Epinephrine infusion

- Adult: 2-10 mcg/min, see drug index
- Pediatric: 0.1-1 mcg/kg/min, see drug index

Dopamine infusion

- Adult and Pediatric: 2-20 mcg/kg/min, see drug index

PHYSICIAN PEARLS:

Calcium Channel Blockers

- Aggressive cardiovascular support is necessary for management of massive calcium channel blocker overdose. While calcium may overcome some adverse effects of CCBs, it rarely restores normal cardiovascular status.
- According to many case reports, glucagon has been used with good results. However, vasopressors are frequently necessary for adequate resuscitation and should be requested early if hypotension occurs.

Beta Blockers

- **Bradycardia with associated hypotension and shock (systolic BP <80 mm Hg, HR <60 BPM) defines severe beta-blocker toxicity.** Bradycardia by itself is not necessarily helpful as a warning sign because slowing of the heart rate and dampening of tachycardia in response to stress is observed with therapeutic levels.
- While case reports have documented hypotension in the absence of bradycardia, blood pressure usually does not fall before the onset of bradycardia. Bradycardia may be isolated or accompanied by mild conduction disturbances affecting the entire cardiac conduction system from the sinus node to the intraventricular Purkinje system.
- Cardiac pacing may be effective in increasing the rate of myocardial contraction. Electrical capture is not always successful and, if capture does occur, blood pressure is not always restored. *Reserve cardiac pacing for patients unresponsive to pharmacological therapy***.** Multiple case reports describe complete neurological recovery, even with profound hypotension, if a cardiac rhythm can be sustained.
- Hypoglycemia, while uncommon, occasionally occurs with beta blocker use. *Always check a BG with a suspected Beta Blocker OD.*
- Agents with combined alpha- and beta-selective properties (Dopamine and Epinepherine) may be necessary to maintain blood pressure. A beta-agonist may competitively antagonize the effect of the beta-blocker. The amount of beta-agonist required might be several orders of magnitude above those recommended in standard ACLS protocols.

Protocol
R-07

SECTION: R-07

PROTOCOL TITLE: Sedative Overdose

REVISED: November 1, 2017

SEDATIVE OVERDOSES

GENERAL COMMENTS: This protocol includes alcohol, benzodiazepines, and GHB analog overdoses. It may include other CNS depressants as well. Patient care should be focused on supporting the airway, respiratory function, and preventing/mitigating self-harm. Of the sedatives commonly seen, GHB analogs are some of the most unpredictable and difficult to manage.

BLS SPECIFIC CARE: *See adult General Toxicological Care Protocol R-1*

AEMT/O.M. SPECIFIC CARE: *See adult General Toxicological Care Protocol R-1*

ALS SPECIFIC CARE: *See adult General Toxicological Care Protocol R-1*

Attempt to identify co-morbid factors and other medical issues, including poly-pharmaceutical involvement, and closed head injury.
Rule out hypoglycemia and other causes of altered mental status.

- Narcan (naloxone):
  If concomitant opioid ingestion suspected
  - Adult:
    - IV/IO: 0.1-2 mg slowly. Repeat as needed every 1-2 minutes to a maximum of 10 mg
    - IM/IN: 2 mg (1 mg in each are if given IN.) Repeat as needed to a maximum of 10 mg
  - Pediatric:
    - IV/IO/IM: 0.1 mg/kg to a maximum single dose of 2 mg. Repeat as needed every 1-2 minutes

PHYSICIAN PEARLS:

The Sedative Toxidrome generally consists of:

- Sedation
- Confusion
- Delirium
- Hallucinations
- Coma
- Paresthesias
- Dysesthesias
- Diplopia
- Blurred vision
- Slurred speech
- Ataxia
- Nystagmus

SEDATIVE OVERDOSES

Protocol R-07

Protocol

R-08

SECTION: R-08

TITLE: Cyanide/Hydrogen Sulfide Poisoning

REVISED: November 1, 2017

CYANIDE & HYDROGEN SULFIDE POISONING

GENERAL COMMENTS: While not normally available to field medics (outside HAZMAT responses) some of the following treatments are kept on fire/EMS supervisor rigs and at certain manufacturing facilities and may be administered by ACCESS paramedics. Begin or continue such treatment as indicated and contact MEDICAL CONTROL as soon as possible.

BLS SPECIFIC CARE: See Adult General Toxicological Care Protocol R-1

- Maintain safety. Do not enter a HOT ZONE without proper PPE. Generally speaking, Level B protection or higher is recommended
- Do not accept a patient who has not been appropriately decontaminated
- Patients suffering from Cyanide or Hydrogen Sulfide poisoning may expose providers by means of respiratory off gassing even after being decontaminated. Ensure good ventilation in enclosed spaces
- Give priority to decontamination of the eyes with water. Remove contaminated clothing and decontaminate the skin as appropriate with soap and water
- If pediatric patient, determine patient's color category on length based resuscitation tape (ACCESS Pediatric Tape)
- Obtain patient's temperature and cool/warm as necessary
- Position patient as appropriate

AEMT/O.M. Specific Care: See Adult General Toxicological Care Protocol R-1

ALS SPECIFIC CARE: See Adult General Toxicological Care Protocol R-1

- Attempt to identify co-morbid factors and other medical issues, including poly-pharm involvement

Protocol

R-08

CYANIDE & HYDROGEN SULFIDE POISONING

Hydroxocobalamin: (Cyanokit)

- IV initial dose: 5g administered over 15 minutes
- Depending upon severity of the exposure and clinical response to the initial dose, a second dose may be administered
- Second dose: 5g IV infused over 15-120 minutes depending upon severity of signs and symptoms

Be prepared for seizures and treat appropriately.

PHYSICIAN PEARLS:

Aggressive management of seizure activity with benzodiazepines is crucial.

Cyanide inhibits brain glutamate decarboxylase, which causes a decrease in the inhibitory neurotransmitter GABA and contributes to convulsions. Drugs such as Benzodiazepines, which act at the GABA receptor complex, therefore can help control seizures.

Protocol
R-09

SECTION: R-09

PROTOCOL TITLE: Withdrawal Syndromes

REVISED: November 1, 2017

WITHDRAWAL SYNDROMES

GENERAL COMMENTS: This protocol includes withdrawal from alcohol, benzodiazepines, and GHB analogs, as they have similar presentations, physiology and treatments. A patient undergoing active withdrawal may mimic hyperdynamic toxicity, and may be difficult to diagnose. These patients have many of the same risk factors as patients in hyperdynamic crisis including agitated delirium, positional asphyxia, hyperthermia, and seizures.
Other patients withdrawing from stimulants may have severe cravings, paranoia, suicidal ideations, exhaustion, and other symptoms.
Good clinical judgment is mandatory when dealing with these situations to decide when to (and when not to) treat the patient.

BLS SPECIFIC CARE: *See Protocol M-1, PM-1, PM-9*

AEMT/O.M. SPECIFIC CARE: *See adult General Toxicological Care Protocol R-1*

ALS SPECIFIC CARE: *See adult General Toxicological Care Protocol R-1*
Attempt to identify co-morbid factors and other medical issues, including poly-pharm involvement, and closed head injury.

Anticonvulsant therapy, see age appropriate Seizure Protocol M-5 or PM-4

Chemical anxiolysis:

Do not administer/discontinue administration if:

- Systolic BP < 90 mmHg
- Respiratory rate, SpO_2 and/or mental status diminishes

- Valium (diazepam):
  - Adult: 2-5 mg every 5-10 min as needed to maximum of 10 mg

- Versed (midazolam):
  - Adult:
    - IV/IO: 0.5-2.5 mg every 5-10 minutes as needed to maximum of 5 mg
    - IN: 5 mg (2.5 mg each nare) to a max total dose 5 mg
    - IM: 5 mg to maximum dose 5 mg

Protocol

R-09

WITHDRAWAL SYNDROMES

PHYSICIAN PEARLS:

General Withdrawal Symptoms:

Withdrawal does not require complete abstinence from a drug, simply reaching sub-normal (for that patient) levels can make a patient symptomatic. Early withdrawal consists of mild anxiety and craving. This progresses in severity to excessive adrenergic effects including tachycardia, hyperventilation, systolic hypertension, diaphoresis, low-grade fever, hallucinations, intense anxiety, tremor, and insomnia. Some patients (up to 50% in cases of alcohol, and GHB) may experience true delirium, severe hyperthermia and seizures.

Comparison of GHB Analogs, Benzodiazepines, and Alcohol Withdrawal Syndromes

	Onset/Duration	Autonomic Instability	Neuro-Psychiatric Symptoms	Mortality
GHB	1-6 Hours to 14 days	Mild	Severe	Unknown
Benzodiazepines	1-3 Days	Moderate	Moderate	1%
Alcohol	6-12 Hours to 7 days	Severe	Moderate	5-15%

Adapted from "GHB Withdrawal Syndrome" (Miotto & Roth, et al, March 2001)

While the delirium associated with withdrawal is the result of abstinence rather than ingestion from certain drugs, the delirium itself continues to pose a life threat to the patient, especially with regard to restraint and pharmacologic agents used.

With marked agitation, liberal use of low dose benzodiazepines may be very helpful in relieving s/s, as well as prevention of myoclonic tremors and/or seizure activity.

Protocol
R-10

SECTION: R-10

PROTOCOL TITLE: Carbon Monoxide Toxicity

REVISED: June 15, 2021

GENERAL COMMENTS: This protocol is for suspected and confirmed Carbon Monoxide Toxicity from a variety of Endogenous and exogenous sources.

BLS SPECIFIC CARE: *See Protocol M-1, PM-1, PM-9*

- Ensure provider safety. Remove patient from potentially toxic environment prior to initiating therapy
- Attempt to ascertain CO content of environment from which patient was removed
    - NIOSH CO Immediately dangerous to life or health (IDLH) level: ≥ 1200 ppm
- Supplemental high flow oxygen via tight fitting non-rebreather mask or CPAP for moderate (≥ 10%) and severe (≥ 15%) exposures.
    - Dry oxygen may not be tolerated in cases of inhalation injury. In these instances, nebulized NS may make oxygen therapy more tolerable
- Pulse oximetry (SpO_2) readings will be falsely elevated.
    - Low SpO_2 readings, (i.e. ≤ 90%) however, may be indicative of other concomitant respiratory pathology (e.g. pulmonary edema)
- Obtain 12 lead for moderate (≥ 10%) and severe (≥ 15%) exposures.

AEMT/O.M. SPECIFIC CARE: *See Protocol M-1, PM-1, PM-9*

ALS SPECIFIC CARE: *See Protocol M-1, PM-1, PM-9*

- For moderate (SPCO ≥ 10%) and severe (SPCO ≥ 15%) exposures: Initiate cardiac monitoring. Apply multi-function electrode (MFE) Defib pads prophylactically.

Symptomatic patients in the setting of suspected CO toxicity, regardless of SpCO/ HbCO, should be transported for further evaluation.

CARBON MONOXIDE TOXICITY

Protocol

R-10

CARBON MONOXIDE TOXICITY

Physician Pearls:

SpCO/ Carboxy-Hemoglobin Levels (HbCO)

- When in doubt, confirm SpCO by two separate readings in two separate digits, preferably in separate extremities.
- **SpCO is approximately +/- 3% of HbCO**
- **SpCO** / HbCO ≥ 10% = moderate carbon monoxide toxicity.
- **SpCO** / HbCO ≥ 15% = severe carbon monoxide toxicity.

Indications for SPCO monitoring: SpCO/ HbCO monitoring should be initiated in the following cases:

- **Fire Rehab**
- **Suspected** Smoke inhalation
- Burn injuries
- Methylene Chloride Exposure:
  - Paint Strippers
  - Degreasers
  - Floor Strippers
- Medical conditions without clearly identifiable etiologies such as:
  - Altered level of consciousness.
  - Chest pain*/pressure*
  - Headache
  - Nausea and vomiting
  - Dizziness and lightheadedness
- Multiple patients with similar non-traumatic symptoms

Concomitant Injuries

- Trauma and burn care take priority over CO toxicity in transport decisions. Priority 2 and 1 Trauma patients should be transported in accordance with trauma destination guidelines.

Pregnant Patients

- Fetal hemoglobin has a significantly stronger affinity for CO than adult hemoglobin.
- Pregnant patients with confirmed or suspected CO exposure, or with SpCO > 10% should be transported for further evaluation, even if asymptomatic.

Obtaining an accurate SpCO reading: The CO Oximeter ***may*** return a false-positive reading based on patient and/or environmental conditions. Considerations regarding false-positive readings

- **Center the nail** directly over the red light preferably by turning the finger upside down (Nail side down) as well as inverting probe so light is flashing facing you. Once the light is flashing facing up simply place the MIDDLE of the nail bed directly over the red light and close sensor. Jamming the finger in too far or not realizing a patient has a **short fingernail bed** utilizing the traditional method of pulse oximetry will cause an elevated reading. Demonstrate this if possible, in training
- Always confirm high readings with 2 additional finger measurements (Use different fingers or hand)
- Be aware of **ambient light** such as strobes, direct sun, extra bright lights that will affect both pulse and CO oximetry. Cover the SpCO sensor and shield from light.
- Fingers should be **clean** especially if full of soot from a fire
- Finger should be **wide enough** to fit the width of sensor. If fingers are too slim (Even with some adults) then there is a chance of a false positive since the light will pass around the finger versus through the middle of the nail. This is the same rule for Pulse Oximetry
- **Perfusion** index on the left side of the RAD 57 should be at least 2 bars. If very low perfusion exists it may not read CO and provide inaccurate pulse Oximetry as well

CARBON MONOXIDE TOXICITY

Protocol R-10

Protocol
PC-01

SECTION: PC-01

PROTOCOL TITLE: PEDIATRIC CARDIAC/RESPIRATORY ARREST

REVISED: December 01, 2022

PED CARDIAC/RESPIRATORY ARREST

BLS SPECIFIC CARE: *See General Pediatric Care Protocol PM-1*

- *For unwitnessed arrest*: Consider 2 minutes of good, sustained, and effective CPR prior to defibrillation or AED attachment
- For *witnessed* Arrest, or after 2 minutes of good, effective and sustained CPR: AED use per current AHA guidelines and manufacturer recommendations
    - Adult AED's can be used in children less than 1 year of age
    - Single shocks are recommended to reduce interruption of CPR
- For a **suspected DROWNING/SUBMERSION**, providers should begin with five high quality ventilations, then proceed standard resuscitation practices.
    - Ignore any "foam", sputum, or copious oral secretions (other than obvious vomit) in the mouth during initial ventilations. Suction only after initial 5 ventilations but do not interrupt high quality resuscitation to do so.
- When possible, reduce interruptions of chest compressions
- When VF/pulseless ventricular tachycardia (VT) is present, deliver 1 shock and immediately resume CPR, beginning with chest compressions. *Do not delay resumption of chest compressions to recheck the rhythm or pulse.*
- After 10 cycles (about 2 minutes) of CPR, analyze the cardiac rhythm and deliver another shock if indicated. If a non-shockable rhythm is detected, resume CPR immediately
- Careful use of BVM, airway adjuncts. Ventilations should occur over 1-2 seconds
- Avoid hyperventilation/hyperinflation
- Notify responding ALS unit ASAP

AEMT/ O.M. SPECIFIC CARE: *See General Pediatric Care Protocol PM-1*

- IV/IO access as soon as possible
    - 10-20 ml/kg normal saline bolus, repeat as needed for 3 total boluses

Protocol PC-01

PED CARDIAC ARREST

ALS SPECIFIC CARE: *See General Pediatric Care Protocol PM-1*

- Consider underlying causes of cardiac arrest and treat as well
- Defibrillation settings: (after 2 minutes of CPR unless witnessed arrest)
    - 2 - 4 J/kg SINGLE shock as needed
    - Subsequent single defibrillations at 4 J/kg
    - Higher energy levels may be considered, not to exceed10 J/kg or the adult maximum dose

Cardio-active Drugs

- Epinephrine (for all Pulseless Rhythms)
    - IV/IO: 0.01 mg/kg 1:10,000 concentration every 3-5 minutes
    - ETT: 0.1 mg/kg 1:1,000 concentration every 3-5 minutes

Antiarrhythmic therapy:

- Amiodarone (VF/VT)
    - 5 mg/kg
    - May repeat doses up to 15 mg/kg (max dose 300 mg)
- Lidocaine (VF, V-Tach, Refractory Torsades)
    - IV/IO: 1 mg/kg to a max of 3 mg/kg every 3-5 min
    - ET: 2 mg/kg diluted in NS
- Magnesium Sulfate (for refractory VF/VT, First Line for Torsades)
    - IV/IO: 25-50 mg/kg
    - Max 2 g

Consider as appropriate:

- Sodium Bicarbonate for known hyperkalemia, metabolic acidosis (DKA, TCA), prolonged resuscitation after ROSC
    - IV: 1 meq/kg repeated in 10 minutes at 0.5 meq/kg. Follow DKA/TCA recommendations if DKA or TCA OD is suspected
- Narcan (Naloxone) for suspected narcotic overdose
    - IV/ETT: 0.1 mg/kg repeated PRN
    - Max of 2.0 mg/dose
- Dextrose for hypoglycemia
    - Birth to 3 months; use D10 10ml/kg slow IV/IO push
    - >3 months; use D25 4 ml/kg slow IV/IO push
    - See Pediatric Hypo/hyper glycaemia Protocol (PM-6)

PHYSICIAN PEARLS:

Consider underlying Pathologies (H's and T's)

- Hypovolemia,
- Hypoxia,
- Hydrogen ion (acidosis),
- Hyper-/hypokalemia,
- Hypoglycemia,
- Hypothermia.
- Tension pneumothorax,
- Toxins,
- Tamponade(cardiac),
- Thrombosis (coronary and pulmonary), and
- Trauma

Outside of the POST/DNR situations (Appendix 26), once ALS intervention is initiated, medical control should be called prior to ceasing efforts. In addition, BLS interventions, an advanced airway, and at least 20 minutes of rhythm-appropriate therapy should have been performed prior to considering termination of efforts.

The American Heart Association (AHA) current guidelines for CPR and Emergency Cardiac Care recommends:

- Good, sustained, and effective CPR. **"Push hard and fast".**
- **Sustained coronary perfusion is believed essential for the heart to respond to defibrillation, any interruption in compressions should be minimized or avoided.** Even brief interruptions of compressions (such as seen in the pause for ventilations or defibrillation) result in a rapid decrease of coronary perfusion.
- Change to a 1-shock protocol. Frequent or long interruptions in precordial chest compressions for rhythm analysis or rescue breathing were associated with post resuscitation myocardial dysfunction and **reduced survival rates**. The AHA notes that: *"…if 1 shock fails to eliminate VF, the incremental benefit of another shock is low, and* ***the resumption of CPR is likely to confer a greater value than another shock."*** Therefore, when a shockable rhythm is found, **only one shock, instead of three stacked shocks, is recommended.**

ETT vs. IO Access: The AHA notes that *"…administration of epinephrine by the IV route was associated with a higher rate of ROSC and survival to discharge than administration of the drugs by the endotracheal route".* **Therefore, while ETT administration of drugs in cardiac arrest is not prohibited, IO is encouraged when peripheral venous access is unsuccessful.**

Protocol
PC-01a

SECTION: PC-01a

PROTOCOL TITLE:
PEDIATRIC CARDIAC/RESPIRATORY ARREST- BLS and AEMT Algorithm
REVISED: December 01, 2022

PED CARDIAC/RESPIRATORY ARREST- BLS/AEMT

Box #1:

If adequate CPR is being performed upon arrival:

- **a)** Confirm cardiopulmonary arrest and resume CPR.
- **b)** Apply defibrillation pads (pediatric pads as per manufacturer's recommendation) and cardiac monitor without cessation of CPR.
- **c)** Apply length based resuscitation tape.
- **d)** Move on to, **"Box 4."**

Box #2:

Sudden, witnessed arrest in the presence of EMS:

- **a)** Perform CPR only long enough to apply defibrillation pads (pediatric pads as per manufacturer's recommendation) and cardiac monitor.
- **b)** Apply length based resuscitation tape.
- **c)** Move on to, **"Box 4."**

Box #3:

If inadequate CPR or no CPR at all, is being performed upon arrival:

- **a)** Confirm cardiopulmonary arrest
- **b)** Initiate CPR
- **c)** 10 cycles 15 compressions to 2 ventilations with two rescuers (approximately 1-2 minutes)
  - **1)** 30:2 for single rescuer CPR.
- **d)** During CPR
  - **1)** Apply defibrillation pads (pediatric pads as per manufacturer's recommendation) and AED
  - **2)** Apply length based resuscitation tape.
  - **3)** Prepared IV/IO equipment (AEMT)
- **e)** Infant (< 1 year) continue CPR until ALS responders arrive.
  - **1)** Recheck rhythm every 5 cycles
- **f)** Child (> 1 year)
  - **1)** Move to "Box #4"

Box #4:

Child (> 1 year)
Shockable Rhythm ?

Shockable Rhythm:

- **a)** **Give 1 shock with AED**
  - **1)** Continue CPR while AED charges.
- **b)** Immediately resume CPR for 5 cycles 15:2.
- **c)** Obtain IV/IO access without cessation of CPR. (AEMT)
- **d)** Check rhythm every 5 cycles, continue until ALS arrives.

Not shockable Rhythm:

- **a)** Immediately resume CPR for 5 cycles 15:2.
- **b)** Obtain IV/IO access without cessation of CPR. (AEMT)
- **c)** Check rhythm every 5 cycles, continue until ALS arrives.2 cycles 15:2

Protocol PC-01a

PED CARDIAC/RESPIRATORY ARREST- BLS/AEMT

PHYSICIAN PEARLS:

For a **suspected DROWNING/SUBMERSION**, providers may begin with five high quality ventilations, then proceed standard resuscitation practices. .

- Ignore any “foam”, sputum, or copious oral secretions (other than obvious vomit) in the mouth during initial ventilations. Suction only after initial 5 ventilations but do not interrupt high quality resuscitation to do so.

Outside of the POST/DNR situations (Appendix 26), once ALS intervention is initiated, medical control should be called prior to ceasing efforts. In addition, BLS interventions, an advanced airway, and at least 20 minutes of rhythm appropriate therapy should have been performed prior to considering termination of efforts.

Protocol
PC-01b

SECTION: PC-01b

PROTOCOL TITLE: PEDIATRIC CARDIAC/RESPIRATORY ARREST –ALS

REVISED: December 01, 2022

PED CARDIAC/RESPIRATORY ARREST - ALS

PEDIATRIC CARDIAC/RESPIRATORY ARREST –ALS Algorithm

Box #1:

If adequate CPR is being performed upon arrival:

- **a)** Confirm cardiopulmonary arrest and resume CPR.
- **b)** Apply defibrillation pads (pediatric pads as per manufacturer's recommendation) and cardiac monitor without cessation of CPR.
- **c)** Apply length based resuscitation tape.
- **d)** Move on to, **"Box 4."**

Box #2:

Sudden, witnessed arrest in the presence of EMS:

- **a)** Perform CPR only long enough to apply defibrillation pads (pediatric pads as per manufacturer's recommendation) and cardiac monitor.
- **b)** Apply length based resuscitation tape.
- **c)** Move on to, **"Box 4."**

Box #3:

If inadequate CPR or no CPR at all, is being performed upon arrival:

- **a)** Confirm cardiopulmonary arrest
- **b)** Initiate CPR
- **c)** 10 cycles of 15 compressions to 2 ventilations with two rescuers (approximately 1-2 minutes)
  - **1)** 30:2 for single rescuer CPR (approx. 2 min)
- **d)** During CPR:
  - **1)** Apply defibrillation pads (pediatric pads as per manufacturer's recommendation) and cardiac monitor.
  - **2)** Apply length based resuscitation tape.
  - **3)** Prepare for endotracheal intubation.
  - **4)** Prepare IV/IO equipment.
  - **5)** Move on to, **"Box 4."**

Box #4:
Rhythm Check

VF/Pulseless VT:

- **a)** **Shock @ 2 J/kg or per manufacturers recommendations.**
  - **1)** Continue CPR while defibrillator charges.
- **b)** Immediately resume CPR without pause for rhythm check.
- **c)** Perform 5 cycles 15:2 (2 rescuers)
- **d)** Check rhythm every 5 cycles
- **e)** Intubate without cessation of compressions if possible.

Asystole/PEA:

- **a)** **No shock indicated**.
- **b)** Immediately resume CPR.
- **c)** Perform 5 cycles 15:2 (2 rescuers)
- **d)** Check rhythm every 5 cycles
- **e)** Intubate without cessation of compressions if possible.

Protocol PC-01b

PED CARDIAC/RESPIRATORY ARREST - ALS

Box #5:
Rhythm Check

VF/Pulseless VT:

- **a) Shock @ 4 J/kg or per manufacturers recommendations.**
  - **1)** Continue CPR while defibrillator charges.
- **b)** Immediately administer 2 minutes of asynchronous CPR without pause for rhythm check.
- **c)** Obtain IV/IO access without cessation of compressions.
- **d)** Assess BGL.
- **e)** ***MEDICATION ADMINISTRATION DURING CPR:***
- **f) IV/IO 1:10,000 epinephrine:**
  - **1)** 0.01 mg/kg (0.1 ml/kg) with 10 ml NS flush.
  - **2)** Repeat every 3-5 minutes.
- **g)** CETT **1:1,000 epinephrine:**
  - **1)** If unable to obtain IV/IO access.
  - **2)** 0.1 mg/kg (0.1 ml/kg) diluted to 5 ml with NS.
  - **3)** Repeat every 3-5 minutes.

Asystole/PEA:

- **a) No shock indicated.**
- **b)** Immediately administer 2 minutes of asynchronous CPR without pause for rhythm check.
- **c)** Obtain IV/IO access without cessation of compressions.
- **d)** Assess BGL.
- **e)** ***MEDICATION ADMINISTRATION DURING CPR:***
- **f) IV/IO 1:10,000 epinephrine:**
  - **1)** 0.01 mg/kg (0.1 ml/kg) with 10 ml NS flush.
  - **2)** Repeat every 3-5 minutes.
- **g)** CETT**1:1,000 epinephrine:**
  - **1)** If unable to obtain IV/IO access.
  - **2)** 0.1 mg/kg (0.1 ml/kg) diluted to 5 ml with NS.
  - **3)** Repeat every 3-5 minutes.

Protocol
PC-01b

PED CARDIAC/RESPIRATORY ARREST - ALS

Box #6:
Rhythm Check

VF/Pulseless VT:

a) **Shock @ 4 J/kg or per manufacturers recommendations.**

b) Continue CPR while defibrillator charges.

c) Immediately administer 2 minutes of asynchronous CPR without pause for rhythm check.

d) ***MEDICATION ADMINISTRATION DURING CPR:***

e) **IV/IO Amiodarone:**

- **1)** 5mg/kg. Repeat up to 15mg/kg (max dose 300mg).

f) **IV/IO 2% lidocaine:**

- **1)** 1 mg/kg with 10 ml NS flush.
- **2)** Repeat every 3-5 minutes as needed.
- **3)** Maximum of 3 mg/kg.

g) CETT **2% lidocaine:**

- **1)** If unable to obtain IV/IO access.
- **2)** 2 mg/kg diluted to 5 ml with NS.
- **3)** Repeat every 3-5 minutes.

h) **IV/IO magnesium sulfate:**

- **1)** First-line agent in the treatment of torsades de pointes.
- **2)** 25-50 mg/kg to a maximum of 2 g.

i) After 5 cycles of CPR go back to “Box #5”

Asystole/PEA:

a) **No shock indicated.**

b) Immediately administer 2 minutes of asynchronous CPR without pause for rhythm check.

c) Obtain IV/IO access without cessation of compressions.

d) Assess BGL.

e) ***MEDICATION ADMINISTRATION DURING CPR:***

f) **IV/IO 1:10,000 epinephrine:**

- **1)** 0.01 mg/kg (0.1 ml/kg) with 10 ml NS flush.
- **2)** Repeat every 3-5 minutes.

g) CETT **1:1,000 epinephrine:**

- **1)** If unable to obtain IV/IO access.
- **2)** 0.1 mg/kg (0.1 ml/kg) diluted to 5 ml with NS.
- **3)** Repeat every 3-5 minutes.

During CPR

- **Push hard and fast (100/min)**
- **Ensure full chest recoil**
- **Minimize interruptions in chest compressions**
- One cycle of CPR: 15 compressions then 2 breaths; 5 cycles ≈ 1 to 2 minutes
- Avoid hyperventilation
- Secure airway and confirm placement
- Rotate compressions every 2 minutes with rhythm checks
- Search for and treat possible contributing factors:
  - **H**ypovolemia

Protocol PC-01b

PED CARDIAC/RESPIRATORY ARREST - ALS

PHYSICIAN PEARLS:

For a **suspected DROWNING/SUBMERSION**, providers may begin with five high-quality ventilations, then proceed with standard resuscitation practices. .

- Ignore any "foam", sputum, or copious oral secretions (other than obvious vomit) in the mouth during initial ventilations. Suction only after initial 5 ventilations but do not interrupt high-quality resuscitation to do so.

Consider underlying Pathologies (H's and T's)

- Hypovolemia,
- Hypoxia,
- Hydrogen ion (acidosis),
- Hyper-/hypokalemia,
- Hypoglycemia,
- Hypothermia.
- Tension pneumothorax,
- Toxins,
- Tamponade(cardiac),
- Thrombosis (coronary and pulmonary), and
- Trauma

Outside of the POST/DNR situations (Appendix 26), once ALS intervention is initiated, medical control should be called prior to ceasing efforts. In addition, BLS interventions, an advanced airway, and at least 20 minutes of rhythm-appropriate therapy should have been performed prior to considering termination of efforts.

The American Heart Association (AHA) current guidelines for CPR and Emergency Cardiac Care recommends:

- Good, sustained, and effective CPR. **"Push hard and fast".**
- **Sustained coronary perfusion is believed essential for the heart to respond to defibrillation, any interruption in compressions should be minimized or avoided.** Even brief interruptions of compressions (such as seen in the pause for ventilations or defibrillation) result in a rapid decrease of coronary perfusion.
- Change to a 1-shock protocol. Frequent or long interruptions in precordial chest compressions for rhythm analysis or rescue breathing were associated with post resuscitation myocardial dysfunction and **reduced survival rates**. The AHA notes that: *"…if 1 shock fails to eliminate VF, the incremental benefit of another shock is low, and* ***the resumption of CPR is likely to confer a greater value than another shock.****"* Therefore, when a shockable rhythm is found, **only one shock, instead of three stacked shocks, is recommended.**

ETT vs. IO Access: The AHA notes that *"…administration of epinephrine by the IV route was associated with a higher rate of ROSC and survival to discharge than administration of the drugs by the endotracheal route".* **Therefore, while ETT administration of drugs in cardiac arrest is not prohibited, IO is encouraged when peripheral venous access is unsuccessful.**

Protocol
PC-02

SECTION: PC-02

PROTOCOL TITLE: PEDIATRIC SYMPTOMATIC BRADYCARDIA

REVISED: November 1, 2019

PED SYMPTOMATIC BRADYCARDIA

General Comments: Symptomatic bradycardia is defined in pediatrics as hypotension or other S/S of poor perfusion, with a (relative to age) bradycardia. Most bradycardia is hypoxia related, and will usually respond to oxygenation.

BLS SPECIFIC CARE: *See General Pediatric Care Protocol PC-1*

Stable/asymptomatic/adequate perfusion

- Ensure adequate oxygenation, ventilation, and perfusion
- Resolve any causes of hypoxia

Unstable/symptomatic/poor perfusion/peri-arrest

- Aggressive oxygenation and ventilations
- Initiate chest compressions for HR < 60 with frequent re-evaluation for situations refractory to oxygenation
- Determine patient's color category on length based resuscitation tape (ACCESS Pediatric Tape)

AEMT/ O.M. SPECIFIC CARE: *See General Pediatric Care Protocol PC-1*

ALS SPECIFIC CARE: *See General Pediatric Care Protocol PC-1*

Consider underlying causes and treat as well.

Vasoactive Bolus Medications

- Epinephrine:
  - IV/IO: 0.01 mg/kg (0.1 ml/kg) 1:10,000 with 5-10 ml NS flush
    - Repeat every 3-5 minutes as needed
- Atropine:
  - IV/IO: 0.02 mg/kg
    - Minimum dose: 0.1 mg
    - Maximum child dose: 0.5 mg
    - Maximum adolescent dose: 1 mg
    - Repeat every 3-5 minutes as needed x 1

Transcutaneous Pacing:

For bradycardia unresponsive/refractory to pharmacologic therapy and oxygenation:

- Consider initial rate at 80-100, initial MA at 60-80

Vasopressor Infusions: Epinephrine is the preferred agent in this setting:

- Epinephrine infusion
    - 0.05-1 mcg/kg/min IV/IO
    - Titrate to adequate heart rate/blood pressure response
- Dopamine infusion :
    - 2-20 mcg/kg/min IV/IO dopamine infusion
    - Titrate to adequate heart rate/blood pressure response

PHYSICIAN PEARLS:
Consider underlying causes

- *Hypoxia*
- *Hypothermia*
- *Drug/Toxin Exposure*

The following information is adapted from the Medtronic Physio-control website regarding pediatric pacing.

"Bradycardia is the most common dysrhythmia in children and is usually secondary to hypoxic events. Although noninvasive pacing may be attempted, typically bradycardias of hypoxic etiology do not respond. First line therapy is prompt airway support, ventilation and oxygenation.
Although less frequent in occurrence, children and infants do experience heart blocks and bradycardias where treatment with noninvasive pacing is indicated and could be lifesaving"

Considerations:

- The landmarks for pacing electrode placement are the same for adults and children; *anterior-posterior* is the most common pacing electrode placement though *Anterior-lateral* is acceptable as long as pacing pads do not overlap.
- ECG electrodes should be placed well away from the pacing electrodes.
- Pediatric pacing electrodes should be used on children who weigh less than 33 pounds (15 kg).
- *Capture thresholds in children are similar to those in adults.*

Protocol
PC-03

SECTION: PC-03

PROTOCOL TITLE: PEDIATRIC TACHYCARDIA

REVISED: November 1, 2017

PED TACHYCARDIA

BLS SPECIFIC CARE: *See General Pediatric Care Protocol PM-1*

- Determine patient's color category on length based resuscitation tape (ACCESS Pediatric Tape)

ILS SPECIFIC CARE: *See General Pediatric Care Protocol PM-1*

ALS SPECIFIC CARE: *See General Pediatric Care Protocol PM-1*

- Support airway/breathing and apply oxygen as needed
- Apply monitor and assess rhythm/rate (Normal rate <180 children; <220 infant)
- Obtain 12- Lead EKG if possible
- Consider underlying causes and treat as well
- *See Protocol M-15 for sedation prior to cardioversion*

Narrow Complex Tachycardia (Supraventricular, QRS ≤ 0.09 sec, and regular):

*If **UNSTABLE** (poor perfusion, AMS, CHF)*: Obtain vascular access and plan for synchronized cardioversion:

- Synchronized cardioversion:
  - Initial energy setting of 0.5 - 1J/kg or as per manufacturer's recommendations
  - Deliver subsequent shocks, as needed, at 2 J/kg or as per manufacturer's recommendations

- Repeat 12-Lead EKG after successful cardioversion

*If **STABLE***:

- Vagal Maneuvers
- Adenosine
  - IV or IO: First dose: 0.1 mg/kg (max: 6 mg)
  - Subsequent doses: 0.2 mg/kg, (max: 12 mg). Repeat x1

- If unsuccessful, yet stable:
- Amiodarone
  - IV or IO: 5 mg/kg over 20-60 min (max 150mg)
- If still unsuccessful, yet stable, contact medical control for further instructions. If unstable, proceed to synchronized cardioversion
- Repeat 12-Lead EKG if rhythm converts

Protocol

PC-03

PED TACHYCARDIA

Wide Complex Tachycardia (QRS ≥ 0.09sec, Variable R-R)

*If **UNSTABLE** (poor perfusion, AMS, CHF)*: Obtain vascular access and plan for synchronized cardioversion:

- *Synchronized* cardioversion:
  - Initial energy setting of 0.5 – 1 J/kg or as per manufacturer's recommendations
  - Deliver subsequent shocks, as needed, at 2 J/kg or as per manufacturer's recommendations
  - If unable to obtain synchronization with QRS complexes, (as with torsades de pointes) proceed with **unsynchronized** cardioversion as detailed below
  -
- *Unsynchronized* cardioversion
  - For unstable polymorphic VT
  - Initial energy setting of 2 J/kg or as per manufacturer's recommendations
  - Deliver subsequent shocks, as needed, at 4 J/kg or as per manufacturer's recommendations

*If **STABLE***:

- Amiodarone
  - IV or IO: 5 mg/kg over 20-60 min (max 150mg)

OR

- Lidocaine
  - IV or IO: 1 mg/kg slow IV
  - Repeat 10-15 minutes x2 to a max dose of 3 mg/kg

- Magnesium sulfate (polymorphic ventricular tachycardia)
  - IV or IO: 25-50mg/kg (max 2g) over 10 minutes
  - Rapid administration can cause hypotension and respiratory compromise; monitor carefully
  - First line agent for hemodynamically STABLE polymorphic VT (torsades de pointes)

- Repeat 12-Lead EKG if rhythm converts.
- If unsuccessful, yet stable, contact medical control for further instructions. If unstable, proceed to synchronized cardioversion.

Protocol
PC-03

PHYSICIAN PEARLS:

- **Amiodarone is contraindicated if the patient is suspected of a TCA overdose.** This also applies to other drugs that widen the QRS

Use of a vagal maneuver may be useful in determining type of rhythm.

QRS Width:
≤ 0.09 seconds –probable Sinus Tachycardia or Supraventricular Tachycardia
≥ 0.09 seconds –probable Ventricular Tachycardia

Rate: (rates less than 180 BPM in a child, or 220 infant are usually secondary to other non-cardiac causes)
Probable Sinus Tach:
< 180 in Children or < 220 BPM in Infants
P-waves present and regular
Constant PR interval
Variability of R-R
Probable SVT:
> 180 in Children or > 220 BPM in Infants
P-waves absent/abnormal
Regular R-R and HR doesn't vary
Probable VT:
> 180 in Children or > 220 BPM in Infants
Wide QRS
Regular HR

PED TACHYCARDIA

Protocol

PC-03

PED TACHYCARDIA

Protocol
PM-01

SECTION: PM-01

PROTOCOL TITLE: PEDIATRIC GENERAL MEDICAL CARE

REVISED: DRAFT 1 December 2022

GENERAL COMMENTS: The Pediatric Medical Protocols (PM series) are meant to supplement existing adult protocols with pediatric appropriate doses, therapies, and guidelines. As a general rule pediatric doses should not exceed adult doses.

With the implementation of the AHA current ECC recommendations, the following age recommendations are made. Newborns are defined as birth to the time the infant leaves the hospital. Infants are defined as less than 1 year of age. A child is defined as 1 year to the approximate onset of puberty (as defined by secondary sex characteristics) and 100 lbs weight. This is typically 12-14 years of age.

BLS SPECIFIC CARE:

- Basic BLS care. Obtain assessments and V/S every 15 minutes unless unstable, then reassess and obtain V/S every 5 minutes
- Oxygen administration titrated for SpO2 < 95% or for patients with cardiac, respiratory, neurologic, or as needed
- Coordinate resources to insure prompt arrival of ALS care to the patient. Update responding ALS units as needed
- Assess blood glucose level as appropriate
- Patients with a respiratory complaint should receive supplemental oxygen, regardless of oxygen saturation
- Keep patient in safe and calm environment

AEMT/O.M. Specific Care:

12 Leads: (if feasible, indicated and available.)

Vascular Access

- IV access (to a max of 3 attempts) or IO access if needed due to severity of underlying injury or illness, otherwise consider deferring until arrival of ALS providers
    - IV: Crystalloid solution at a TKO rate. May administer 10-20 ml/kg boluses if S/S of dehydration or decomposition/shock are present, repeat as needed to a maximum of 60 cc/kg.
    - Withhold fluids and maintain IV at TKO rate if patient is hemo-dynamically stable or signs and symptoms of fluid overload are present

Respiratory Support (if appropriate and available)

- *Consider* Assisted/Intermittent Positive Pressure Ventilation
- *Consider* Placement of SGA
- *Consider* CPAP: See also *Appendix 6*
    - **Medical Control Required if BP less than 90 systolic.**
    - Initial setting at 5 cmH2O, **MAX: 10 cmH2O**

GENERAL PEDIATRIC CARE

- IO access: as needed for markedly critical patients after unsuccessful peripheral vascular access. Follow fluid administration guidelines as above

ALS SPECIFIC CARE:

Airway Management: Secure the airway using means best determined by good clinical decision making.

- See “Appendix *2: Advanced Airway Support Supplement" for* guidelines for current and anticipated clinical needs

Cardiac Monitoring: Apply cardiac monitor as necessary

- 12-lead ECG’s will only be transmitted for the following:
  - STEMI
  - On-line medical direction consults, regarding 12-lead ECG

Non-Traumatic Blood Loss: For Severe Blood Loss w/in 3 hours of onset:

- **Pediatrics**
  - IV/IO: 15 mg/kg in 250 cc over 10 minutes. Does not need a pump. 1 GM max.

Protocol
PM-01

PHYSICIAN PEARLS:
Basics of Pediatric Care:
As a general rule pediatric doses should not exceed adult doses.

- Remember that most doses for Pediatric patients are expressed in mg/kg or ml/kg, nor pounds. Pay attention to the difference to avoid errors.

Pediatric Hypotension: The definition of pediatric hypotension is based on multiple factors including age and size. For the purposes of this protocol, it is defined as:

70 + (Age in years x 2) = Systolic B/P or 90 mm hg, *whichever is lower*.

Proper airway positioning in airway management is essential. Avoid hyperventilation/hyperinflation with ventilation.

Communications: Notify responding ALS units and receiving hospitals ASAP of critical pediatric situations.

IV Set selection:

Consider the use a Buretrol for an IV administration set for all medical patients under 8 years of age for fluid admin < 100 cc (excluding saline locks).

Use standard IV sets or blood tubing as needed for trauma patients under 8 years of age or for fluid admin > 100 cc.

If patient's weight is unknown, the ACCESS Pediatric Tape should be used. When the ACCESS Pediatric Tape gives a more specific drug dosage than is listed in these protocols due to weight, the ACCESS pediatric tape dosage may be used *at the paramedic's discretion.*

GENERAL PEDIATRIC CARE

Protocol PM-01

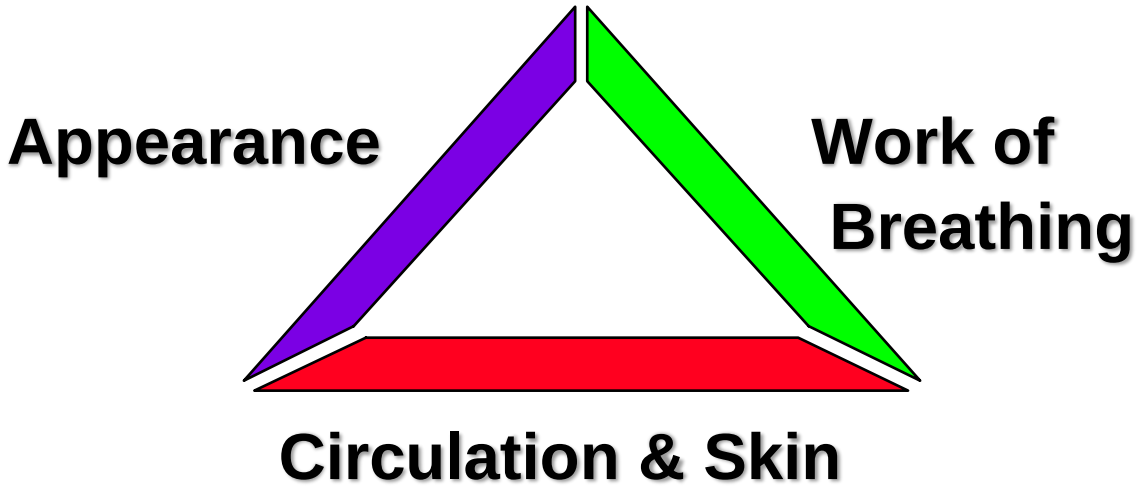
GENERAL PEDIATRIC CARE

Pediatric Drip Rule of 6's

To calculate a **DRUG** infusion, multiply the child's weight in kg by **6**. This amount of **DRUG** (in mg) is then added to enough IV solution to equal a total of 100 ml. When the resulting solution is infused at a rate of **1 ml/hr**, it will deliver a dosage of **1 mcg/kg/min.**

Pediatric Assessment Triangle

Pediatric patients tend to decompensate as a result of respiratory failure, shock, or a combination of the two. This can lead to cardiopulmonary failure if not promptly and adequately treated. The Pediatric Assessment Triangle is a visual aid to facilitate rapid evaluation of pediatric patients.



Protocol
PM-02

SECTION: PM-02

PROTOCOL TITLE: PEDIATRIC RESPIRATORY EMERGENCIES

REVISED: November 1, 2017

PEDIATRIC RESPIRATORY EMERGENCIES

GENERAL COMMENTS: This protocol covers a wide variety of pediatric respiratory emergencies, particularly asthma, respiratory infections, and croup.

BLS SPECIFIC CARE: *See General Pediatric Care Protocol PM-1*

Determine patient's weight or color category on length based resuscitation tape (ACCESS Pediatric Tape)

Bronchodilators

- Nebulizer
    - Albuterol 2.5 mg / Atrovent 0.5 mg nebulized
        - May use DuoNeb™ preparation for initial nebulizer
    - Repeat as needed with Albuterol 2.5 mg
    - Do not dilute
- *As an alternative* May Assist the patient (or family) with his prescribed "rescue" inhaler. Use a spacer if the patient is prescribed one and has it available
    - Assisted Inhaler: 2 puffs or number of puffs as prescribed by the patient's MD
    - Repeat every 5-10 minutes or as prescribed by the patients MD
    - Use a spacer if available
    - Hold for HR >200/min
- *As an alternative*, the patient (or his family) may be allowed to use their own nebulized medication
    - Hook up oxygen in lieu of a room air "condenser" and run at 6-8 LPM with the patients Hand Held Nebulizer (HHN). The patient (or family) must prepare it themselves

Stridor

- Determine patient's color category on length based resuscitation tape (ACCESS Pediatric Tape)
- Allow patient to remain in his/her position of comfort as they have assumed this position to maximize the effectiveness of their own respirations
- Avoid agitating the patient as doing so can cause further deterioration of the respiratory status

AEMT/O.M. SPECIFIC CARE: *See General Pediatric Care Protocol PM-1*

Respiratory Support (if appropriate and available)

- *Consider* Assisted/Intermittent Positive Pressure Ventilation
- CPAP (if available and feasible) : See also *Appendix 6*
    - **Medical Control Required if BP less than 90 systolic.**
    - Initial setting at 5 cmH2O, **MAX: 10 cmH2O**

Protocol
PM-2

PEDIATRIC RESPIRATORY EMERGENCIES

ALS SPECIFIC CARE: *See General Pediatric Care Protocol PM-1*

Bronchodilators

- Epinephrine 1:1000 for patients in severe distress
    - IM 0.01 mg/kg for severe refractory bronchospasm
- Magnesium Sulfate (if worsening after above medications)
    - 25-50 mg/kg in 100 ml infused over 2-5 min
    - Max 2 g

Corticosteroid Therapy

- Solu-Medrol
    - 1-2 mg/kg IVP

For stridor, suspected croup, and suspected epiglottitis

- Epinephrine Neb (first line)
    - 3 mg (3 ml) epinephrine 1:1,000 nebulized diluted with 3ml NS for a total of 6 ml
    - Repeat x 2 as needed. Allow 2 minutes between doses.
- Epinephrine 1:1000 for patients in severe distress
    - IM 0.01 mg/kg for severe refractory stridor

PHYSICIAN PEARLS:

All respiratory emergency patients shall have continuous ECG monitoring. It is important to note, “not all asthma wheezes” and “not all that wheezes is asthma.” The history and physical is key.

Magnesium Sulfate (IV/IO) and Epinephrine (IM/SQ) should be used only on severe patients who are refractory to initial treatments

The predominant cause for stridor in younger children is acute viral laryngotracheobronchitis (CROUP); although less common, epiglottitis should be considered as a life threatening cause of stridor however similarly, Albuterol and Atrovent will not provide benefit to these patients. As noted above, nebulized epinephrine is the first line treatment for field personnel for these conditions.

For severe respiratory distress (in the absence of congenital heart defects), normal saline fluid boluses should be administered early (after first nebulized treatment as beta agonists and epinephrine can cause increased tachycardia and secondary hypotension. Additionally, with tachypnea, patients can manifest dehydration secondary to insensible losses of respiration and from potential underlying illness. Therefore fluid boluses should be administered liberally with these patients.

Protocol
PM-03

SECTION: PM-03

PROTOCOL TITLE: PED ALLERGY/ANAPHYLAXIS

REVISED: June 15, 2021

PED ALLERGY/ANAPHYLAXIS

BLS SPECIFIC CARE: *See General Pediatric Care Protocol PM-1*

- Determine patient's color category on length based resuscitation tape (Broselow Tape)

Epi Pen Protocol (If optional Module not completed)

- Administer epinephrine via auto-injector per State of Idaho epinephrine auto-injector program guidelines
- In the absence of this training and patient has his/her own epinephrine auto-injector, the EMT may assist with its administration per the following guidelines
    - Confirm prior to administration:
    - Is Epi-Pen prescribed to the patient (Right Patient?)
    - Is it an Epi-Pen of the correct dose (Right Dose?)
        - Patient weight < 30 kg (66 lbs)?
            - Use Epi-Pen Junior: 0.15 mg 1:1,000 epinephrine
        - Patient weight > 30 kg (66 lbs)?
            - Use Epi-Pen Adult: 0.3 mg 1:1,000 epinephrine
    - Is the Epi-Pen an intramuscular (IM) auto injector (Right route?)
    - Is the Epi-Pen expired?
- Re-evaluate patient's sign and symptoms every 5 minutes following administration. Evaluate for presence adverse effects of epinephrine.
    - Chest pain
    - Headache
    - Palpitations
    - Anxiety/tremors
- Repeat in 10 minutes if no improvement

If signs of bronchospasm are present, consider bronchodilators:

- *Option 1:* Nebulizer Treatment
    - Albuterol 2.5 mg (0.83% in 3 cc)
    - Ipratropium Bromide (Atrovent) 0.5 mg (0.02% in 2.5 cc)
    - May repeat as needed using Albuterol only. May use equivalent solutions of above medications such as *DuoNeb* as available
- *Option 2:* Assist the patient with his prescribed "rescue inhaler." Use a spacer if the patient is prescribed one and has it available
    - Assisted Inhaler: 2 puffs or a specific number of puffs as prescribed by patient's MD
    - Repeat every 5-10 minutes or as prescribed by patient's MD
    - Hold for HR >150/min
- *Option 3:* As an alternative, the patient may be allowed to use his/her own prescribed nebulized medication. Use oxygen in lieu of a room air "condenser" and run at 6-8 lpm with the patient's hand-held nebulizer (HHN). The patient must prepare it him/herself

Protocol

PM-03

PED ALLERGY/ANAPHYLAXIS

AEMT/O.M. SPECIFIC CARE: ***See General Pediatric Care Protocol PM-1***

IV Fluid Resuscitation

- Treat hypotension aggressively with IV crystalloid up at 20 cc/kg repeated PRN to max of 1000 cc. Hold for s/s of CHF/pulmonary edema or CHF History

Sympathomimetic

- Epinephrine 1:1000
  - Patient weight < 30 kg (66 lbs): IM: 0.15 mg
  - Patient weight > 30 kg (66 lbs): IM: 0.3 mg
  - Repeat x 1 in 10 minutes if s/s do not significantly improve

ALS SPECIFIC CARE: *See General Pediatric Care Protocol PM-1*

IV Fluid Resuscitation

- Treat hypotension aggressively with IV crystalloid PRN. Hold for s/s of CHF/pulmonary edema or CHF History
  - 20 cc/kg Boluses repeated PRN.

Sympathomimetics

- Epinephrine Infusion: for persistent (age specific) hypotension and/or severe refractory s/s
  - IV Infusion: 0.05-1 mcg/kg/min, titrate for effect via infusion pump
  - To Mix: 1 mg epinephrine in 250 cc NS bag

- Epinephrine Neb *(for laryngeal edema only)*
  - 3 mg (3 ml) mixed with 3 ml NS for 6ml total epinephrine 1:1,000 nebulized

Antihistamine

- Benadryl (Diphenhydramine)
  - IV, IM, IO: 1-2 mg/kg MAX of 25 mg.
  - PO: (If available) 25 mg (for mild cases)

- Pepcid (Famotidine) May be used in conjunction with Benadryl
  - IV, IO: 0.5 mg/kg Slow admin Every 12 hours. To a MAX of 20 mg. *May* dilute to 100 or 250 cc and administer over 15 minutes.
  - PO: (If available) 20 mg (for mild cases)

CAUTION: All patients receiving inhaled beta agonists and/or anticholinergic medications should be observed for a least one hour following treatment for return of symptoms.

Protocol
PM-03

ALS evaluation is indicated if Epi administered either PTA or by EMS, and transport strongly encouraged. Refusals require medical control contact.

PED ALLERGY/ANAPHYLAXIS

PHYSICIAN PEARLS:

Epinephrine Auto injector: EMTs can administer the epinephrine Auto-Injector if it has been prescribed to the patient. In addition, EMTs may administer an auto injector that HAS NOT been prescribed to the patient IF they have successfully completed additional training as required by the Department of Health and Welfare, Bureau of EMS and the ACCESS Medical Directors.

Epi IM admin Optional Module: EMTs can administer the epinephrine via IM injection after drawing it from a vial, glass amp, or other container if they have successfully completed additional training as required by the Department of Health and Welfare, Bureau of EMS and the ACCESS Medical Directors.

H2 Antagonists: H2 antagonists are adjunctive therapies to Benadryl (with or without epinephrine) in anaphylaxis & allergic reactions. It is not a stand-alone intervention. If Benadryl is given for anaphylaxis & allergic reactions, an H2 antagonist should also be given unless contraindicated. **PEPCID is IV/IO ONLY.**

Common Presentations: The most common symptoms were urticaria and angioedema, occurring in approximately 80% of patients. The next most common manifestations were respiratory symptoms, such as upper airway edema, dyspnea, and wheezing. Gastrointestinal symptoms occur most commonly in food-induced anaphylaxis but can occur with other causes as well. Oral pruritus is often the first symptom observed in patients experiencing food-induced anaphylaxis. Abdominal cramping is also common, but nausea, vomiting, and diarrhea are frequently observed as well.
Cardiovascular symptoms of dizziness, syncope and hypotension were less common, *but it is important to remember that cardiovascular collapse may occur abruptly without the prior development of skin or respiratory manifestations.*

A comment about FATAL and FOOD based reactions: It is commonly believed that all cases of anaphylaxis present with cutaneous manifestations, such as hives or mucocutaneous swelling. In fact, as previously mentioned, up to 20% of anaphylactic episodes may not involve these signs and symptoms on presentation for emergency care.
Moreover, a survey of children with food-induced anaphylaxis showed that 80% of fatal reactions were not associated with cutaneous manifestations. In one study (Sampson et al) many cases of fatal food-induced anaphylaxis occurred in a biphasic clinical pattern. In these, mild oral and gastrointestinal symptoms occurred within 30 minutes of food ingestion. These symptoms resolved, only to be followed 1–2 hours later by severe respiratory symptoms and hypotension.
Put simply, the many fatal reactions do not present with "skin signs".

Individuals at greater risk for a fatal reaction include those with asthma, atopic dermatitis (eczema), a prior anaphylactic history, and those who deny symptoms and therefore delaying treatment with epinephrine.

Protocol
PM-03

PED ALLERGY/ANAPHYLAXIS

BLANK PAGE

Protocol
PM-04

SECTION: PM-04

PROTOCOL TITLE: PEDIATRIC SEIZURES

REVISED: 01MAY2018

PEDIATRIC SEIZURES

BLS SPECIFIC CARE: *See General Pediatric Care Protocol PM-01*

- Administer oxygen (high flow in the presence of neurological deficits or altered mental status)
- Place patient in recovery position; prevent accidental harm
- Anticipate brief combativeness or agitation during the post ictal phase
- Obtain BGL and temperature
- Determine patient's color category on length based resuscitation tape (ACCESS Pediatric Tape)

AEMT/O.M. Specific Care: *See General Pediatric Care Protocol PM-01*

ALS SPECIFIC CARE: *See General Pediatric Care Protocol PM-01*

Anticonvulsant Therapies (for the actively seizing patient):

- Diazepam (Valium)
  - **IV/IO:** 0.2 mg/kg administered slowly, repeat every 5 minutes PRN, max total dose 10 mg
  - **PR:** 0.5 mg/kg, max total dose 10 mg

- Midazolam (Versed)
  - **IN/IM:** 0.2 mg/kg, repeat every 5 minutes PRN, max total dose 10 mg
  - **IV/IO:** 0.1 mg/kg, repeat every 5 minutes PRN, max total dose 5 mg

- Lorazepam (Ativan)
  - **IV/IO/IM:** 0.1 mg/kg, repeat in 5-10 min PRN, max total dose of 2 mg

PHYSICIAN PEARLS:
Complete a detailed neurological assessment as patient condition allows.

Obtain a BGL and repeat every 10-15 minutes, as needed. If hypoglycemia is present, refer to PM-06.

If unable to control seizures after the max dose of any single benzodiazepine, contact medical control to continue with another benzodiazepine.

Protocol

PM-04

PEDIATRIC SEIZURES

Left Blank

Protocol
PM-05

SECTION: PM-05

PROTOCOL TITLE: PEDIATRIC HYPOTENSION AND SHOCK

REVISED: November 1, 2019

PEDIATRIC HYPOTENSION AND SHOCK

GENERAL COMMENTS:
This protocol includes shock and hypotension from a myriad of causes. When another protocol is more appropriate (i.e. Allergic Reaction) it should be followed instead.
The definition of hypotension is based on blood pressure. The definition of shock is based on clinical presentation of hypo-perfusion. Use of good clinical judgment is essential.

BLS SPECIFIC CARE: *See General Pediatric Care Protocol PM-1*

AEMT/O.M. Specific Care: *See General Pediatric Care Protocol PM-1*

IV/IO fluid therapy

- 20 ml/kg fluid boluses over 10 minutes
- Hold for signs of pulmonary edema
- Repeat up to three times as needed to a maximum of 60 ml/kg

ALS SPECIFIC CARE: *See General Pediatric Care Protocol PM-1*

- Assess and treat underlying cause of shock, if known

Vasopressors: *For hypotension and shock refractory to fluids and other interventions.* Titrated to maintain adequate HR, MAP>65 mmHg or 100 mmHg SBP. A provider must choose the most appropriate vasopressor for the situation.

- **Norepinephrine**
  - **IV/IO Infusion: IV/IO: 0.01- 2 mcg/kg/min**
  - **Start at 0.1 mcg/kg/min**
- Epinephrine
  - **IV/IO Infusion:** 0.05-1 mcg/kg/min
  - First line agent for treatment of persistent hypotension during anaphylactic shock.
- Dopamine
  - **IV/IO Infusion:** 2-20 mcg/kg/min
  - Start at 5 mcg/kg/min

Protocol

PM-05

PEDIATRIC HYPOTENSION AND SHOCK

PHYSICIAN PEARLS:

Pediatric Vasopressor Infusions should be administered by IV Pump

Pediatric Hypotension: The definition of pediatric hypotension is based on multiple factors including age and size. For the purposes of this protocol, it is defined as:

70 + (Age in years x 2) = Systolic B/P or 90 mm hg, *whichever is lower*.

Fluid administration use should be used with caution in pediatric patients with severe congenital heart defects.

Protocol
PM-06

SECTION: PM-06

PROTOCOL TITLE: PEDIATRIC HYPER/HYPOGLYCEMIA

REVISED: June 15, 2021

GENERAL COMMENTS: Symptomatic hypoglycemia is defined as BG < 60 mg/dl with an altered LOC.

BLS SPECIFIC CARE: *See General Pediatric Care Protocol PM-1*

If hypoglycemia is confirmed by glucometry: (BG < 60 mg/dl **with** symptoms):

- Infant/ Pediatric BG = < 60 mg/dl with symptoms
- Newborn/Neonate (< 28 days) = See Protocol PM-10

Simple carbohydrates/sugars:

- If the patient can hold a cup or plate without assistance (or fed by bottle or breast), and can swallow without difficulty, encourage the patient to consume simple carbohydrates.
- Attempt to document volume of food/liquid ingested (as appropriate). If grams of sugar are known, document this as well.
- Oral Glucose
  - If simple carbohydrates are not readily available or not feasible
  - Only if patient retains an intact and self-maintained airway
  - 5-45 g of glucose paste administered orally (providing the patient can swallow on command). Glucose paste may be mixed in a liquid to make it more palatable for the patient. The EMT may stop administration when the patient returns to a full state of awareness and baseline status. NOTE: A full 45 g is not likely to be needed

AEMT/O.M. Specific Care: *See General Pediatric Care Protocol PM-1*

Fluid Resuscitation

- If BG >300, give 20ml/kg fluid bolus 1 time.

ALS SPECIFIC CARE: *See General Pediatric Care Protocol PM-1*

If BG>300 (hyperglycemia):

- Cardiac Monitoring is indicated
- Fluid Resuscitation as needed if Hypotensive.
  - IV/IO: 20ml/kg fluid bolus
  - Hold for s/s of pulmonary edema
  - May repeat up to 3 times to a max of 60 ml/kg

PED HYPER/HYPOGLYCEMIA

Protocol

PM-06

PED HYPER/HYPOGLYCEMIA

If BG<60:

- Dextrose (D10%)
  - IV/IO: 5 ml/kg slow IV/IO push.
  - Re-evaluate and repeat PRN

- Glucagon IM:
  - If unable to obtain IV/IO access
  - 0.02 mg/kg
  - Maximum of 1 mg (Unit)

PEDIATRICS DO NOT FALL UNDER NORMAL TREAT & RELEASE GUILDLINES DUE TO AGE. CONTACT MEDICAL CONTROL FOR T/R

PHYSICIAN PEARLS:

Altered Mental Status (AMS) patients should have a BG assessed, regardless of history of diabetes. Hypoglycemia, particularly in children, can occur from many causes.

It is important to rule out other causes for altered mental status. This particularly includes, but is not limited to:

- Stroke
- Overdose/Medication error
- Closed head injury from falls or other causes.
- Sepsis

An inadequate amount of glucose for heat production, combined with profound diaphoresis, many hypoglycemic patients are at risk for hypothermia. Keep patient warm.

Diabetics ages <12 and >65 tend to be more difficult to regulate.

The absence/presence of SZ during hypoglycemia should be assessed, and if present transport should be strongly encouraged.

Protocol
PM-07

SECTION: PM-07

PROTOCOL TITLE: PEDIATRIC PAIN CONTROL

REVISED: May 01, 2022

GENERAL COMMENTS: Pre-hospital EMS is committed to the relief of pain and suffering in patients with acute painful conditions. Given the circumstances, complete resolution of pain may be an unachievable goal. It is therefore an acceptable goal to make pain more tolerable until definitive care can be rendered.

Providers at all levels should take a multi-faceted approach to pain control. Pain is often complex and multidimensional, and thus treatment should be individualized for each patient. Providers must be aware of the pharmacology and possible complications with every analgesic in the protocols. Documentation is essential before and after analgesic administration, and monitoring needs to be constant for changes in condition.

ALS Providers should consider decreased dosage or prolong administration intervals of sedative or analgesic medications in higher risk populations such as altered mental status, traumatic head injury, recent use/administration of other sedative medications, elderly, or known/suspected hypersensitivity.

BLS SPECIFIC CARE: *See General Pediatric Care Protocol PM-1*

- Treat underlying injury or illness as appropriate
- Consider use of splinting, elevation, ice packs, padding, breathing techniques, good communication or the use of family members to assist in calming or alleviating pain
- Length based resuscitation tape (ACCESS Pediatric Tape) may be helpful in determining patients' weight

AEMT/O.M. Specific Care: *See General Pediatric Care Protocol PM-1*

ALS SPECIFIC CARE: *See General Pediatric Care Protocol PM-1*

General comments about analgesics: **DO NOT** administer/discontinue administration if hypotensive. Hypotension is defined as:

70 + (Age in years x 2) = Systolic B/P or 90 mm hg, *whichever is lower*.

Consider use of anti-emetics with administration of analgesics especially in the setting of trauma or known sensitivity.

PEDIATRIC PAIN CONTROL

Protocol PM-07

PEDIATRIC PAIN CONTROL

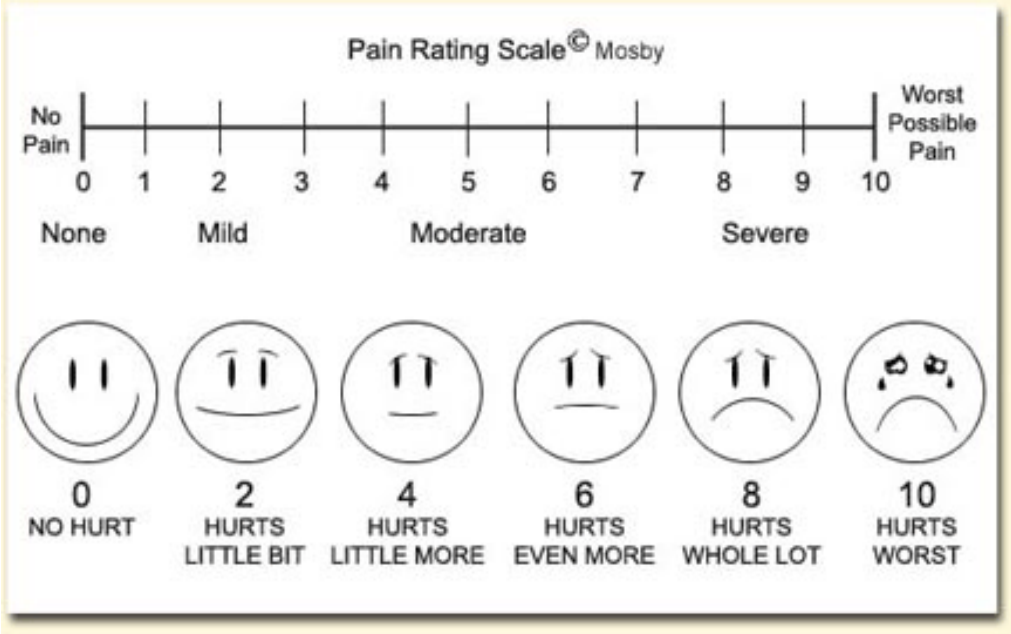
Analgesia

If unable to control pain after max dose of any single analgesic, call medical control to continue with another analgesic.

- Fentanyl
    - IV/IO/IM/IN: 1-2 mcg/kg initial dose (max initial dose 75 mcg)
    - Give slowly over 2 minutes (with the exception of IN route)
    - May repeat every 10 minutes as needed with 1 mcg/kg (max total dose of 150 mcg)
- Morphine sulfate
    - IV/IM/IO: 0.1 mg/kg as initial dose (max initial dose 5 mg)
    - Give slowly over 2 min
    - May repeat every 10 minutes as needed with 0.05 mg/kg (max total dose of 15 mg)
    -
- Ketamine Hydrochloride IV/IM/IO (do not use in patients under 1 year of age)
    - IV/IO: 0.2 mg/kg (Max single Dose 30 mg)
        - Dilute to at least 10 ml and give slowly over 2 minutes
        - May repeat every 20 minutes as needed.
    - IM: 0.5 mg / kg
        - Repeated every 30 minutes PRN
        - Max single dose 50 mg

PHYSICIAN PEARLS:

- **<u>If unable to control pain after max dose of any single analgesic,</u>**
- **<u>call medical control to continue with another analgesic.</u>**
- As with most sedatives/analgesics, IV/IO route is the preferred route of administration if possible due to ability to administer slowly and titrate dosage.
- Do not use Ketamine in pediatrics under 1 year of age



PEDIATRIC PAIN CONTROL

Protocol
PM-07

PEDIATRIC PAIN CONTROL

LEFT BLANK INTENTIONALLY

Protocol
M-08

SECTION: M-08

PROTOCOL TITLE: Adult Vomiting/Severe Nausea/Vertigo

REVISED: December 01, 2022

ADULT VOMITING/NAUSEA/VERTIGO

GENERAL COMMENTS: Nausea and vomiting are general complaints that can have any number of underlying causes. Care should be taken to screen for significant pathology and treat accordingly. An emphasis on a complete neurologic exam is paramount.

BLS SPECIFIC CARE: *See adult General Medical Care Protocol M-1*

Antiemetics:

- Zofran (Ondansetron)
  - **ODT:** 4 mg
  - Repeat one time in 10 minutes, if needed

AEMT/O.M. SPECIFIC CARE: *See adult General Medical Care Protocol M-1*

ALS SPECIFIC CARE: *See adult General Medical Care Protocol M-1*

Antiemetics:

- Zofran (Ondansetron)
  - **IV/IM/IO:** 4 mg
  - Repeat one time in 10 minutes, if needed
- Benadryl (diphenhydramine) IV/IM/IO:
  - **IV/IM/IO:** 25-50 mg
- Droperidol (Inapsine)
  - **IV/IO:** 0.625 mg – 1.25 mg, repeat every 5-10 minutes PRN, max total dose 5 mg
  - **IM:** 2.5 mg, repeat once in 5-10 minutes PRN, max total dose 5 mg
  - Hold for history/suspicion of prolonged QT syndrome, Torsade de Pointes, or EPS/Dystonia.

PHYSICIAN PEARLS:

Care should be given when administering medications with sedative properties to patients who may have consumed alcohol or are receiving other CNS depressants.

Nausea can mask many pathologies. All providers are responsible to investigate and consider differential pathologies when giving anti-emetics.

Protocol
M-08

ADULT VOMITING/NAUSEA/VERTIGO

BLANK PAGE

Protocol
PM-09

PEDIATRIC TOXICOLOGICAL EMERGENCIES

SECTION: PM-09

PROTOCOL TITLE: PEDIATRIC TOXICOLOGICAL EMERGENCIES

REVISED: November 1, 2021

GENERAL COMMENTS: This protocol directly supplements protocols R-1 through R-10 (Adult Toxicological Emergencies.)

BLS SPECIFIC CARE: *See General Pediatric Care Protocol PM-1*

Scene safety:

- Ensure law enforcement is on scene for traditional overdoses
- Wear appropriate PPE including respiratory and topical skin protection
- Request HAZMAT for suspected toxic exposure, such as meth labs, chemical mishaps, and topical poisons

In addition to standard medical history obtain:

- Name of ingested substance
- Quantity ingested
- Time of ingestion
- Has vomiting occurred?

Basic BLS assessments and V/S every 15 minutes unless unstable, then reassess and V/S every 5 minutes

- Assess a Blood Glucose. Treat as appropriate. See *Pediatric Hypoglycemia Protocol (PM-06)*
- *Obtain Temperature*

All toxicological emergencies *shall* receive ALS evaluation.

Patients with respiratory complaint or abnormality should receive supplemental oxygen, regardless of oxygen saturation. Assist ventilations as needed

Restraints may be used for patient and/or rescuer safety

Suspected (symptomatic) opiate ingestion:

- Oxygenation: Initiate basic airway/oxygenation/ventilation maneuvers prior to opioid antagonists. Some opiate overdose patients will respond well to simple assisted ventilations.
- Narcan (naloxone)
    - IM/IN**:** 2-8 mg. Repeat as needed to a maximum of 10 mg if IV access is unavailable.
    - If patient has obviously aspirated, consider bypassing Narcan and manage airway if required.
- Do not delay basic care (i.e., Airway positioning, ventilations, or CPR) waiting for Naloxone availability or for Naloxone to take effect.

Protocol PM-09

PEDIATRIC TOXICOLOGICAL EMERGENCIES

AEMT/O.M. Specific Care: *See General Pediatric Care Protocol PM-1*

Suspected (symptomatic) opiate ingestion:

- Narcan
  - IV/IO: 0.01 - 0.05 mg/kg to max single dose of 2 mg. Administer slowly. Repeat as needed every 1-2 minutes to a maximum of 10 mg.
  - If patient has obviously aspirated, consider bypassing Narcan and manage airway as required.
  - IV/IO in cardiac arrest: 2 mg

ALS SPECIFIC CARE: *See General Pediatric Care Protocol PM-1*

12 Lead ECG for all pediatric toxicological emergencies.

Seizures secondary to toxic ingestion:

- Follow Pediatric Seizure Protocol (PM-4)

Hypotension secondary to toxic ingestion:

- Follow Pediatric Hypotension and Shock Protocol (PM-5)

Suspected TCA overdose: (do not administer Amiodarone)

- Sodium Bicarbonate for hypotension, arrhythmia, QRS >100 ms
  - IV: 1 meq/kg IV
  - Re-bolus in 5-10 min at 1 meq/kg if s/s persist

- Magnesium Sulfate *(for Torsades REFRACTORY to sodium Bicarbonate)*
  - IV/IO: 25-50 mg/kg in 100 ml Buretrol over 2-5 minutes, **MAX 2 GM**

Calcium channel blocker/beta blocker ingestion

- **Calcium Chloride (for Calcium Channel Blockers Only)**
  - IV (Slow): 20 mg/kg over 10 minutes until s/s improve

- **Glucagon**
  - IV, IM, SQ: 0.1 mg/kg to a max of 1 mg every 5 minutes as needed and as available
  - Do not use diluents (e.g., propylene glycol) supplied with single use kits. Use Normal Saline instead

- **Epinephrine Infusion**
  - 0.1-2 mcg/kg/min, see drug index

Organophosphate Exposure

- Atropine Sulfate
  - IV/IO/IM: 0.05 mg/kg, repeated PRN for continued symptoms

Hyper-dynamic drug ingestion/exposure (with active s/s)

- Diazepam (Valium)
    - IV/IO/IM: 0.2 mg/kg every 5-10 min PRN to a max of 10 mg
- Midazolam (Versed)
    - IV/IO: 0.1 mg/kg every 5-10 min (over 2-5 minutes if IV). Maximum dose of 2.5 mg
    - IN/IM: 0.2 mg/kg repeat every 5 min PRN. If no IV access is available (Max 5mg)

EPS:

- Benadryl (Diphenhydramine)
    - IV/IM: 1 mg/kg IVP max of 25 mg

PHYSICIAN PEARLS:

The following are high risk toxicological situations that should be evaluated at a hospital regardless of clinical stability. *These are the substances that, for a variety of reasons, result in the highest ICU admissions.*

- **Any situation where 2 or more agents/drugs may be involved** (Poly-Pharmacy ingestion). 44% of fatal pediatric overdoses involve more than one substance
- **Iron Ingestions** (as little as 20-60mg/kg) Iron ingestions may present with a latent period at about 1-6 hours with cardiovascular collapse occurring 12-24 hours post ingestion. Commonly found in OTC supplements, *iron ingestions are a leading cause of pediatric fatal ingestion*
- **Hyper-dynamic Drug Ingestions**/Meth Lab exposures
- **Antidepressants** of any type: Tricyclic Antidepressants (TCAs) are especially high risk
- **Anticonvulsants**
- **Digitalis** (Nightshade) or Digitalis containing substances. (Digoxin)
- **Opiates**
- **Hydrocarbon-based household products**:
    - Gasoline, kerosene, etc.
    - Gases & fumes (huffing)
- **Alcohols** (any type): Alcoholic Beverages, Wood Alcohol, Isopropyl alcohol, Etc.
- **Benzodiazepines**
- **Aspirin**
- **Cleaning substances**

PEDIATRIC TOXICOLOGICAL EMERGENCIES

In addition to the above substances, the following situations and symptoms are also worrisome with suspected toxic ingestion and should be transported to the hospital.

- Sudden onset of:
    - Abdominal pain
    - Nausea
    - Vomiting
    - Seizures
    - Coma
    - Decreased LOC
    - Bizarre behavior
    - Abnormal walking gait
- Sudden onset of unexplained illness
- Bizarre, incomplete, evasive history
    - Suspect abuse, neglect, or illegal activity
- Pediatric patient with cardio-respiratory distress

Protocol
PM-10

SECTION: PM- 10

PROTOCOL TITLE: General Newborn Care

REVISED: June 15, 2021

GENERAL NEWBORN CARE

GENERAL COMMENTS: A newborn infant, or neonate, is a child under 28 days of age (WHO Guidelines). Care is focused around an Assessment→ Action →Reassessment Cycle. These Critical re-assessments are done every 30-60 seconds (referred to as the "Golden Minute"), moving up and down the Inverted Pediatric Pyramid as needed.

BLS SPECIFIC CARE: *See General Pediatric Care Protocol PM-1*

Critical Assessments

- Critical reassessments include:
  - Heart Rate
  - Respiratory Effort/Vigor
  - Peripheral and Central Perfusion

Critical Interventions

- **Heat Conservation and Stimulation**
  - Dry, warm and use "Port-a-warm Mattress"
  - Tactile Stimulation (rub back)
  - Place in plastic wrap/bag over extremities and trunk. *Leave head/airway assessable.*
- **Oxygenation and Ventilations**
  - Ventilation with a properly fitting mask is the single most important intervention, and may prevent further deterioration is promptly administered.
  - Titrated O2 (See Pearls)
  - Properly pad under shoulders to maintain good airway alignment
- **Chest Compressions:** 3 compressions:1 ventilation ratio
  - Initiate for complete cardiac arrest and for HR <60 refractory to Drying, warming, stimulation, oxygenation and ventilations
  - "Two thumb" method is preferred.

AEMT/O.M. Specific Care: ***See General Pediatric Care Protocol PM-1***

- Advanced airway placement in a newborn or pre-term neonate should be deferred to ALS providers or specialists.

ALS SPECIFIC CARE: *See General Pediatric Care Protocol PM-1*

Oxygenation and Ventilation

- ETT placement for patient's refractory to BLS measures.
- Trans-tracheal suction of meconium prior to ventilation.
- OG to decompress stomach

Pharmacologic therapy:

- **Epinephrine:**
  - Indicated if heart rate remains < 60 bpm despite adequate ventilation with 100% oxygen and chest compression
  - IV/IO:
    - 0.01-0.03 mg/kg 1:10,000 every 3-5 minutes as needed

- **Dextrose 10%:** For neonatal hypoglycemia. (BG < 40 mg/dl)
  - IV/IO: 5 ml/kg slow IV/IO push.
  - Re-evaluate and repeat PRN

- **Narcan (naloxone)**
  - 0.1 mg/kg
  - **Do not** administer to newborn of a mother with history of narcotics dependence
  - Indicated if ***both*** of the following are present:
    - Continued respiratory depression after positive pressure ventilation has restored normal heart rate and color
    - History of maternal narcotic administration/ingestion within the last 4 hours

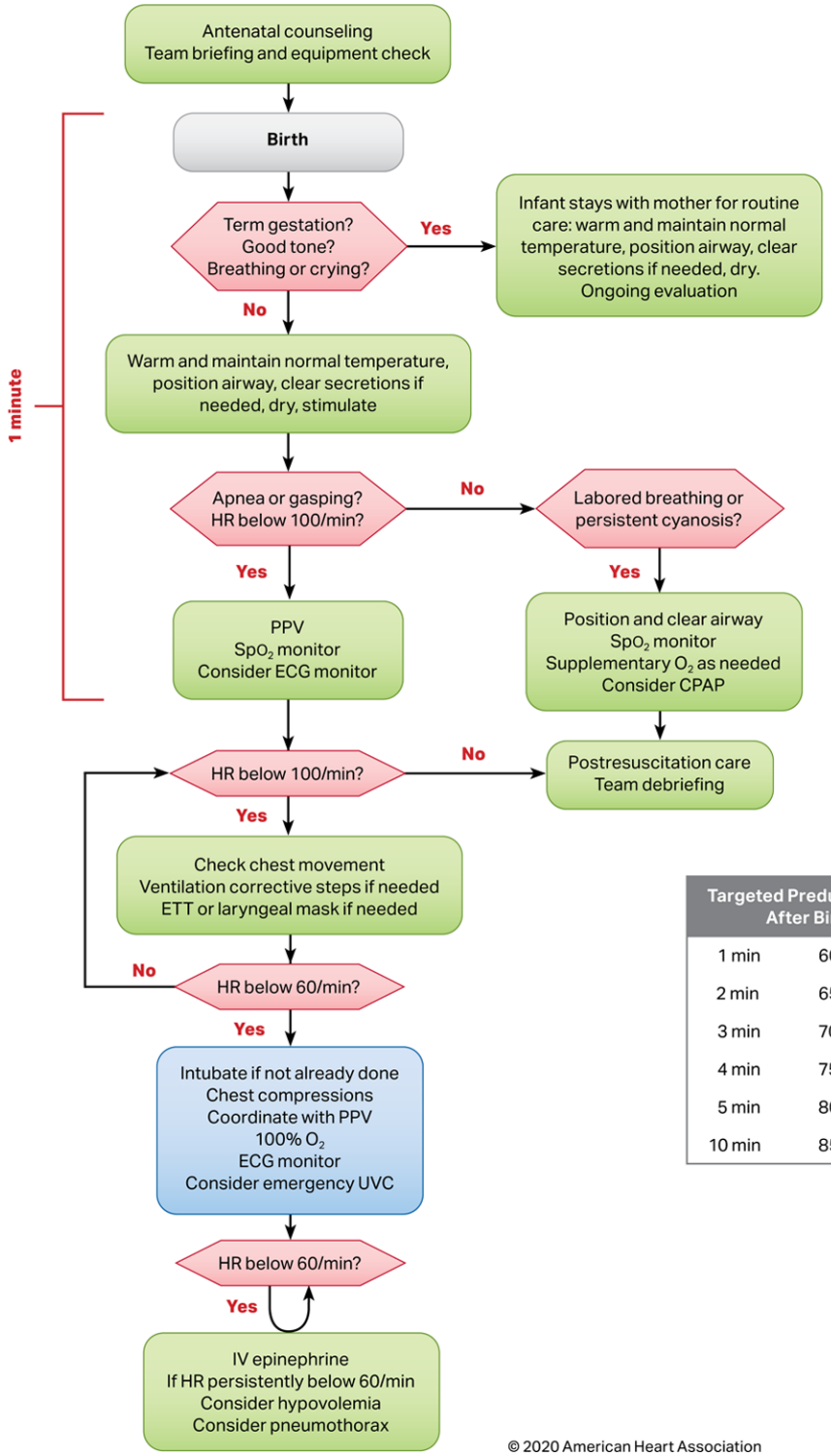
Fluid therapy: IV/IO

- **IV/IO Crystalloids**
  - Indicated if neonate appears to be in shock, there is evidence of blood loss (e.g. placental abruption/previa or blood loss from umbilical cord, or exceptionally pale appearance) and is unresponsive to resuscitation
  - 10 ml/kg normal saline over 5-10 minutes
  - Administer a second dose if necessary

Protocol
PM-10

2020 Neonatal Care / Resuscitation (for reference only)

Neonatal Resuscitation Algorithm



Targeted Preductal SpO_2 After Birth	
1 min	60%-65%
2 min	65%-70%
3 min	70%-75%
4 min	75%-80%
5 min	80%-85%
10 min	85%-95%

GENERAL NEWBORN CARE

Protocol
PM-10

GENERAL NEWBORN CARE

PHYSICIAN PEARLS:

A newborn infant, or neonate, is a child under 28 days of age (WHO Guidelines). Basic Newborn Care is focused around respiratory support with prevention and treatment of hypothermia and hypoglycemia close seconds.

Be Prepared: Always be prepared for resuscitation at childbirth. Risk factors, while important, are poor predictors of birth asphyxia. **Up to half of newborns** that require resuscitation have no identifiable risk factors before birth. Every birth should have at least one person dedicated to newborn care, if possible. Consider extra resources early.

Heart Rate: During resuscitation, an increase in the newborn's heart rate is considered the most sensitive indicator of a successful response to each intervention. Therefore, identifying a rapid, reliable, and accurate method to measure the newborn's heart rate is critically important.

- EKG monitoring is considered more reliable than SPO2 *for monitoring HR*, when available.

Oxygen Administration: Even in healthy newborns, it may take 10 minutes to reach "normal" SPO2 after birth. Therefore oxygen administration should be based on heart rate and vigor, rather than SPO2 in the first few minutes of life. Even brief exposure to high flow O2 may be problematic. It is permissible, and occasionally preferred to provide ventilation on room air. Oxygen administration should be titrated to "Pre-ductal SPO2" in the vigorous infant.

Targeted Pre-Ductal SPO2 After Birth	
1 min	60-65%
2 min	65-70%
3 min	70-75%
4 min	75-80%
5 min	80-85%
10 min	85-95%

Compressions: Compressions are indicated for HR < 60 despite interventions. The **3:1** ratio is considered standard practice for newborn resuscitation. It is still suggested that compressions and ventilations be coordinated to avoid simultaneous delivery. The chest should be allowed to re-expand fully during relaxation, but the rescuer's thumbs should not leave the chest. The "2-thumb" technique generates higher blood pressures and coronary perfusion pressure with less rescuer fatigue, the 2 thumb–encircling hands technique is suggested as the preferred method. If the patient requires compressions, then 100% SPO2 should be administered regardless of SPO2.

Heat Retention: Newborns lose heat rapidly and need to be kept warm to decrease oxygen demands and prevent metabolic acidosis. In resource-limited settings, simple measures to prevent hypothermia in the first hours of life (use of plastic wraps, skin to-skin contact, and even placing the infant after drying in a clean food-grade plastic bag up to the neck) may reduce mortality.

ETT/LMA placement: When dealing with such a short trachea, remember that movement less than 1 centimeter in airway position can result in inadvertent extubation. Consider immobilization of entire head and neck to protect tube placement.

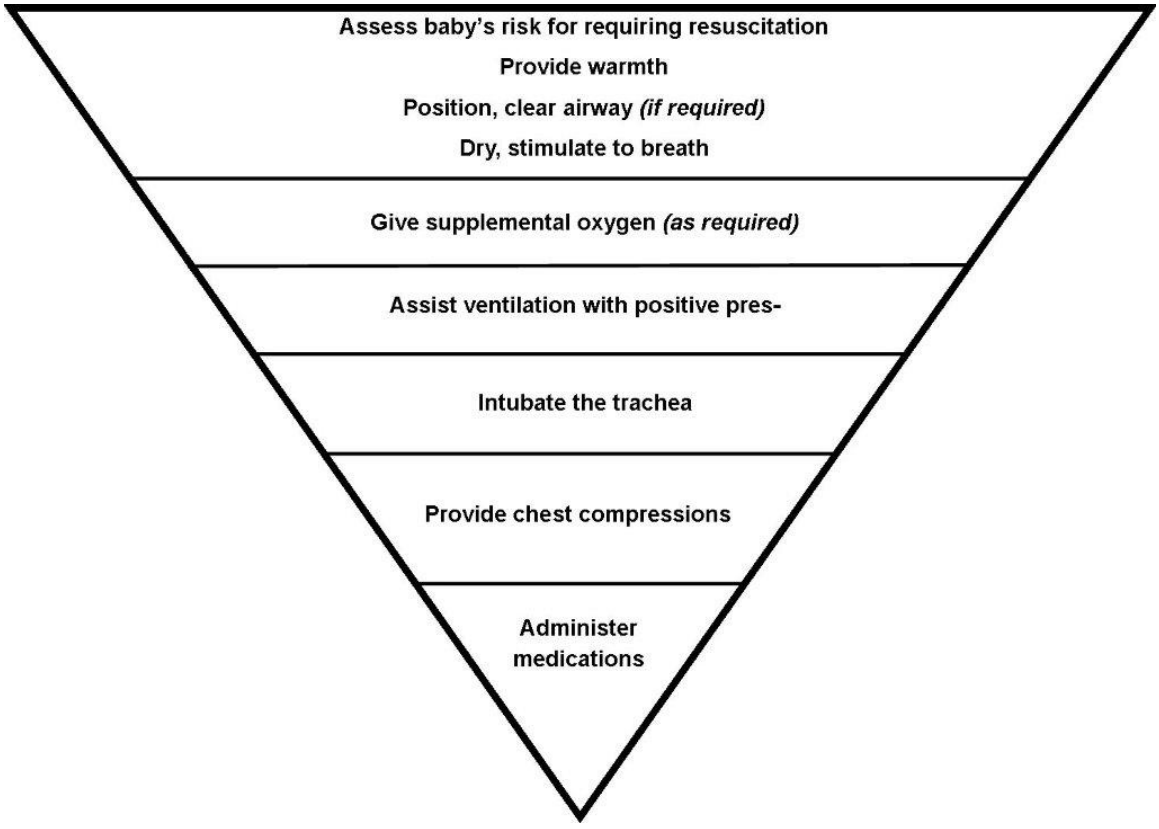
Meconium Staining: "Routine" intubation for tracheal suction is no longer suggested because there is insufficient evidence to continue this recommendation. Appropriate intervention to support ventilation and oxygenation should be initiated as indicated for each individual infant. This may include intubation and suction **if the airway is obstructed**. Discard the ET tube used to suction the meconium and intubate with a clean ET tube.

Delayed cord clamping: 2020 guidelines suggest delayed cord clamping **after 30 seconds** is reasonable for both term and "late" preterm infants **who do not require resuscitation at birth**. Delayed clamping may reduce need for hemodynamic support. Those who require resuscitation should have their cord clamped and cut immediately to facilitate resuscitation.

Protocol
PM-10

APGAR score: Perform 1 and 5 minute APGAR assessment

Sign	0	1	2
Heart Rate	Absent	<100	>100
Respirations	Absent	Slow, ineffective, irregular	Good and Crying
Muscle Tone/ activity	Limp	Some Flexion	Active Motion
Reflex Irritability /Grimace	None	Grimace	Cough or sneeze Pulls away
Color	Central Cyanosis Blue/Pale	Central Pink Peripheral Blue	Completely Pink



GENERAL NEWBORN CARE

GENERAL NEWBORN CARE

Protocol
PM-10

APPENDIX 01

APPENDIX: 01

TITLE: BASIC AIRWAY SUPPORT PROCEDURES

REVISED: November 1, 2021

BASIC AIRWAY SUPPORT

I. BASIC OXYGEN ADMINISTRATION

Supplemental oxygen shall be administered to all patients at risk for hypoxia/hypoxemia. Current AHA guidelines also recommend supplemental oxygen administration for patients with SPO2 ≤ 94% unless otherwise contraindicated.

Adjunct	Flow Rate
Nasal Cannula/ETCO2 NC	1-6 L/min
Simple Mask	8-10 L/min
Non-Rebreather Mask	10-15 + L/min
Bag-Mask w/ Reservoir	10-15 + L/min

If hypoventilation is present, utilize bag/mask to insure adequate ventilation and oxygenation.

Other devices, such as a trach mask, venture mask, vapotherm cannula, or other device may also be used based on clinical judgment and presentation of the patient.

Adjustments may be made to flow rates, etc based on clinical judgement and circumstances (ex. Apneic Oxygenation, HF Nasal Cannula)

II. BASIC VENTILTORY SUPPORT

If supplemental oxygen support is inappropriate, ineffective, or impractical, and the patent is considered to be at risk for hypoventilation, hypoxia, or respiratory failure/compromise, then respiratory support be indicated. Interventions include, but are not limited to,

- *Intermittent Positive Pressure Ventilation* (IPPV) using a bag valve manual resuscitator with a traditional face mask, an intra-oral mask (IOM), ETT, other advanced airway (i.e., supra-glottic airways) mechanical ventilator, or to a tracheostomy tube.
- PEEP
- CPAP (See Appendix 6)

When possible, providers should maintain strict ventilatory discipline to reduce adverse hemodynamic effects and baro-trauma, particularly during cardiac arrest, low perfusion states, and those with fragile respiratory anatomy (i.e. Asthmatics, COPD).

Providers should adjust mechanical ventilatory support based on the measured SPO2, ETCO2, and patient-ventilator synchrony/compliance. As spontaneous ventilation becomes more efficient and as concurrent medical conditions allow, the level of support may be adjusted.

III. PULSE OXIMETRY

Pulse Oximetry (SPO2) is a useful clinical tool in the care of patients. Supplemental oxygen should be considered for patients who are at risk of hypoxemia while avoiding the negative effects of hyperoxia. Therefore, supplemental oxygen administration should be initiated for patients with an SPO2 < 92% or who are at risk for decompensation. Supplemental oxygen should be titrated to maintain an SPO2 of 92-96% to avoid hyperoxia.

SPO2 is not a perfectly reliable indication of oxygenation or perfusion status and findings should always be clinically correlated. Indicated SPO2 may be delayed ("Saturation Lag"), especially by poor perfusion.

NOTE: Hemoglobin binding gases (CO, etc.), acidosis, and low peripheral perfusion may give false high or low pulse oximetry data.

IV. EXPIRED CO2 MONITORING

Expired/End Tidal CO2 (ETCO2) monitoring shall be utilized and documented on all patients with an advanced airway patient using the most appropriate device available.

ETCO2 is a useful adjunct for determining perfusion and measuring expired C02 in the intubated patient. Correctly interpreted end tidal volume capnometry is an excellent method of confirming correct ETT placement. It is a reliable method, but it is only a tool and has several limiting factors in its interpretation.
Some factors that can cause false or misleading readings are:

- Pulmonary shunt – limits the perfusion of available lung parenchyma causing poor gas exchange
- Hypovolemic shock – limits available hemoglobin for gas exchange by limiting pulmonary perfusion and circulating RBC's
- Cardiogenic shock – poor gas exchange from limited perfusion of blood through the lungs
- Neurogenic shock – limits available hemoglobin for gas exchange by limiting pulmonary perfusion
- Lack of C02 production – i.e. cellular death
- Tube dislodgement, kinking, obstruction

The major limitation of any ETCO2 is the user, not the device. Appropriate decision-making must utilize all available information and good judgment. In the intubated patient with good breath sounds, fogging of the tube, equal chest excursion and direct visualization of the cords with observation of the tube passing between them, a *low* (but otherwise present waveform reading with ETCO2 is not an absolute indication for extubation.

Conversely, an absent or inability to obtain a waveform/other ETCO2 indication (i.e., Colorimetric ETCO2) is always suspicious for misplaced ETT. It is, however, always appropriate to recheck ETT placement through multiple independent means if any question of patency or placement arises and extubate promptly if ETT placement cannot be satisfactory confirmed.

IV. USE OF PEEP WITH VENTILATION

Positive End Expiratory Pressure (PEEP) should be considered in patients receiving artificial ventilation, of ventilation, of all age groups; to increase alveolar recruitment, reduce risk of repetitive alveolar collapse injury, and increase oxygenation. It may be applied either via a “PEEP” valve on a Bag-Valve-Mask device or with a mechanical ventilator.

Patients presenting with the following history or signs may benefit from PEEP:

- Conditions prior to respiratory arrest that would indicate CPAP (but it is not available).
  - See *Appendix 6: CPAP*
- Hypoxia
- Lung disease prior to intubation such as ARDS or COPD
- Suspected atelectasis (alveoli collapse)
- Extended duration of artificial respiration such as interfacility transfer (Greater than 30 minutes)
- Pulmonary contusion or flail chest
- Drowning and Aspiration related conditions.
- Congestive Heart Failure.

PEEP is (relatively) contraindicated with:

- Untreated Pneumothorax

Special Considerations with PEEP

- Patients should be monitored closely for pneumothorax.
- Hypotension (Systolic BP less than 90)
- The airway should be monitored closely for the need to suction.
- Higher levels of PEEP can decrease ETCO2.
- Monitor for stacked breaths (Auto-PEEP) due to incomplete exhalation.
- Decreased tidal volumes are often required to achieve adequate chest rise with PEEP.
- Nebulized medications can be administered during PEEP use.

APPENDIX

01

BASIC AIRWAY SUPPORT

APPENDIX 02

APPENDIX: 02

TITLE: Advanced Airway Support Supplement

REVISED: May 01, 2022

ADVANCED AIRWAY SUPPORT

I. BACKGROUND:

The purpose of this supplement is to provide a holistic approach to advanced airway management. Known as broadly as Rapid Sequence Induction (RSI), Delayed Sequence Intubation (DSI)*, Crash Airway Procedures (CAP), Medicated Assisted Intubation (MAI), etc., Advanced airway management is complex, requiring dynamic clinical judgement and teamwork from all providers on scene to achieve the best outcome possible.

* “Delayed Sequence Intubation” is the specific strategy where the intubation (or other advanced airway) is delayed/slowed until aggressive preoxygenation and hemodynamic resuscitation occurs in patients whom emergency airway management would be otherwise unsafe due to the risk of decompensation, hypoxemia and hypotension.

II. INDICATIONS

Indication for advanced airway management include:

- Failure to oxygenate
- Failure to Ventilate
- Failure to maintain the airway
- And based on anticipated clinical course (anticipated failure of any of the above)

Specific examples of circumstances (not all inclusive) which may necessitate pharmacological agent use during airway management:

- Isolated head trauma
- Cerebrovascular accidents
- Multiple system trauma
- Overdose
- Status epilepticus
- Acute pulmonary edema
- Respiratory failure
- Severe burns (with suspected airway/respiratory involvement)

The above indications are applicable in instances that it becomes necessary to manage severe respiratory distress, optimize airway protection, hyperventilate for central nervous system lesions, or to provide ventilatory assistance in the presence of hypoventilation and hypoxia when other means of doing so are ineffective or contraindicated.

III. MEDICATIONS

MEDICATIONS (not all inclusive): The use of medications to assist in intubation is both lifesaving and risky. Pharmacological agents should be used to assist the paramedic in performing advanced airway management in patients who are difficult to manage due to excessive gag reflex, combativeness, or other factors; and in instances where protecting the airway is a potentially life-saving maneuver.

The choice of medications (to include timing and doses) should be selected with the patient's clinical situation in mind with the goal of minimizing or avoiding adverse effects (such as hypotension) and outcomes (such as peri-airway arrest). *The paramedic should be thoroughly familiar with ALL DRUGS DISCUSSED WITHIN THIS SECTION.*

a. **Sedative Hypnotics**. To be used before paralyzing agents as an induction agent *alternative* to ketamine.
   - *Etomidate (Amidate):* for adults and children greater than two years of age
     i. ADULTS and PEDS IV/IO: 0.2 – 0.4 mg/kg

b. **Dissociative Anesthetic.** To be used before paralyzing agents as an induction agent *alternative* to etomidate. Also may be used for post-airway analgesia if contraindications exist to standard post airway management (i.e. opioids and benzodiazepines).
   - *Ketamine:* Ketamine is an ideal induction agent as has the least effect on airway reflexes and respiratory drive. IV/IO onset is rapid (30-60 seconds)
     i. ADULTS and PEDS IV/IO: 1-2 mg/kg SLOW IV push over at least one minute (ideally two to three minutes) prior to paralytic administration. Repeat at 0.5-1 mg/kg as needed to achieve / maintain disassociation.
   - Rapid administration should be avoided as this may cause laryngospasm and apnea.

c. **Neuromuscular Blocking Agents:** Paralytics should never be used without adequate sedation/analgesia.
   - *Succinylcholine chloride (Anectine):*
     i. Pre-Airway: To be used after etomidate or ketamine
     ii. Post-Airway: Should not be used to post-airway paralysis except as a last resort.
     iii. ADULTS (IV/IO): 1-2 mg/kg, repeat one time only
     iv. PEDS (IV/IO): 1-2 mg/kg for children, 2 mg/kg for infants
   - *Rocuronium bromide (Zemuron):*
     i. Pre-Airway: To be used as an alternative to succinylcholine when clinically indicated.
     ii. Post-Airway: long-acting paralytics are to be used only after the airway is secured and confirmed.
     iii. ADULTS and PEDS (IV/IO): 1mg/kg, repeat PRN

- *Vecuronium (Norcuron):*
    i. Pre-Airway: To only be used as an alternative to rocuronium or succinylcholine when clinically indicated.
    ii. Post-Airway: long-acting paralytics are to be used only after the airway is secured and confirmed.
    iii. ADULTS and PEDS IV/IO: 1mg/kg, repeat PRN
    -

d. **Benzodiazepines (BZD).**
    a. Midazolam (Versed)
        i. Versed is the preferred benzodiazepine in the post-intubation setting:
        ii. ADULTS IV/IO/IM: 0.5-5 mg, max total dose 10mg
        iii. PEDS IV/IO: 0.1-0.2 mg/kg, max single dose 5 mg, max total dose 10 mg
    b. Diazepam (Valium):
        i. ADULTS IV/IO/IM: 5-10 mg, repeat PRN, max total dose 20 mg
        ii. PEDS IV/IO: 0.2-0.3 mg/kg, repeat PRN, max total dose 20 mg

    c. Lorazepam
        i. ADULTS and PEDS (IV/IO): 0.05 mg/kg, titrate to sedation, repeat at 10 minutes PRN, max single dose 2 mg, max total dose 4 mg

e. **Opiates.** Cautionary use with hypotension:
    a. Morphine Sulfate (MS)
        i. ADULTS (IV/IO/IM): 0.1 mg/kg initial dose, repeat at 0.05mg/kg every 10 min PRN, max single dose 10 mg, max total dose 20 mg
        ii. PEDS (IV/IM/IO): 0.1 mg/kg, repeat at 0.05 mg/kg every 10 min PRN, max single dose 5 mg, max total dose 15 mg
    b. Fentanyl, (Sublimaze)
        i. ADULTS (IV/IO/IM): 1 mcg/kg initial dose, repeat every 10 min PRN, max single dose 100 mcg, max total dose 200 mcg
        ii. PEDS (IV/IO): 1 mcg/kg, repeat every 10 min PRN, max single dose 75 mcg, max total dose 150 mcg

f. **Other Medications**. Used in specific situations:
    a. *"Push Dose" Epinephrine* 1:100,000 to treat peri-airway management hypotension, and as a bridge to vasopressor infusions in peri-airway management.
        i. To Mix: 1 ml (0.1 mg) of 1:10,000 Epinephrine ("*Cardiac Arrest Epi*") in a 9 ml NaCL Flush for a 10 mcg/cc concentration. **LABEL SYRINGE.**
        ii. IV/IO: initial dose of 20 mcg (2 ml) followed by 5 mcg (0.5 ml) repeated 2-3 minute as needed for hypotension and/or bridge to infusion (if appropriate).

APPENDIX

02

ADVANCED AIRWAY SUPPORT

IV. PROCEDURE:

a. Plan

a. Treat every airway as a potentially difficult airway
b. Have a plan A, B, and C (See Section IV)
c. Make sure the team “knows the plan”
d. Anticipate Problems: These conditions (AKA *HEAVEN* criteria) have been shown to significantly increase the likelihood of difficult airway.
    i. **H**ypoxemia,
    ii. **E**xtremes of size,
    iii. **A**natomic abnormalities,
    iv. **V**omit/blood/fluid,
    v. **E**xsanguination
    vi. **N**eck mobility issues

b. Preparation

a. Ensure adequate oxygenation while preparation occurs
b. Have the following ready:
c. Bag-valve-mask connected to functioning oxygen delivery system
d. Working suction with tubing and suction tip attached
e. Full Intubation set to include:
    i. Endotracheal tube(s) with stylet, syringe and intact cuff and ETT
    ii. Laryngoscope with blades and bright light source.
    iii. Scalpel (full cricothyrotomy kit preferred)
    iv. Alternative airway (i.e. SGA, LMA if available and appropriate)
    v. Endotracheal tube introducer (AKA the “bougie”, Flexiguide)
    vi. Anticipated pharmacological agents
    vii. Manpower to adequately manage the patient in the event of desaturation or other adverse event (i.e. Cardiac Arrest) .
    viii. Check to be sure that a functioning, secure vascular access device (IV or IO) is in place.
        - Note: If unable to establish IV or IO access certain drugs may be given IM instead
    ix. Cardiac monitor, ETCO2, and SPO2. Be alert for the possibility of bradycardia or other dysrhythmias. Bradycardia and desaturation can be peri-arrest indicators.
f. Alternative Airway (i.e. SGA, LMA if available and appropriate)
g. Cricothyrotomy kit
h. Assess the patient for likelihood of successful intubation and need for definitive airway, and the feasibility of alternative methods (Nasal ETT, SGA, LMA, BVM use only).
i. Ensure adequate oxygenation, with a BVM or CPAP if required, while preparing the equipment.

c. Positioning

a. Ideally, position the patient *'head up'* at 30 degrees (or more), with auditory meatus above the jugular notch. This is optimal intubation position and reduces vomiting. This may not be possible in all situations.
b. Position and manipulate airway to facilitate opening the airway.

d. **Pre-Oxygenate:** Choose preoxygenation device based on the patient's SpO2 and clinical presentation. Oxygenation should ideally occur for 2-3 minutes prior to advanced airway attempts attempt unless patient's situation precludes this (inability to ventilate with BVM and inability to protect airway).

a. Oxygenation should target an SPO2 of $\geq$ 94%. This ensures sustained oxygenation during the intubation attempt ("Safe Apnea").
b. Place standard nasal cannula at "high flow" rates at prior to placement of the preoxygenation device. Examples include:
    i. A Nasal Cannula at high flow rates (6+ LPM for PEDS, 15+ LPM for ADULTS)
    ii. AND/OR bag-valve-mask (BVM) with PEEP valve and a good seal at 15 L/min O2,
    iii. AND/OROR non-rebreather (NRB) mask and a good seal at 15 L/min O2 (or more)
    iv. AND/OR CPAP with 100% FiO2.

e. Resuscitate

a. Address Hypotension/physiology if possible, depending on clinical presentation.

f. Procedural Pause

a. Pause and brief team regarding "Primary Plan", Roles, and "Contingency Plans"

g. Medications

Administer induction agent(s) and pre-airway paralytic 45-60 seconds prior to Advanced Airway Procedure:

a. Administer Induction agent (Ketamine or Etomidate)
b. Neuromuscular Blocking Agents (Succinylcholine, Rocuronium bromide or Vecuronium)
    i. If conducting a DSI approach, consider the use of Rocuronium instead of Succinylcholine)

As patient relaxes:

c. (DSI) If patient clinical condition permits, another "procedural pause" is appropriate between induction/sedation and administration of paralytics to evaluate the patient's hemodynamic status.
d. Consider applying laryngeal manipulation / "B.U.R.P." until intubation is successfully completed, the endotracheal tube cuff is inflated, and tube position confirmed

e. After fasciculation's stop (if they occur), demonstrate adequate jaw relaxation by manipulating the mandible. Jaw relaxation and decreased resistance to bag-mask ventilations indicate that the cords are paralyzed and that it is time to proceed with intubation.
f. If inadequate relaxation is present, give either a:
    i. Second dose of Induction Agent
        1. OR
    ii. Initial or second dose of Neuromuscular Blocking Agent

h. Advanced Airway Placement

a. Refer to SWO Appendix 3: "Intubation Procedures"
b. Refer to SWO Appendix 4: "SUPRAGLOTTIC AIRWAY PROCEDURES"
c. Refer to SWO Appendix 5: "CRICOTHYROTOMY (SURGICAL/NEEDLE/ Quick Trach)"

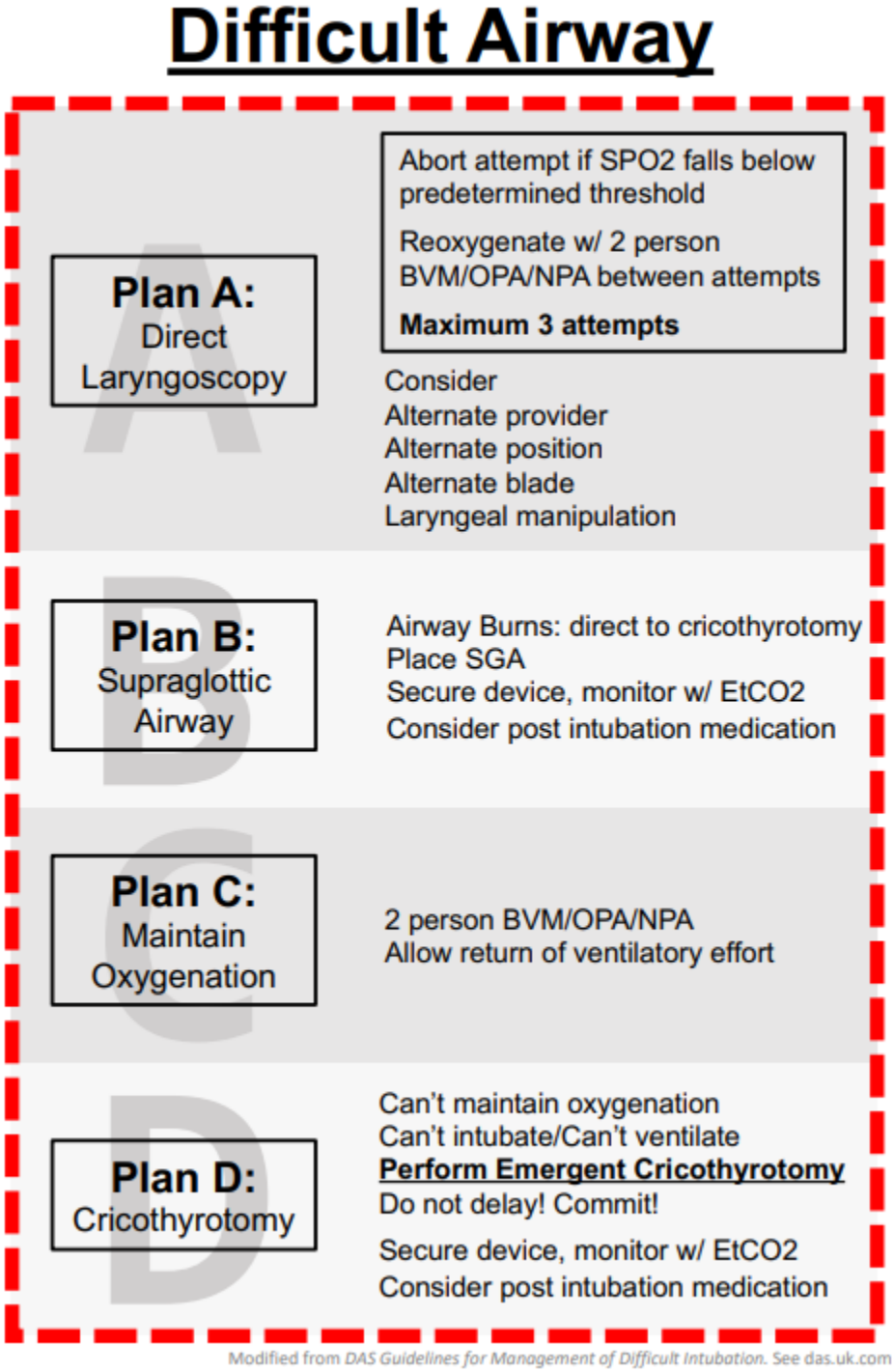
i. Post Airway Monitoring and Maintenance

a. Post airway monitoring should include
    i. Waveform ETCO2
    ii. Frequent D.O.P.E.S. assessments
        - **D:** Displacement
        - **O:** Occlusion
        - **P:** Pneumothorax
        - **E:** Equipment failure/functioning optimally
        - **S:** Stacked breaths (Increased intrathoracic pressure, hemodynamic compromise, and Barotrauma)
    iii. Airway monitoring should be continuous, with additional checks (i.e. Auscultation, depth checks, etc) frequently, but particularly with:
        - Patient movement
        - Transfer of care
        - Deterioration

j. Post Airway Medications

a. **Non-Depolarizing Neuromuscular Blocking Agents.** These are long-acting paralytics to be used only after the ETT is secured:
b. **Benzodiazepines (BZD).** Versed is the preferred benzodiazepine in the post-intubation setting. Cautionary use with hypotension.
c. **Opiates.** Excellent for post intubation analgesia. Cautionary use with hypotension.
b. **Dissociative Anesthetic:** Ketamine may be used for post-airway analgesia if contraindications exist to standard post airway management (i.e., opioids and benzodiazepines).

V. **Difficult Airway Procedure:** If the Provider/team experiences difficult airway placement (defined as a single unsuccessful, difficult, or prolonged attempt, or anticipated Difficulty) then this is the standardized approach to difficult airway management. In all cases, clinical judgement remains paramount.



Modified from *DAS Guidelines for Management of Difficult Intubation*. See das.uk.com

Every Airway, Every Time

APPENDIX

02

MEDICATION ASSITED INTUBATION

PHYSICIAN PEARLS:

Previously, lidocaine and Atropine was used for pretreatment in certain patients (head injury and pediatrics respectfully). A review of the evidence has shown no clear benefit to this practice but increased risk of complications. Therefore, the use of lidocaine or Atropine routinely during advanced airway procedures for increased ICP or pediatrics is no longer recommended.

Use of induction agents without following with neuromuscular blockade may result in significantly suboptimal intubation conditions in patients who are not in deep coma states or cardiac arrest. Induction only intubation should be considered Clinical Judgement is paramount.

Use of medications in advanced airway management should only be used with the intent to place an advanced airway, not to “take a look”.

APPENDIX 03

APPENDIX: 03

TITLE: INTUBATION PROCEDURES

REVISED: November 1, 2021

INTUBATION

I. BACKGROUND

Advanced Airway Procedures and competency are the cornerstones of Paramedicine. True competency involves knowing not only how to control the airway, but when to control the airway, and selecting the best method to do so. While oral-tracheal intubation is the gold standard of securing the airway, it is not the only means available to ACCESS paramedics, nor may it even be the best option for a specific patient.

The window of opportunity in controlling the airway is often brief indeed. Good clinical judgment is paramount, coupled with critical decisiveness, and is essential to obtain the best outcomes possible for the patient.

II. INDICATIONS AND CONTRAINDICATIONS

ABSOLUTE INDICATIONS:

- Inadequate ventilation by BVM or another airway device.

STRONGLY CONSIDER WITH:

- Failure to oxygenate
- Failure to ventilate
- Failure to maintain the airway
- And based on anticipated clinical course (anticipated failure of any of the above)
- Cardiopulmonary arrest
- Respiratory arrest
- Other Respiratory failure/distress with diminished respiratory drive
- Comatose with non-maintainable airway
- Pronounced hypoxia
- Airway burns or edema
- CHF with diminished respiratory drive
- Acute asthma / COPD with diminished respiratory drive
- Suspected intracranial bleed/closed head injury
- Those patients who fail to respond to positive pressure ventilation
- GCS <8 without reversible causes

CONTRAINDICATIONS:

None

II. COMPLICATIONS:

The Paramedics must be prepared to deal with and prevent complications while placing an Endotracheal tube. These include:

- Unsuccessful intubation attempt
- airway trauma
- laryngospasm
- hypoxia
- aspiration

The worst-case scenario being a **"Can't Intubate, Can't Ventilate"** (CICV) situation.

APPENDIX

03

INTUBATION

III. PROCEDURE

PREPARATION:

Have the following ready:

- Bag-valve-mask connected to functioning oxygen delivery system
- Working suction with tubing and suction tip attached
- Full Intubation set to include:
- Endotracheal tube(s) with stylet, syringe and intact cuff
- Laryngoscope with blades and bright light source
- Scalpel
- Alternative airway (example: EOA, EGTA, SGA, LMA, etc.)
- Endotracheal tube introducer (AKA the "bougie", Flexi-guide)
- Anticipated pharmacological agents (See Appendix 3)
- Manpower
- Check to be sure that a functioning, secure vascular access device (IV or IO) is in place. Note: If unable to establish IV or IO access certain drugs may be given IM instead
- In non-spinal trauma patients (especially those who are obese), elevate the head of the bed to 30 degrees

Cardiac monitor. Be alert for the possibility of bradycardia or other dysrhythmias.

PRE-OXYGENATION AND MEDICATION:

Pre-medicate as appropriate and feasible:

- See Appendix 2: Advanced Airway Management.

Oxygenate:

- Assist ventilations/oxygenate 2-3 minutes prior to *intubation attempt* unless patient's situation precludes this (inability to ventilate with BVM and inability to protect airway). Oxygenate as best as possible based on patient's condition using a BVM
- Place patient on high flow Nasal cannula
- Good pre-oxygenation is a vital component to successful airway management in all patients. This ensures sustained oxygenation during the intubation attempt and prevents bad outcomes.

ORAL INTUBATION:

Endotracheal intubation is comprised of 3 steps: Epiglottoscopy, Laryngoscopy, and Intubation. Below is the suggested procedure for optimizing airway success while minimizing risk to the pt, when utilizing a MAC or standard geometry laryngoscope. Using other laryngoscope styles may require modification.

- Epiglottoscopy:
    - Proceed slowly and methodically down the posterior aspect of the tongue, while identifying the epiglottis.
    - Distract the tongue and jaw forward and lift the epiglottis edge off of the posterior pharynx.

- If the epiglottis cannot be identified, the provider may consider advancing the laryngoscope blade down the midline until the epiglottis is visible.
- Once the epiglottis is visualized, the provider should maneuver the blade to engage the hypoepiglottic ligament.

- Laryngoscopy:
  - Steps to laryngoscopy are largely in place to improve 3 axis alignment and to improve airway visualization.
  - Providers shall consider preforming a head lift when appropriate (baring C-spine precautions).
  - The intubating provider may preform external laryngeal manipulation. An assistant should be available to continue the maneuver as the intubating provider proceeds with laryngoscopy.
- Intubation:
  - The provider should select and appropriately sized ETT and the providers choice of of bougie or stylet.
  - Bougie used during the first airway attempt is strongly recommended.
  - Insert the bougie or ETT and stylet from the R corner of the patient's mouth, to allow for optimized view of the ETT/Bougies passing the airway structures.
  - The ETT should pass easily through the pt's airway structures without force. If utilizing an ETT+ bougie/stylet, the provider may consider rotating the ETT 30-40* to the left.

- If initial intubation attempts fail, follow difficult airway procedures (Appendix 2). Actions to remedy this situation may include
  - Alternating blade size and type
  - Changing patient position
  - Placing an alternative airway (EOA, EGTA, SGA, LMA, etc)
  - Ventilating the patient with the bag-mask
  - Cricothyrotomy
- Treat bradycardia occurring during intubation by temporarily halting intubation attempts, and oxygenating/ventilating the patient with the bag mask and 100% oxygen
- Once intubation is complete, inflate the cuff and confirm endotracheal tube placement by standard methods, **including ETCO2**.
- Secure endotracheal tube with commercial device if available
- Reconfirm placement every 5 minutes or after any patient movement

NASAL INTUBATION: listed below is a general guide to the procedure. It may be modified as needed due to patient's position, anatomical features, or other conditions as needed

- Oxygenate and Ventilate with high-flow oxygen for 2-3 minutes with a BVM/CPAP while preparing the equipment
- Bend the tube to the approximate airway curvature to heighten the degree of success.
- Lubricate the endotracheal tube with Lidocaine gel. Spray Neosynephrine in the nare to prevent bleeding

- Insert the endotracheal tube into the nostril on a flat plane. Use of the right nostril may be easier
- Turn the tube so as to avoid the nasal turbinates. Use no more than gentle pressure to advance the tube; *NEVER FORCE THE TUBE*
- Continue advancing the tube judging position in the throat by the amount of air you can feel coming out of the tube
- If there is suddenly less air flow than noted previously, the tube is likely past the area of the epiglottis and vocal cords
- Pull back on the tube until a large amount of airflow returns
- If using a standard ETT, turning the tube to the left and then advancing the tube will assist with good placement.
- Using cricoid pressure and the BURP procedure may also facilitate passage through the cords
- When you are certain your tube is in the trachea, inflate the cuff with 5-10ml air.
- Follow confirmation procedures
- Secure the ETT. Note the centimeter markings on the tube at the nare.
- Reconfirm placement frequently

DIGITAL INTUBATION: listed below is a general guide to the procedure. It may be modified as needed due to patient's position, anatomical features, or other conditions as needed

- Hyperventilate with high-flow oxygen for 2-3 minutes with a BVM and oral/nasal airway in place while you are preparing your equipment
- Insert a stylet into the ETT and curve it to form a "J"
- Lubricate the tube with Lidocaine gel
- With a GLOVED hand, stand or kneel facing the patient opposite shoulder.
- Place the index and middle fingers into the patient's mouth until you palpate the epiglottis, usually in the midline
- Lift the epiglottis with your middle finger and slide the ETT along the palmar surface of your index finger, guiding the tube under the epiglottis and between the vocal cords
- Withdraw the stylet and confirm proper ETT placement
- Secure the ETT. Note the centimeter markings on the tube.
- Reconfirm placement frequently

Use of the endotracheal tube introducer (AKA the "Bougie", Flexi-guide): The tracheal tube introducer is used to facilitate difficult intubation. It should not be confused with the more rigid stylet, which is inserted into the ETT and used to alter its shape prior to intubation. Unlike the stylet A bougie may be inserted independently of the ETT and is used as a guide. The bougie may also be "preloaded" onto the ETT. Since the bougie is considerably softer, more malleable, and blunter than a stylet this technique is considered to be a relatively atraumatic procedure. Bougie use is strongly recommended on every airway attempt. It should be utilized on difficult/perceived difficult intubations.

- Prepare the endotracheal tube introducer for use: Curve the bougie and ensure the distal tip is formed into a J (coudé) shape

- Perform a laryngoscopy, obtaining the best possible view of the glottic opening. You should always be able to view the tip of the epiglottis and, ideally, the arytenoid cartilages
- Advance the bougie, continually observing its distal tip, with the concavity facing anteriorly
- Visualize the tip of the bougie passing posteriorly to the epiglottis and (where possible) anterior to the arytenoid cartilages
- Once the tip of the bougie has passed the epiglottis, continue to advance it in the mid-line so that it passes behind the epiglottis but in an anterior direction
- As the tip of the bougie enters the glottic opening you may feel 'clicks' as it passes over the tracheal rings or the tip may stop against the wall of the airways. This suggests correct insertion, although cannot be relied upon to indicate correct positioning with 100% accuracy. If hold-up is felt, the bougie may then be withdrawn up to 5cm to avoid the ETT impacting against the carina
- Hold the bougie firmly in place and pass the endotracheal tube over the proximal end of the bougie
- As the proximal tip of the bougie is re-exposed, carefully grasp it, assuming control of the bougie
- The ETT should then be carefully advanced along the bougie and hence through the glottic opening, taking care to avoid movement of the bougie
- SUCCESSFUL INTUBATION MAY BE CONSIDERABLY ENHANCED BY ROTATING THE ET TUBE 90º COUNTERCLOCKWISE, SO THAT THE BEVEL FACES POSTERIORLY. In so doing the bougie may also rotate along the same plane but should not be allowed to move up or down the trachea.
- Once the ETT tube is fully in place hold it securely as you slowly withdraw the bougie
- Inflate the cuff
- Follow normal confirmation procedures
- Secure the tube

POST INTUBATION:

This shall apply not only to patients intubated by ACCESS personnel, but any patient that has an advanced airway (i.e., Hospital/F.D. placed ETT, Combi-tube, LMA, PTLA) in place (with good control of the airway) who comes under the care of EMS personnel.

Advanced airways should be reassessed for placement frequently and after any major decrease in patient's status.

After any change in patient position or condition, reconfirm ET placement.

- **Secure the Tube:** Using a commercial Tube Holder when available

Sedation: **<u>continued sedation is mandatory and humane.</u>** The need for continued sedation is based on physiologic signs (biting the tube, attempts at respirations, and combativeness.) Inadequate sedation results in increased ICP, barotrauma, and poor compliance to ventilation. See *Appendix 2: Advanced Airway Support Supplement*

- **Restraints:** Restraints should be considered for the patient to prevent any dislodgement of the tube caused by any breakthrough combativeness
- **C-Collar**: Patient's head should be immobilized with a collar (or similar method) after intubation to prevent ETT displacement secondary to flexion, extension, or rotation of neck. Even in non-traumatic patients, the use of a C-Collar has been shown to reduce tube dislodgement. Therefore, the C-Collar is strongly encouraged

- **ETCO2:** ETCO2 monitoring is mandatory (when available). Ventilate at rate/volume to maintain ETCO2 at 35-45 mm/hg. Ventilate as needed to ETCO2 of 30-35 mm/hg for obvious head injury with increased ICP
- **Removing the BVM:** Remove the BVM from the tube during patient transfer from cot to bed (and similar activities) to prevent the BVM from pulling the tube out
- **Troubleshooting:** Frequent reassessments for complications and dislodgements. "**Don't be D.O.P.E.S**."
    - D: Displacement (Extubation. right main stem intubation or false passage)
    - O: Obstruction (kinked ETT, vomitus, blood, mucus, etc.)
    - P: Pneumothorax
    - E: Equipment Failure (Ventilator, BVM, O2 supply, etc.)
    - S: Stacked Breaths (Baro trauma, etc.)

IV. CONFIRMATION AND DOCUMENTATION

Endotracheal tube placement shall be confirmed (and documented) by **at least 3 methods**, including:

- (**MANDATORY**) Use of STAT-CAP or EASY-CAP or other expired end tidal CO2 monitor devices, to included Colorimetric CO2 devices, digital ETCO2, and waveform capnography, on all ET tubes.
- Direct visualization of tube passing through the vocal cords
- Auscultation for equal breath sounds **and** the absence of epigastric sounds (counts as one method)
- Observing for fogging/misting of tube
- Use of an endotracheal esophageal detector
- Improvement in patient's clinical status

Documentation shall include:

- Provider(s)
- Method
- Number of attempts and time of successful intubation. An intubation attempt is defined as anytime:
    - Orotracheal Methods: Insertion of laryngoscope blade into mouth (irrespective of whether an endotracheal tube is placed with the intent of performing endotracheal intubation). This includes simultaneous airway decontamination methods (i.e., SALAD airway management)
    - Digital Methods: The digits of the hand (or any other device) are passed into the hypopharynx in an effort to pass an ETT tube
    - Nasotracheal Methods: Insertion of tube through nares of nose
    - Laryngeal Mask/Tube and Other Methods: Insertion of laryngeal mask/tube into mouth (for Combitube, King, LMA, iGel, and other oral non airway devices)
    - Surgical Methods: Insertion of needle/surgical airway device through neck (for cricothyroidotomy, needle jet ventilation, retrograde ETI, and other ''surgical'' methods of airway management)
    - The removal of a foreign body using a laryngoscope and Magill forceps does not constitute an intubation attempt.

- Depth of ETT at the Teeth (or gums), nares, or external opening of the neck.
- Complications encountered, reasons for unsuccessful attempt if known.
- Methods of confirmation.
- Tube position and confirmation just prior to turning over care to ER or D/C efforts in the field. A “snapshot” of the ETCO2 waveform is preferred.

V. SPECIAL SITUATIONS:

Suspected C-Spine Injury:
Consider the endotracheal tube introducer (AKA the “Bougie”, Flexi-guide). If unable to place endotracheal tube, remove front of C-collar and hold in-line stabilization while attempting intubation. If still unsuccessful, consider alternate airway access techniques (nasal, digital, crich, etc.).

Laryngeal edema
Rarely, laryngeal edema due to burns or anaphylaxis will be severe as to result in swelling which obliterates the glottic opening. When nothing but inflamed swollen tissue is visible on laryngoscopy, instruct an assistant to push down slowly on the chest **AND MAINTAIN THE COMPRESSION.** This may result in a bubble of air becoming visible over the (hidden) glottis. Pass a bougie through the bubble and it should enter the larynx. Passage of a ETT over the bougie should now be possible. A smaller than normal ETT should be considered due to the swelling.
Maintaining the insertion of a bougie will facilitate trying various sizes of ETT in the event of difficulty as the bougie can remain in position until success is achieved.
If the use of this procedure is not feasible, or is unsuccessful, consider ventilating with a BVM, use of an alternative airway or use of a surgical or needle airway.

APPENDIX

03

INTUBATION

Pediatric Intubation

Providers should consider making adjustments to the above procedures for intubation of pediatric patient populations. Examples include: Alternative blade type/size, altering flow rate of “No Desat” nasal canula, alternative positioning strategies for pediatric patients, etc.

When selecting the appropriate ETT tube size, the use of a length based pediatric tape (AKA “Braslow Tape” or “ACCESS Pediatric Tape”) or similar device may help guide the provider.

Weight (kg) /Zone	Cuffed (mm)*	Length at teeth (cm)
<1 kg	2.5 mm	5.5-6 cm
< 3 kg	2.5 – 3mm	6-8.5 cm
3 kg	3.0 mm	9-9.5 cm
4 kg	3.0 mm	9.5-10 cm
5 kg	3.0 mm	10-10.5 cm
Pink/Red	3.0 mm	10.5-11cm
Purple	3.5 mm	11-12 cm
Yellow	4.0 mm	12.5 – 13.5 cm
White	4.5 mm	14-15 cm
Blue	5.0 mm	15.5-16.5 cm

*NOTE: ACP no longer routinely carries uncuffed ETT. When available, use ACCESS Pediatric Tape for guidance with pediatric ET tube sizes.

Physician PEARLS

SEDATION OR USE OF PARALYTIC MAY BE REQUIRED TO CONTROL PATIENT FOR INTUBATION/POST-INTUBATION MANAGEMENT (CONSCIOUS PATIENT, TRISMUS, ETC.). SEE APPENDIX 3

A key to good airway management is moving promptly through unsuccessful ETT attempts to successful airway management. Delays caused by repeated attempts trying to get traditional intubation (oral) may result in hypoxia, and poor patient outcomes. Use good clinical judgment when determining when to continue with a traditional ETT, and when to rapidly proceed to other methods (including surgical cricothyrotomy).

First pass success can be improved with preparation and proper patient positioning which aligns the “triple airway axis”.

APPENDIX 04

APPENDIX: 04

TITLE: SUPRAGLOTTIC AIRWAY PROCEDURES

RELEASE: May 01, 2022

SUPRAGLOTTIC AIRWAY PROCEDURES

I. BACKGROUND: Supraglottic airways (SGA) offer an alternative to Endotracheal Intubation in a number of circumstances. Currently is a single Supraglottic Airway in the ACCESS/ACP system: The Laryngeal Mask Airway (LMA) *Supreme*, although this does not preclude the use of other SGAs in specific circumstances. This document supplements *APPENDIX 2: Advanced Airway Support Supplement* and provides general guidance on the specific procedure of placing an LMA, not airway management, with the understanding that specific circumstances may necessitate some variance from standard procedure.

II. Indications and Contraindications

General Indications

- Cardiopulmonary arrest
- Respiratory arrest
- Comatose with non-maintainable airway
- Pronounced hypoxia
- Inadequate ventilation by BVM or other airway device.

STRONGLY CONSIDER WITH

- As an alternative (i.e. a "rescue airway device") to other advanced airways devices/interventions in actual or anticipated difficult airway situations
- After unsuccessful endotracheal intubation attempts, or where endotracheal intubation is not available or feasible.
- Any patient with a decreased level of consciousness with compromised ability to manage their airway
- Those patients who fail to respond to positive pressure ventilation/airway support
- Anticipated clinical course such as impending respiratory or airway failure

Absolute Contraindications

- Intact gag reflex
- Inadequate mouth opening to allow placement

Relative Contraindications

- Known/suspected esophageal disease such as Esophageal Varices or Esophageal cancer
- Known or suspected ingestion of a caustic substance
- Edema of the airway such as burns or anaphylaxis

Cautions

- Morbid Obesity (LMA – Increased risk of aspiration, increased difficulty ventilating)
- Obstructive and reactive airway disease (LMA - airway pressures needed may exceed mask/cuff pressure)
- Pregnancy > 14 weeks (LMA - increased risk of aspiration)
- If airway problems persist or ventilation is inadequate, the SGA should be removed and an airway established by some other means

APPENDIX

04

SUPRAGLOTTIC AIRWAY PROCEDURES

III. Sizing

Weight Based Selection: The LMA is selected based on Patient size (weight) not Height)

LMA Size	Patient estimated or actual Size	*Maximum* Cuff volume*	*Maximum* OG size
1	Neonates/Infants up to 5 kg (11 pounds)	5 ml	6 fr.
1.5	Infants 5- 10 kg (11-22 pounds)	8 ml	6 fr.
2	Infants 10-20 KG (22-44 pounds)	12 ml	10 fr.
2.5	Children 20-30 KG (44-66 pounds)	20 ml	10 fr.
3	Children 30-50 KG (66-110 pounds)	30 ml	14 fr.
4	Adults 50-70 kg (110-154 pounds)	45 ml	14 fr.
5	Adults 70-100 kg (154-220 pounds)	45 ml	14 fr.

*These are maximum volumes that should never be exceeded. It is recommended that the cuff be inflated no more than a maximum of 60 cm H2 0 intracuff pressure if known.

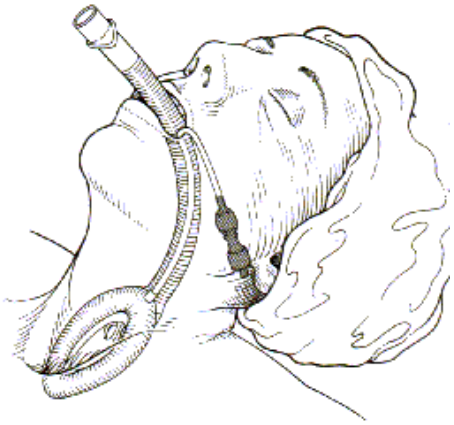
Alternative Sizing Methods

Oral Airway Comparison: Size the oral airway according to the traditional sizing method (angle of the jaw to the corner of the mouth). Choose the appropriate size LMA® Supreme™ Airway, based on the following:

- 80 mm oral airway (#3) = Size 3 LMA® Supreme™ Airway
- 90 mm oral airway (#4) = Size 4 LMA® Supreme™ Airway
- 100 mm oral airway (#5) = Size 5 LMA® Supreme™ Airway

IV. Procedure

- Procedure
- Place patient in supine position if possible.
- Pre-oxygenate patient to attain SpO2 of > 94% if possible. Oxygenation should target an SPO2 of > 94%. This ensures sustained oxygenation during the airway attempt (“Safe Apnea”).
- Chose an appropriate size LMA.
    - For normal adults, use the size 4 device as a first choice.
    - an approximate estimate of suitable sizing can be made by holding each device against the side of the patient’s face in the position corresponding to that shown below.

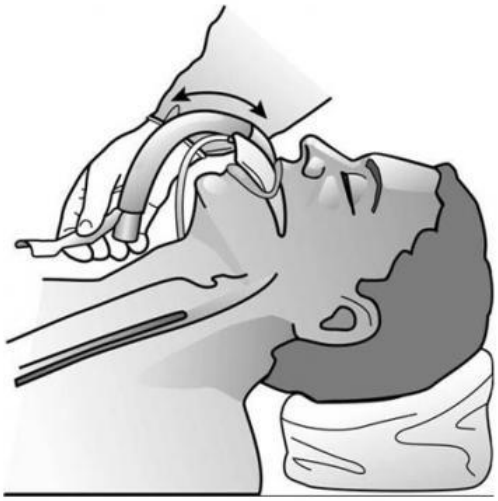


- Inspect the cuff for damage or tears.
- Check the cuff for proper inflation/deflation. *Deflate* the cuff completely using at least 50 cc of aspiration and watch for re-inflation (indicates there is a leak)
- Apply a water based lubricant to the DORSAL/POSTERIOR aspect of the LMA, including the shaft.
-
- Insert the LMA into the hypopharynx until resistance is met.

APPENDIX

04

SUPRAGLOTTIC AIRWAY PROCEDURES



- Connect the LMA to the desired ventilation device /method and ventilate the patient.
- Use as many as possible of the following confirmation techniques:
    - Misting in the tube
    - Quantitative and Qualitative end tidal CO_2 ($EtCO_2$)
        - Maintain at 35-45 mmHg
        - Monitor Waveform
    - Auscultation of gastric region *and* bilateral chest
        - Equal chest rise with assisted ventilations
        - No Epigastric sounds
    - Recovery/maintenance of SpO_2
- Additional RECOMMENDED confirmation methods:
    - Fixation Tab Test: (Recommended to confirm correct size and esophageal seal) After fixation, the taping tab should be positioned 1 to 2.5 cm from the upper lip.
        - If the taping tab is more than 2.5 cm from the upper lip, this suggests the device may be too big.
        - If the taping tab is less than 1 cm from the lip, this suggests the device may be too small.
        - At no time should the taping tab be in contact with the upper lip.
        - Use clinical judgment to replace a mask that appears too big or small
    - Gel Test: (Recommended to confirm correct size and esophageal seal)
        - Apply ¼ inch of (viscous) water-soluble sterile lubricant to the proximal end of the drain tube and hand ventilate. The gel should remain covered across the top of the drain tube.

        - This indicates that the esophageal seal has been achieved by ensuring the tip of the mask is against the upper esophageal sphincter.
    - OG Tube Placement (optional): (Inserting an OG tube allows the option to either suction or decompress the stomach. Successful passage of an OG tube is definitive confirmation of drain tube patency and tract separation).
- Record depth markings
- Secure the tube with either a commercial tube holder (Adult) or tape (Pediatric or adult).
- Immobilize the neck to prevent movement. A cervical collar is recommended to achieve this.
- Reassess frequently

APPENDIX

04

SUPRAGLOTTIC AIRWAY PROCEDURES

LEFT BLANK INTENTIONALLY

APPENDIX 05

APPENDIX: 05

TITLE: CRICOTHYROTOMY (SURGICAL/NEEDLE/Quick Trach)

REVISED: November 1, 2017

CRICOTHYROTOMY

I. BACKGROUND

Cricothyrotomy is an emergency life-saving procedure. It is an invasive technique which allows a patent airway to be rapidly established for temporary ventilation and oxygenation of those patients in whom airway control is not possible by other means.

II. INDICATIONS AND CONTRAINDICATIONS

INDICATIONS:

- Surgical: patients > 8 years of age
- Needle: patients < 8 years of age
- Supra-glottic airway obstruction with:
    - Foreign body obstruction
    - Laryngeal trauma
    - Edema
- Inability to intubate and ventilate after use of paralytic agent, or if other alternative airways are ineffective or not feasible

This procedure shall be utilized when all other methods of establishing a patent airway from above the glottis have failed.

RELATIVE CONTRAINDICATIONS:

1. Fractured larynx or significant damage to the cricoid cartilage or larynx.
2. Coagulopathy
3. Expanding hematoma in the area of the cricothyrotomy.

COMPLICATIONS:

- Venous hemorrhage
- Damage to arterial structures with severe hemorrhage
- Laceration of posterior tracheal wall
- Laceration of vocal chords
- Laceration of thyroid gland
- Tracheal stenosis (late)
- Creation of a false passage

APPENDIX

05

CRICOTHYROTOMY

III. PROCEDURE:

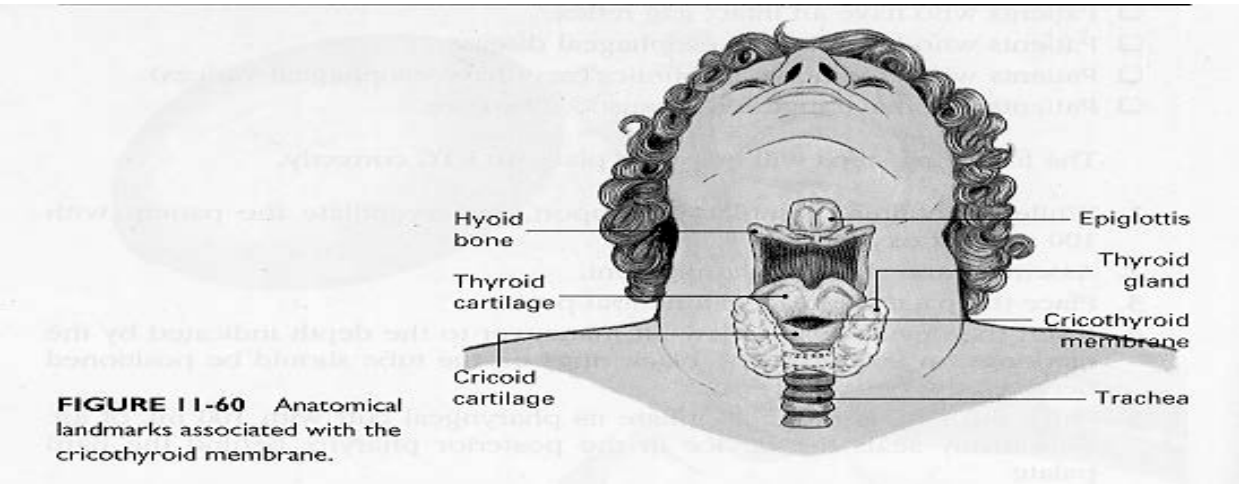


FIGURE 11-60 Anatomical landmarks associated with the cricothyroid membrane.

SURGICAL:

- Gather and assemble the appropriate equipment:
    - **a.** 6.0 endotracheal tube, cut off just above the balloon port
    - **b.** Bougie (Flex-guide ™)
    - **c.** #10 scalpel
    - **d.** Ruiz hook
    - **e.** Chlorhexidine swabs
    - **f.** Sterile gauze pad
    - **g.** Twill tape
    - **h.** Suction equipment
    - **i.** 10 mL syringe

- Hyperextend the patient's neck (unless cervical spine injury is suspected) to bring the larynx and cricothyroid membrane to an extreme anterior position.
- Locate the cricothyroid membrane between the cricoid and thyroid cartilage by palpating the depression in the midline, caudal to the prominence of the thyroid cartilage.
- Using aseptic technique, prepare the area with Chlorhexidine swabs.
- Palpate and maintain grasp on thyroid cartilage with non-dominant hand. Make a vertical 1-2" skin incision.
- Puncture the cricothyroid membrane with the Ruiz hook. Hook the inferior edge of the thyroid cartilage and lift cephalad.
- Orient the #10 scalpel transversely and puncture the membrane, creating a large enough incision to accommodate the CETT. Do not remove the scalpel.

- Orient scalpel blade in the vertical position, and insert bougie next to the blade, advancing the bougie caudally into trachea. Remove scalpel.
- Slide CETT over and advance it down the bougie. Twisting the CETT as you slide it down the bougie and through the cricothyroid membrane wil make it easier to advance.
- Ensure the balloon is through the membrane and into the trachea. Remove the bougie.
- Inflate the cuff and ventilate the patient with 100% oxygen.
- Once position is confirmed, remove the Rizu hook. NOTE: It is not uncommon to mistakenly place the CETT into a paratracheal position (i.e. outside the trachea). Do not remove the Ruiz hook until the CETT is confirmed to be in the trachea and functional. Secure the CETT using twill tape.
- Verify proper tube placement by:

    a. Auscultation of lung fields
    b. $ETCO_2$ detector
    c. Lack of subcutaneous air in the neck

NEEDLE:

- Gather and assemble the appropriate equipment:

    a. Chlorhexidine swabs
    b. #6 fr. Cook Needle (may also use 16 gage or larger angiocath)
    c. 3cc Syringe
    d. 3.0 CETT Barrel
    e. 4 x 4
    f. 36” twill tape
    g. Sterile gauze pad

- Hyperextend the patient’s neck (unless cervical spine injury is suspected) to bring the larynx and cricothyroid membrane to an extreme anterior position.
- Locate the cricothyroid membrane between the cricoid and thyroid cartilage by palpating the depression in the midline, caudal to the prominence of the thyroid cartilage.
- Using aseptic technique, prepare the area with Chlorhexidine swabs.
- Stabilize the airway between the thumb and forefingers.
- Insert the reinforced 6 Fr Cook catheter through the skin overlying the criothyroid membrane at a 30 degree angle caudally.
- When the needle is through the skin, aspirate for air as you advance to ensure tracheal entry. 1-2 mL of saline in the syringe will help identify presence of air bubbles.
- Advance the catheter over the needle and seat catheter hub against skin, remove the needle.

- Attach the 3.0 CETT adapter with flex tube to the hub of the catheter and begin ventilations with the BVM.
- Secure the cannula with twill tape after confirming correct placement by auscultation for breath sounds (5 point check) and $ETCO_2$ (may have low readings), observe the catheter for kinking.
- Consider sedation.

Notes and Precautions:

1. Hazard in performing this procedure are primarily damage to nearby structures. Major vessels are present on either side of the midline the vocal cords may be injured if the puncture is made to high and a through and through injury of the trachea may occur if the puncture is made too deep.
2. Palpation of the cricothyroid membrane is very difficult in the infant and younger child. The key to success is immobilization of the trachea throughout the procedure.

QuickTrach®:

- Place the patient in a supine position. Assure stable positioning of the neck region (place a pillow or piece of clothing under the patient's shoulders) and hyperextend the neck.
- Ensure the neck region is stabilized for puncture.
- Secure the larynx laterally between the thumb and forefinger; identify the cricoid puncture site midline between the thyroid cartilage and cricoid cartilage.
- Firmly hold and introduce the device at a 90 degree angle into the trachea.
- After puncturing the cricoid space check the entry of the needle into the trachea by aspirating air through the syringe. If air is present the needle is within the trachea.
    - **NOTE:** Should no aspiration of air be possible because of an extremely thick neck, it is possible to remove the stopper and carefully insert the needle further until entrance into the trachea is made.
- Change the angle to 60 degrees caudally and advance the device into the trachea to the level of the stopper.
- Remove the stopper. **Be careful not to advance the device further with the needle still attached.**
- Hold the needle and syringe firmly and slide only the plastic cannula along the needle into the trachea until the flange rests on the neck.
- Remove the syringe and needle.
- Secure the device in place and connect ventilation device tubing to the 15mm connector.

REFERENCES:

1. Board of Fire Surgeons. "*Cricothyrotomy*." Advanced Life Support Protocols. Palm Beach County, FL.: Palm Beach County Fire Rescue, 1989.
2. Frank, Micahel, MD. "*Cricothyrotomy – Practice Makes Perfect*." Journal of Emergency Medical Services. JEMS Communications.
3. Frei FJ, et al. "Cricothyrotomy using the Quicktrach Cricothyrotomy instrument set" Anasth Intensivther Notfallmed. 1990 Jan;25 Suppl 1:44-9.
4. Schaumann, Nikolaus M.D, et al. **"***Evaluation of Seldinger Technique Emergency Cricothyroidotomy versus Standard Surgical Cricothyroidotomy in 200 Cadavers."*
   Anesthesiology. *102*(1):7-11, January 2005.
5. American Heart Association. *Airway Adjuncts*, Textbook of Advanced Cardiac Life Support**.** American Heart Association, 1987, p 33-34.
6. Life Flight Network: "Patient Care guidelines" Aurora, OR 97002; Life Flight Network, LLC 2010 pp 17-19

APPENDIX

05

CRICOTHYROTOMY

APPENDIX 06

APPENDIX: 06

TITLE: CPAP

REVISED: November 1, 2017

C.P.A.P. Procedure

I. Introduction:

Continuous Positive Airway Pressure (CPAP) is a non-invasive method to provide respiratory support to certain patients. CPAP has been shown to rapidly improve vital signs, gas exchange, work of breathing, decrease the sense of dyspnea, and decrease the need for endotracheal intubation in the patients who suffer from shortness of breath from congestive heart failure (CHF), acute pulmonary edema (APE), and COPD.

II. Mechanism of Action:

CPAP works by providing increased continuous gas pressures at the level of the lower airway structures, improving gas exchange in the alveoli. In patients with CHF, CPAP improves hemodynamics by reducing preload and after load.

III. Indications:

For ***consideration*** in moderate to severe respiratory distress secondary to asthma/reactive airway disease, near drowning, COPD, CHF, acute pulmonary edema (cardiogenic and non cardiogenic), or pneumonia who present with *any* of the following:

- Pulse oximetry < 88% not improving with standard therapy
- $ETCO_2$ > 50mmHg
- Accessory muscle use / retractions
- Respiratory rate > 25
- Wheezes, rales, rhonchi
- Signs of respiratory fatigue or failure

IV. Contraindications:

Physiologic

- Unconscious, Unresponsive, or inability to protect airway.
- Inability to sit up
- Respiratory arrest or agonal respirations (Consider Intubation)
- Persistent nausea/vomiting
- Systolic Blood Pressure less than 90 mmHg
- Inability to obtain a good mask seal

Pathologic

- Suspected Pneumothorax
- Shock associated with cardiac insufficiency

- Penetrating chest trauma
- Facial anomalies / facial trauma
- Has active upper GI bleeding or history of recent gastric surgery

V. Procedure:

General

1. Place patient in a sitting position or similar position of comfort
2. Assess and monitor the patient

    - Vital signs q5 min
    - Lung sounds before and after CPAP, and as feasible thereafter.
    - Attach ECG and pulse oximeter
    - **Medical Control Contact: If BP <90 systolic contact Medical Control prior to beginning CPAP**

3. Explain the procedure to the patient
4. Anticipate and control anxiety

    - The CPAP may produce anxiety in some patients. Verbal coaching is often very effective in reducing this
    - Verbally coach breathing as needed
    - In some patients, ***low dose*** benzodiazepines may be needed. See *Adult Sedation for Painful Procedures (M-15)*

5. Assemble CPAP. Attach CPAP to O2 source and adjust starting CPAP pressure:

    - Begin at 5 cmH2O
    - Consider use of nebulized medications as indicated by patients clinical presentation and suspected etiology
    - Progressively increase the pressure desired cmH_2O There is better tolerance with gradual progression of pressure
    - **MAX CPAP PRESSURE:**
        - **i. CHF: 10 cmH2O**
        - **ii. All other respiratory conditions: 5 cmH2O**

6. Apply mask.

    - Check for air leaks
    - *Consider* having the patient hold the mask in place for a minute or so to reduce anxiety. As an option the medic may hold it in place to ensure a good seal is obtained
    - Using the head Straps: The use of the head straps is at the medics discretion based on ability to keep a continuous face mask seal weighed against the increased anxiety the head straps may cause
        - Place head strap over occipitoparietal area
        - Gently hold the delivery device to the patient's mouth and nose
        - Attach the straps, loosely at first, gradually tightening as the patient tolerates. Proceed with tightening the straps until air leaks are eliminated
    - Continue to coach patient to keep mask in place and readjust as needed

7. An in line nebulizer may be run simultaneously with the CPAP.
8. Treatment should be given continuously throughout transport to ED.

Removal of CPAP

CPAP therapy needs to be continuous and **should not** be removed unless the patient can not tolerate the mask, requires suctioning or airway intervention, experiences continued or worsening respiratory failure, or a pneumothorax is suspected. Intermittent positive pressure ventilation and/or intubation should be *considered* if patient is removed from CPAP therapy.

Intubation considerations

These patients are often in a state of crisis and respiratory failure. Intubation will be inevitable in some patients regardless of the use of CPAP, and the paramedic must be prepared for rapid intervention by RSI/MAI. Indications to proceed to ET placement are (not all inclusive):

- Deterioration of mental status
- Increase of the $EtCO_2$
- Decline of SpO_2
- Progressive fatigue
- Ineffective tidal volume
- Respiratory or cardiac arrest

APPENDIX

06

C.P.A.P. Procedure

VI. Documentation:

Documentation on the patient care record should include:

- CPAP level →(10cmH2O)
- F_iO_2 →(100%)
- SpO2 q5 minutes
- Vital Sign q5 minutes
- Response to treatment
- Any adverse reactions
- Justification for sedation, intubation, or discontinuation of CPAP. Be specific.

Special Notes:

1. This procedure is specific to the Emergent PortO2Vent CPAP device. When another device is used, and there is a conflict with this procedure and the devices recommended guidelines use the manufacturers recommended guidelines when they will not result in a detriment to patient care.
2. Advise receiving hospital as soon as possible so they can prepare for the patient's arrival.
3. Do not remove CPAP until hospital therapy is ready to be placed on the patient
4. Once CPAP headset is in place, consider early administration of nitro-paste, as nitro spray may be impractical to use in CHF patients.
5. Success is highly dependent upon patient tolerance, and EMT-P ability to coach the patient.
    a. Instruct patient to breath in through nose and exhale through mouth as long as possible
6. Monitor closely for development of pneumothorax and or hypotension
7. Monitor patients closely for vomiting and or gastric distention
8. Most patients will improve in 5-10 minutes. If no improvement within this time, assess for other causes and problems. Re-evaluate for intermittent positive pressure ventilation or Intubation
9. CPAP is an acceptable treatment option for a patient with a DNR/DNI order who is in respiratory failure

APPENDIX 07

APPENDIX: 07

TITLE: NEBULIZED BRONCHODILATOR TREATMENT PROCEDURE

REVISED: 01MAY2018

NEBULIZED BRONCHODILATOR TREATMENT

I. INDICATIONS:

- Wheezing or silent chest on exam
- Acute laryngeal edema secondary to anaphylaxis
- Epiglottitis and croup
- Decreased air exchange with a history of asthma, COPD, cardiac asthma, anaphylaxis, or toxic inhalation injury

II. CONTRAINDICATIONS/CONSIDERATIONS (*medical problems complicating the situation)*:

- Systolic BP > 200 mmHg
- Diastolic BP > 110 mmHg
- Wide complex tachycardia
- Ischemic chest pain
- Pregnant and nursing mothers (relative)
- Sensitivity to medication

III. MEDICATIONS:

Several medications are administered via nebulizer. Below are the ones covered in ACCESS SWOs:

- **Albuterol** (Proventil), 2.5 mg (0.083% in 3 ml)
- **Ipratropium bromide** (Atrovent), 0.5 mg (0.02% in 2.5 ml), usually combined with Albuterol, may repeat Atrovent once, max total dose of 1 mg (two nebs)
- **Epinephrine** (Adrenalin), 3 mg 1:1,000 epi (3 ml) mixed with 3 ml NS for 6 mL total solution

This does not preclude the use of other medications as dictated by special situations (e.g. hazmat exposures, cystic fibrosis), as approved by medical control, orders from an attending physician, or special protocols.

IV. PROCEDURES:

1. Patients, when appropriate, should have a cardiac monitor and venous access established with bronchodilator treatment.
2. Set up the nebulizer, add medication to the chamber, and set the oxygen flow rate to 6-8 L/min if using a mouthpiece, or 8 - 10 L/min if using a mask or ET tube. Encourage the patient to take slow, deep breaths. Ensure that there is a good seal at the mouthpiece or mask, and that the nebulizer unit is held level
3. Tap the side of nebulizer chamber periodically to completely disperse medication.
4. Discontinue treatment if there is a dramatic increase in heart rate, frequent ventricular ectopy develops, or the patient develops mental status changes.
5. All patients receiving nebulized bronchodilator treatments in the field must be evaluated for at least one hour after treatment for recurrence of symptoms.

APPENDIX

07

NEBULIZED BRONCHODILATOR TREATMENT

(This Page Left Blank)

APPENDIX 08

APPENDIX: 08

TITLE: NEEDLE THORACOSTOMY PROCEDURE

REVISED: November 1, 2017

NEEDLE THORACOTOMY

A needle thoracotomy is an invasive procedure that allows for emergency chest decompression in patients with respiratory and/or hemodynamic compromise second to suspected tension pneumothorax.

I. INDICATIONS:

Suspected tension pneumothorax is evidenced by:

Signs of hypoxia / respiratory distress with decreased LOC with indications below.

a. Absent breath sounds over affected side
b. Hyperresonance over the affected side
c. Distended neck veins
d. Tracheal shift away from affected side
e. Hypotension
f. Trauma arrest / PEA
g. Significant mechanism of blunt or penetrating chest trauma with any of the above
h. JVD
i. Intubated patients who become suddenly unstable or difficult to bag despite suctioning
j. Patients with known rib fractures and SQ emphysema
k. Other chest injuries including open chest wound(s), simple pneumothorax contusion, and flail chest.

II. CONTRAINDICATIONS:

Suspected diaphragmatic rupture with protrusion of bowel into chest cavity.

III. COMPLICATIONS:

- Laceration of intercostal artery / nerve
- May create a simple pneumothorax
- Bowel perforation

APPENDIX 08

NEEDLE THORACOTOMY

IV. PROCEDURE:

1. Identify the insertion site:
   a. The second intercostal space at the midclavicular line
   b. The fifth intercostal space, anterior midaxillary line.

2. Using aseptic technique, prepare the site with Chlorhexidine swabs.

3. Using a 6 Fr Cook Catheter (or 16 gage or larger angiocath), introduce the catheter at a 90 degree angle over the **superior** aspect of the inferior rib into the desired intercostal space a "rush" of air is noted (a pop may be felt).

4. Advance the catheter over the needle and seat catheter hub against skin, remove the needle.

5. Assess the patient for improvement in clinical status.

6. Repeat as needed if you suspect catheter is occluded due to blood, tissue or movement and if tension reoccurs.

V. REFERENCE:

1. Greenwald, Johnathan. The Paramedic Manual. Englewood, CO: Morton, 1988. Pg 123-125.
2. Life Flight Network: "Patient Care guidelines" Aurora, OR 97002; Life Flight Network, LLC 2010 pp 80

APPENDIX 09

APPENDIX: 09

TITLE: LUCAS Chest Compression System

REVISED: November 1, 2017

LUCAS Chest Compression System

The LUCAS Chest Compression System is designed to provide chest compressions for adult patients who are unresponsive, pulseless, and apneic. The LUCAS Chest Compression System may be utilized when CPR is appropriate as noted in the adult cardiac arrest protocol.

Contraindications:
Patient is too small- The LUCAS device will alarm with three fast signals when "Pause" or "Active" buttons are depressed.
Patient is too large- The upper part of the LUCAS device must lock to the back plate without compressing the patient's chest

Instructions:

- Confirm cardiac arrest
- Start manual compressions
- Position the bag with its top towards you
- Turn the unit on while it is in the bag to start the self-test
- Remove the LUCAS back plate from the carry bag
- Stop CPR and support the patient's head while placing the back plate under the patient, immediately below the arm pits
- Resume manual CPR
- Hold the handles on the support legs to remove the LUCAS upper part from the bag. Pull the release rings once to make sure the claw locks are open.
- Let go of the release rings and attach the support leg that is nearest to you to the back plate
- Attach the other support leg to the back plate
- Pull up once on the legs to make sure the legs are correctly attached
- Adjust the height of the suction cup by pushing the "Adjust" button and using two fingers press the suction cup down until it touches the patient's chest
- Position the suction cup immediately above the end of the sternum(the compression point is the same location as for manual CPR)
- Push the "Pause" button to lock this setting in place,
- Check for proper position. If needed, push the "Adjust" button and pull the suction cup up and readjust to the proper position
- Push the "Pause" button to lock this setting in place
- To start compressions push "Active continuous" if an advanced airway is in place or "Active 30:2" if an advanced airway is not in place
- **IMPORTANT:** To prevent the LUCAS from migrating and potentially causing an iatrogenic injury, attach the stabilization strap behind the patient's neck as near the shoulders as possible

APPENDIX

09

LUCAS Chest Compression System

- Secure the patient's arms with the LUCAS arm straps
- Stop compressions by pushing the "Pause" button when lifting the patient to a backboard or stretcher
- Start compressions by pushing "Active continuous" or "Active 30:2"
- The LUCAS Chest Compression system may remain active while moving a patient when it and the patient are safely positioned on the transportation device

APPENDIX: 10

TITLE: CARDIAC MONITORING PROCEDURES

REVISED: November 1, 2017

I. INDICATIONS:

Patients at risk for dysrhythmias or receiving medications shall have continuous EKG monitoring. A rhythm strip shall accompany each EKG rhythm interpreted in written patient reports. A 12 Lead EKG shall be obtained when appropriate.

A PARAMEDIC SHALL ATTEND ALL PATIENTS REQUIRING EKG MONITORING.

II. CONTRAINDICATIONS:

NONE

III. PROCEDURE:

12-LEAD EKG PLACEMENT:
Limb leads are placed on a non-bony part of the distal anterior aspect of the appropriate extremity.

Chest leads are placed as follows, shave and gently abrade the area as needed.

Left chest leads
- V1: fourth intercostal space just right of the sternum
- V2: fourth intercostal space just left of the sternum
- V3: fifth rib, between V2 and V4
- V4: fifth intercostal space, midclavicular line
- V5: fifth intercostal space, anterior axillary line
- V6: fifth intercostal space, midaxillary line

Right chest leads: (Optional)
- Placed in corresponding position on the right side of the chest
- Documented as V3R, V4R, etc. (V4R is preferred)

Posterior chest leads (V7-V9) (Optional)
- V7: Posterior axillary line, fifth intercostal space
- V8: Midscapular line, fifth intercostal space
- V9: Left of the vertebrae, fifth intercostal space

"12-LEAD EKG RULES TO LIVE BY"

- Watch for reciprocal (mirror image) changes opposite the site of a suspected MI
- Inferior MI with reciprocal changes in V1-V2, consider posterior MI
- Inferior MI with decreased B/P, decreased heart rate, consider right-sided MI. This is especially true if ST elevation is greater in lead III than lead II
- About 30% of left inferior MI's are also right-sided MI's
- Apparent A-Fib with regular R-R's, consider digoxin toxicity
- Right-sided MI's may need fluids before nitrates

APPENDIX

10

CARDIAC MONITORING

IV. SPECIAL CONSIDERATIONS:

- Limb lead EKG monitoring is for rhythm interpretation only. A 12-lead must be obtained to document diagnostic EKG changes (ST segment changes, Q waves, etc.)
- If a 12-lead EKG is not available, a “Modified Chest Lead” (MCL) may be obtained by monitoring lead III and placing the left leg electrode in the V1, V4, or V6 position. This shall be documented as MCL-1/4/6
- The diagnostic 12-lead EKG is intended to assist in the recognition of infarction and dysfunction. **A normal 12-lead EKG does not preclude the presence of an MI**.
- The acquisition of a 12-lead EKG should not significantly delay treatment or transport

APPENDIX 11

APPENDIX: 11

TITLE: AED Protocol

REVISED: November 1, 2017

THIS SUPPLEMENT IS FOR BLS PERSONNEL WHEN A PARAMEDIC IS NOT PRESENT, AND AN AED IS IMMEDIATIELY AVAILABLE.

The following procedure is generic and should be used unless the manufacturers instructions are available and give specific recommendations not covered here. Most AED units are self-instructional when power is turned on. Most cardiac monitors used in ACCESS have an AED function.

An AED may be used in place of a manual defibrillator as needed to allow other essential care to be done.

IF A PUBLIC ACCESS DEFIBRILLATOR (PAD) IS UTILIZED PRIOR TO YOUR ARRIVAL, SWITCH FROM PAD TO YOUR DEFIBRILLATOR AND PROCEED WITH PROTOCOL.

INDICATIONS:

- Sudden cardiac arrest patients

AND

- Patients who are unresponsive, apneic, and pulseless

CONTRAINDICATIONS:

- Patients who are conscious with stable signs and symptoms.
- Patients suffering from major traumatic injury. Rapid transport is indicated.

PRECAUTIONS

- Make sure patient and environment are dry
- Avoid placing patches over pacemakers, internal defibrillators or nitroglycerin patches
- DO NOT touch the patient while the AED is assessing the patient or charging
- ENSURE that no one is touching the patient when the shock button is pushed
- NEVER analyze while moving the patient or when in a moving ambulance

POTENTIAL ADVERSE EFFECTS:

- Burns to skin
- Injury to patient, self and /or bystander
- Deactivation of patient's implanted pacemaker

1. Use BSI precautions. Perform an initial assessment. If pulseless and non-breathing (in cardiac arrest):
   - For a one-person EMS response, continue with AED protocol.
   - For a two-person EMS response, begin one-rescuer CPR while partner continues with AED protocol. If PAD is in place, use your AED.

2. Turn on defibrillator power and apply electrodes according to manufacturer instructions.

AED

3. Stop CPR per AHA guidelines, clear patient and begin analysis of rhythm.
   - If a shockable rhythm is determined, continue with protocol.
   - If no shockable rhythm is determined and pulse is absent, continue CPR, using appropriate interventions, such as bag-valve mask, airway and oxygen. Reassess patient every two minutes. Contact medical control and make transport determination.

4. If AED advises deliver first shock.

5. Begin CPR starting with chest compression.

6. After two minutes of CPR (5 cycles) re-analyze rhythm. (If the machine advises no shock, check pulse.)

7. If AED advises, clear the patient and deliver second shock.

8. Begin CPR starting with chest compression.

9. After two minutes of CPR (5 cycles) re-analyze rhythm. (If the machine advises no shock, check pulse.)

10. Continue the CPR/AED sequence till ALS arrives.

AED Use In Children and Infants

For attempted defibrillation of children 1 to 8 years of age with an AED, the rescuer should use a pediatric dose-attenuator system if one is available. If the rescuer provides CPR to a child in cardiac arrest and does not have an AED with a pediatric dose-attenuator system, the rescuer should use a standard AED. For infants (< 1 year of age), a manual defibrillator is preferred. If a manual defibrillator is not available, an AED with pediatric dose attenuations desirable. If neither is available, and AED without a dose attenuator may be used.

AED Pad / Paddle Placement

The anterior-posterior and anterior-lateral locations are generally acceptable in patients with implanted pacemakers and defibrillators. In patients with implantable cardioverter-defibrillators or pacemakers, pad or paddle placement should not delay defibrillation. It might be reasonable to avoid placing the pads or paddles directly over the implanted device.

APPENDIX 12

APPENDIX: 12

TITLE: VAGAL MANEUVER PROCEDURE

REVISED: November 1, 2017

VAGAL MANEUVERS

I. BACKGROUND:

Vagal maneuvers are non-pharmacologic interventions used to terminate and diagnose tachy-dysrhythmias. Vagal maneuvers increase parasympathetic tone and slow conduction through the AV node.
The most common methods for stimulating the vagus nerve are Valsalva's maneuver and Carotid Sinus Massage (CSM). A safer variant of carotid sinus massage is Carotid Sinus Pressure (CSP).
Facial immersion in ice water is an acceptable alternative for pediatric patients.

II. INDICATIONS:

- Suspected SVT (or other rapid, narrow tachycardia) in a stable patient.
- Unstable patients require pharmacologic or electric cardioversion.

The Valsalva maneuver and CSM shall only be attempted when the patient's EKG is being monitored and venous access has been established. Generally, CSM shall only be attempted after the patient has failed to respond to pharmacological intervention

III. COMPLICATIONS & SPECIAL NOTES:

- Dysrhythmias are common after conversion by vagal maneuvers. Note: Treatment is indicated only if persistent (greater than 3-5 minutes)
- Other potential complications include:
  - Asystole
  - Stroke from dislodged carotid artery thrombus in persons with atherosclerotic disease
  - Brain ischemia from occlusion of carotid artery or compromise of marginally perfused areas of brain
- It is difficult to differentiate congestive heart failure caused by tachycardia from a tachycardia caused by CHF. The symptoms of a patient with a pulse under 160 are usually not the result of a rate related problem
- Pediatric patients may respond better to facial immersion in ice water. The diving reflex causes peripheral vasoconstriction and a vagally induced decrease in heart rate
- Sometimes Vagal Maneuvers can be used to diagnose tachy-dysrhythmias.

Tachycardia	**Expected Response to Vagal Maneuvers**
Sinus Tachycardia	No response or gradual slowing
Paroxysmal Atrial Tachycardia	No response or conversion to sinus rhythm
Atrial Flutter increasing block	Ventricular slowing revealing flutter waves
Atrial Fibrillation	Variable slowing
Ventricular Tachycardia	No response

IV. PROCEDURE:

Patients should have continuous EKG monitoring and IV access. A 12-lead EKG is preferred prior to initiation.

APPENDIX

12

VAGAL MANEUVERS

Valsalva maneuver: Performed by the patient (patient must be conscious and cooperative)

- Document the dysrhythmia before treating
- Explain the procedure to the patient
- Instruct the patient to inhale and hold their breath and
  - Bear down as if to have a bowel movement, and to hold this position for 20-30 seconds

  OR

  - Blow forcefully through a straw (or IV catheter/similar device) for as long as possible (at least 20 seconds)
- Monitor rhythm continuously
- Stop maneuver immediately if:
  - -Patient becomes confused
  - -HR drops below 100 BPM
  - -Asystole occurs

Carotid sinus pressure

- Patients with high cholesterol, previous strokes, or other significant risk factors for thrombus should not have CSM performed.
- Document the dysrhythmia before treating
- Explain the procedure to the patient
- Place the patient in supine position
- Expose the neck and hyperextending slightly
- Gently palpate for carotid pulses on one side, then the other. Proceed only if bilateral carotid pulses are palpable.
- Auscultate for bruits over both carotid arteries

  <u>Do not perform the procedure if a bruit is heard on either side.</u>
- Turn the patient's head to the left side
- Turn the paper recorder on and leave on until the procedure is completed.
- Apply procedure:
  - -(CSP) Gentle and steady pressure over the right carotid sinus and hold for 5-10 seconds.

  OR

  - -(CSM) Gentle and steady messaging motion over the right carotid sinus for 5-10 seconds
- Pressure should be firm but should not totally occlude blood flow
- Monitor rhythm constantly throughout procedure
- Release pressure immediately if:
  - -Patient becomes confused or shows signs of brain ischemia
  - -HR drops below 100 BPM
  - -Asystole occurs
- If asystole occurs and persists for longer than 15 sec:
  - Begin CPR
  - See asystole protocol
- If no response to the right side carotid sinus pressure, wait 2-4 minutes and repeat the procedure on the left side

APPENDIX: 13

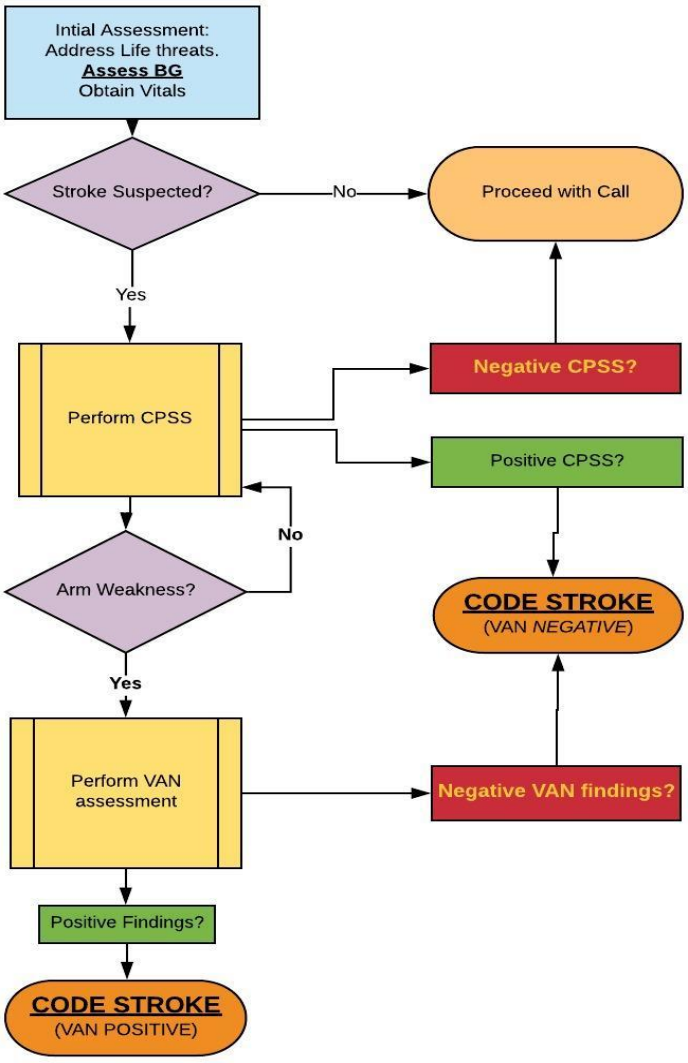
TITLE: Stroke Assessment

Updated: November 1, 2018

General Comments: The purpose of this procedure is to standardize the minimum assessment of suspected stroke patients**. This assessment should combine the use of the VAN and Cincinnati Stroke assessments.** Providers may add other assessments as appropriate.

Procedure:

In the ACCESS system, there are two substantial types of stroke centers. Level I (Comprehensive) Stroke centers that can provide direct resolution of clots in Large Vessel Occlusion (ELVO) strokes, and Level 2 (primary) stroke centers that may provide thrombolytic therapy ("clot Busting Agents") for other kinds of strokes.
ACCESS providers will use stroke assessments to facilitate choosing the most appropriate destination in accordance with the hospital destination protocol.



Stroke Assessment

APPENDIX

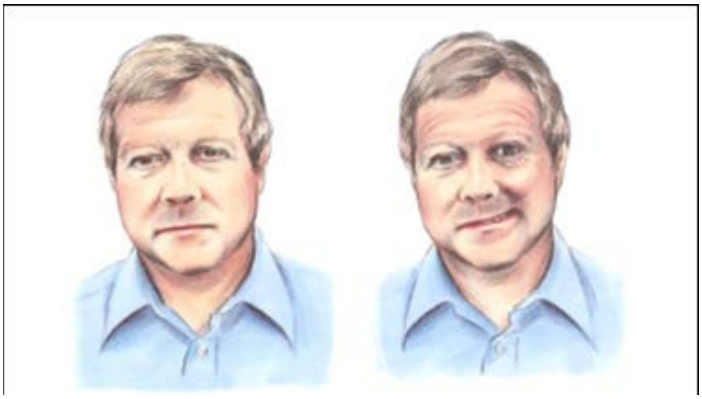
13

Stroke Assessment

The Cincinnati Prehospital Stoke Scale: THINK F.A.S.T.

F: Facial Droop (Have the 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.



Left: Normal, Right: Stroke patient with facial droop (right side of face)

A: Arm Drift (Patient closes eyes and extends both arms straight out, with palms up, for 10 seconds):

- Normal – both arms move the same or both arms do not move at all (other findings, such as pronator drift, may be helpful)
- Abnormal – one arm does not move or one arm drifts down compared with the other

S: Abnormal Speech (Have the patient say "you can't teach an old dog new tricks"):

- Normal – patient uses correct word with not slurring
- Abnormal – patient slurs words, uses the wrong words, or is unable to speak

Interpretation: If any 1 of these 3 signs is abnormal, the probability of a stoke is 72%

T: Time

Determine "Last known well" and time of onset.

APPENDIX 13

The VAN stroke assessment:

The VAN assessment is typically performed AFTER other stroke assessments. Patient must have arm weakness ***AND*** a deficit in the VAN assessment to be considered VAN positive. A VAN negative patient should still be assessed using the Cincinnati stroke scale or other stroke assessments.

Large Artery Stroke Screening Forms for VAN

1. How weak is patient on one side of body?

- ☐ *Mild* (minor drift) (hold both arms up for 10 seconds) **PROCEED WITH VAN EXAM.**
- ☐ *Moderate* (severe drift - touches or nearly touches ground) **PROCEED WITH VAN EXAM.**
- ☐ *Severe* (flaccid or no antigravity) **PROCEED WITH VAN EXAM.**
- ☐ Patient shows no weakness. **Patient is VAN negative. Proceed to other stroke assessments.**

(exceptions are confused or comatose patient's with dizziness, focal findings or no reason for their altered mental status then Basilar artery thrombus must be considered)

2. Visual Disturbance?

- ☐ *Field Cut:* Peripheral Vison and Eye Movement (4 quadrants) ("How many fingers am I holding up")
- ☐ Double vision (ask patient and look to right then left, evaluate for uneven eyes)
- ☐ Blind new onset
- ☐ NONE

3. Aphasia?

- ☐ Expressive (inability to speak or errors) don't count slurring of words (repeat & name 2 objects)
- ☐ Receptive (not understanding or following commands) (close eyes, make fist)
- ☐ Mixed
- ☐ NONE

4. Neglect?

- ☐ Forced gaze or inability to track to one side
- ☐ Unable to feel both sides at same time, or unable to identify own arm
- ☐ Ignoring one side
- ☐ NONE

If patient has **any** arm weakness (step 1) **PLUS** any abnormal findings in the VAN exam, the patient is considered VAN POSITIVE. This is likely a large artery clot (cortical symptoms).

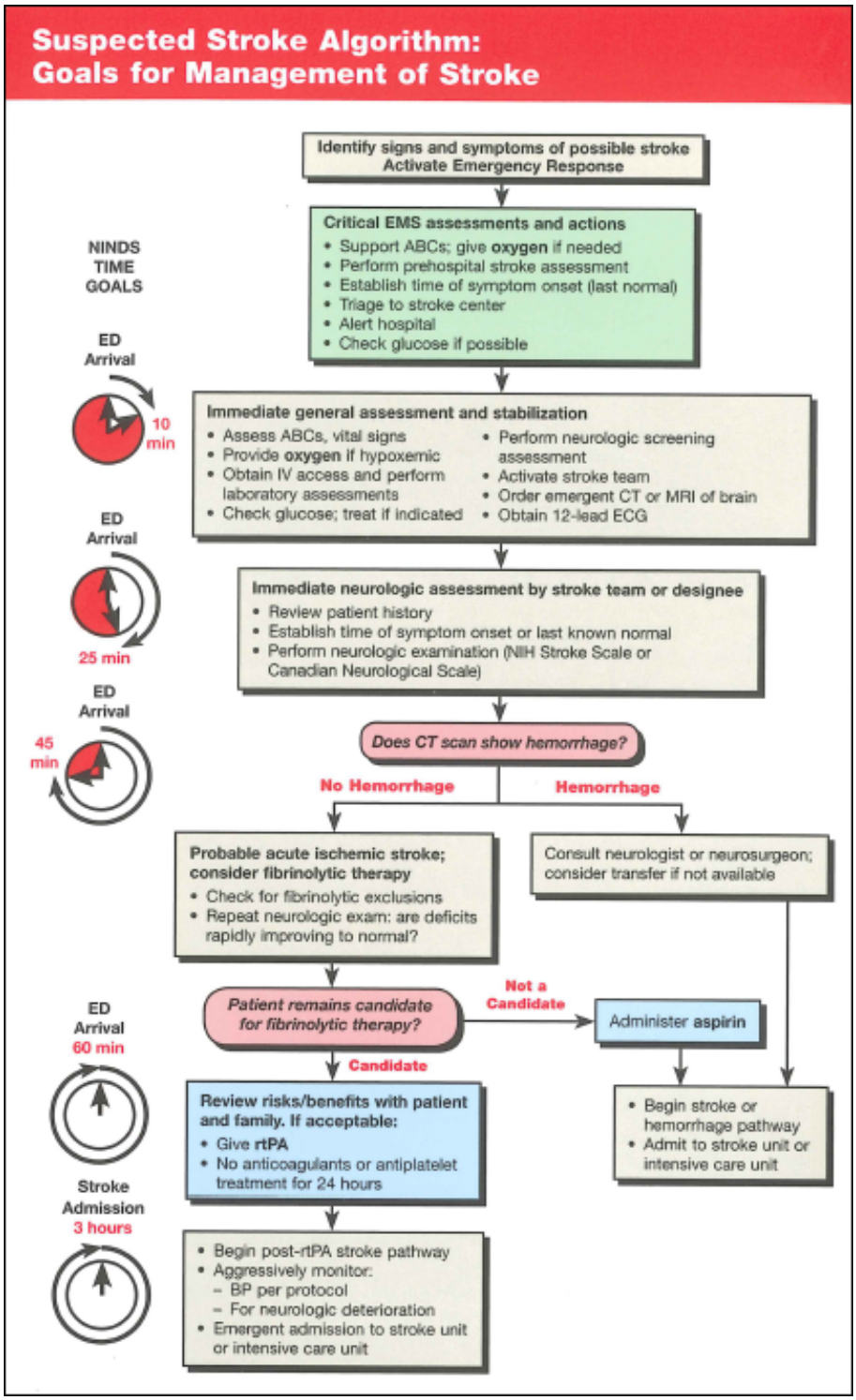
APPENDIX

13

Stroke Assessment

Physician Pearls:

Below is the AHA/ASA recommended goals for management of stroke. This does not supersede the ACCESS SWO and protocols.



APPENDIX: 14

TITLE: INTRAOSSEOUS INFUSION PROCEDURES

REVISED: November 1, 2017

I. BACKGROUND

Intraosseous infusion is a method of gaining access to the circulatory system in infants and children, in which a specialized trocar is placed in the proximal tibia. All IV drugs and fluids may be given by the intraosseous route.

II. ADVANTAGES OVER PERIPHERAL IV ACCESS:

1. Non-collapsible route providing rapid access in patients with circulatory collapse, obesity, burns, or edema.
2. A low complication rate.
3. Safer and easier than central line placement.
4. Rapid IV access may decrease morbidity and mortality in the critical pediatric patient.
5. The procedure can be accomplished without interrupting CPR.

III. INDICATIONS:

1. Infant or child who appears to be 6 years of age or less. Children up to 8 years of age may be candidates for femoral site access.
2. A life or limb threatening condition exists.
   -Volume depletion (dehydration or hemorrhage)
   -Circulatory collapse
   -Cardiac arrest
   -Medication route if no other access is available
3. A peripheral IV cannot or is unlikely to be established.
4. Delay in administration of fluids or medications may increase risk to the patient.

IV. CONTRAINDICATIONS:

1. Cellulitis overlying the site.
2. Fracture in the same bone or a suspected proximal vascular injury.
3. Severe pelvic trauma.
4. A previous intraosseous attempt in the same bone.

V. COMPLICATIONS:

1. Sub-periosteal infusion due to incorrect placement.
2. Extravasation due to prior attempt in same bone, or through-and-through puncture of the bone.
3. Plugging of needle with bone or marrow.
4. Growth plate damage.
5. Osteomyelitis (more common with hypertonic or irritating solutions or medications).

APPENDIX

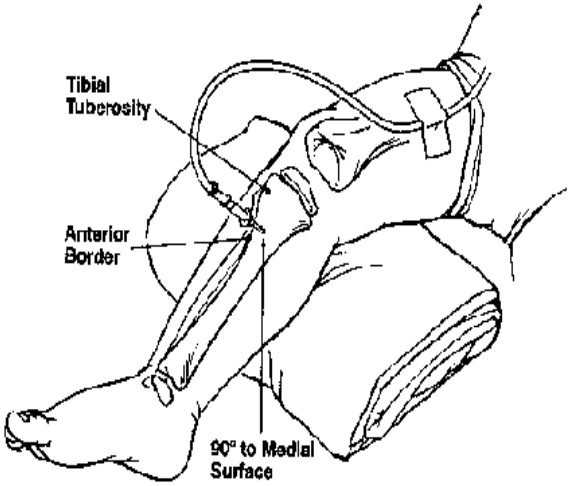
14

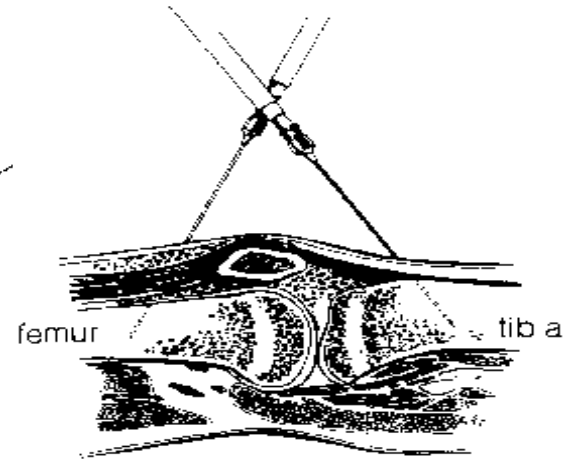
INTRAOSSEOUS INFUSION

VI. PROCEDURE:

Note: The proximal tibia is the preferred insertion site. Alternatives sites exist and can be used in special situations (i.e. tibia fractures).

1. Place the patient supine and flex the knee to 30 degrees. Locate insertion site:
   - Flat anteriomedial surface of the tibia, 1 - 2 finger widths below the tibial tuberosity. After entering the skin, the needle should be directed at a slight angle (10-15° from the vertical) **caudad for proximal tibia insertion**.
   - The landmarks for femoral insertion are the lower third of the femur, approximately 3 cm above the lateral femoral epicondyles. After entering the skin, the needle should be directed at a slight angle (10-15° from the vertical): **cephalad for femoral insertions**.
   - This slight angulation minimizes the risk of trauma to the growth plate.





2. Using a 15-18-gauge IO bone marrow aspiration needle directed perpendicular and slightly caudal (or cephalad depending on approach) to the bone surface, penetrate the skin and periosteum using firm pressure. A back-and-forth twisting motion should be used in penetrating the cortex, and a “give” or “pop” will be felt as the medullary canal is entered.
3. Remove the stylet and using a syringe aspirate 1 ml of bone marrow. (This may best be accomplished by injecting 1 ml of IV solution prior to aspirating. Marrow will appear as pink or reddish aspirant.)
4. Attach the IV tubing and fluids to be run using pressure bag. Observe for good flow.
5. Stabilize the IO needle with 4 X 4’s, kerlex rolls, and tape.

APPENDIX 15

APPENDIX: 15

TITLE: EZ-IO Infusion System

REVISED: November 1, 2017

- **Sizes:**
  - EZ-IO®LD **(Over 40 kg with excessive tissue from Edema, Muscle, or Obesity)**
  - EZ-IO®AD **(40 kg and over)**
  - EZ-IO® PD **(3 – 39 kg)**
    - Note: *Certain patients may require a needle set outside of their ideal weight range. "One size needle set does not fit all."*
- **Indications:**
  - Immediate vascular access needed.
  - Intravenous fluids or medications are **urgently** needed and a peripheral IV cannot be established within 90 seconds

  AND:
  - The patient exhibits one or more of the following:
    - An altered mental status (GCS ≤ 8)
    - Respiratory compromise (SpO_2 < 90% after appropriate oxygen therapy, respiratory rate < 10 or > 40 min)
    - Hemodynamic instability (Systolic BP of < 90).
  - The EZ-IO should be considered ***PRIOR to*** peripheral IV attempts in the following situations:
    - Cardiac arrest (medical or traumatic)
    - Patient in extremis with immediate need for delivery of medications and or fluids.

- **Contraindications:**
  - Fracture of the bone selected for IO infusion (*consider alternate sites*)
  - Excessive tissue at insertion site with the absence of anatomical landmarks (*consider alternate sites*)
  - Previous significant orthopedic procedures (*IO within 24 hours, prosthesis - consider alternate sites*)
  - Infection at the site selected for insertion (*consider alternate sites*)

- **Considerations:**
  - **Pain:**
    - **Insertion** of the EZ-IO® in conscious patients has been noted to cause mild to moderate discomfort (usually no more painful than a peripheral IV). However, IO **infusion** for conscious patients has been noted to cause severe discomfort
    - Prior to IO syringe bolus (flush) or continuous infusion in conscious patients, SLOWLY administer Lidocaine 2% (Preservative Free) through the EZ-IO hub. *Ensure that the patient has no allergies or sensitivity to Lidocaine.*
      - ► EZ-IO® **AD** Slowly (30 seconds minimum) administer 20 – 40 mg Lidocaine 2%
      - ► EZ-IO® **PD** Slowly (30 seconds minimum) administer 0.5 mg /kg Lidocaine 2%

- **Flow rate:**
  - Due to the anatomy of the IO space, flow rates may appear to be slower than those achieved with an IV catheter.
  - Ensure the administration of an appropriate rapid **SYRINGE BOLUS (flush)** prior to infusion
  - "**No Flush = No Flow"**
    - ► Rapid syringe bolus (flush) the **EZ-IO® AD** with **10 ml** of normal saline.
    - ► Rapid syringe bolus (flush) the **EZ-IO® PD** with **5 ml** of normal saline.
    - ► Repeat syringe bolus (flush) as needed
  - To provide continuous infusion flow rates always use a syringe, pressure bag or infusion pump.

- **Precautions:**
  - The EZ-IO® is **not intended** for prophylactic use.

- **Equipment:**
  - EZ-IO® Driver
  - EZ-IO® AD or EZ-IO® PD Needle Set
  - Alcohol or Betadine Swab
  - EZ-Connect® or Standard Extension Set
  - 10 ml Syringe
  - Normal Saline (or suitable sterile fluid)
  - Pressure Bag or Infusion Pump
  - 2 % Lidocaine (preservative free)
  - EZ-IO® Yellow wristband

- **Procedure:**
- *If the patient is conscious, advise of EMERGENT NEED for this procedure and obtain informed consent*
  - Determine EZ-IO® Indications
  - Rule out Contraindications
  - Locate appropriate insertion site (*Sites with regulatory approval include: Proximal / Distal Tibia & Proximal Humerus*)
  - Prepare insertion site using aseptic technique
  - Prepare the EZ-IO® driver and appropriate needle set
  - Prime EZ-Connect® tubing with Lidocaine for conscious patients; Normal Saline for unconscious patients
  - Stabilize site and insert appropriate needle set
  - Remove EZ-IO® driver from needle set while stabilizing catheter hub
  - Remove stylet from catheter, place stylet in shuttle and approved sharps container
  - Confirm placement
  - Connect primed EZ-Connect®
  - Slowly administer appropriate dose of Lidocaine 2% IO to conscious patients
  - Syringe bolus (flush) the EZ-IO® catheter with 3-5 ml Normal Saline

- Begin infusion with pressure (syringe bolus, pressure bag or infusion pump) where applicable
- Dress site and secure tubing
- Monitor EZ-IO® site and patient condition – Remove catheter within 24 hours

APPENDIX

15

EZ-IO INFUSION System

APPENDIX 16

APPENDIX: 16

TITLE: TSE and Code Critical Criteria

Revised: May 01, 2022

TSE and Code Critical Criteria

Time Sensitive Emergencies and Critical Criteria for Field Providers

CODE STROKE

This designation is used to notify appropriate receiving hospitals that the patient meets certain criteria outlined in *Protocol M-4 Adult CVA* and *G-3 Hospital Destination Protocol*

*Example: "**Medic 13 enroute with** a **Code Stroke** **Patient**"*

CODE STEMI

This designation is used to notify appropriate receiving hospitals that the patient meets certain criteria outlined in *"C-4:* S*.T.E.M.I. Protocol".*

*Example: "**Medic 13 enroute with** a **Code STEMI** **Patient. Pt's cardiologist is Dr. Goodheart**."*

Clinical presentation suggestive of ACS ***AND:***

- New ST elevation at the J point in at least 2 contiguous leads of:
  - >2mm *in men* leads V2-V3 or
  - 1.5 mm *in women* in leads V2-V3 and/or
  - 1 mm in *other contiguous chest leads* or the limb leads
- New or presumed new Left Bundle Branch Block; or
- ST Depression in> 2 precordial leads V1-V4 may indicate transmural posterior injury/infarction
- **Right sided EKG:** ST elevation from the J Point of approximately 1/3 QRS height measured from the J point in V4R alone, or in two contagious leads.

** **It is imperative that the name of the cardiologist (if known) is given in the radio report**.**

CODE CRITICAL

This designation is used to notify appropriate receiving hospitals that the patient meets certain criteria for increased morbidity and mortality, but who otherwise don't fall under one of the other *Time Sensitive Emergency* (T.S.E.) categories outlined above.

*Example: "**Medic 13 enroute with** a **Code Critical** **Patient**."*

Airway:

- Advanced Airway in place of any type (ETT, LMA, King, excluding longstanding trachs unless issue with placement)
- Impending Airway Failure (i.e., Anaphylaxis, ACE Angioedema, Airway Burns)
- GCS <8 or unable to control airway

Breathing (Respiratory):

- CPAP in use
- Impending Respiratory Failure
- Assistance with positive pressure ventilation

Circulation:

- Cardiac Arrest/Post Cardiac Arrest (ROSC)
- Symptomatic Hypotension < 90 mm Hg Systolic
- Symptomatic Bradycardia < 40/min in Adults
- Symptomatic Tachycardia > 150/min in Adults

Other Criteria:

- Suspected Severe Sepsis
- Restraints with continued combativeness/Agitated Delirium
- Paramedic Discretion

Trauma Priority Criteria for Field Providers

General Comments:

- The following criteria are based off Idaho Trauma Triage Guidelines (V4.0) published November 2019. This appendix supplements protocol G-03 Hospital Destination Protocol
- **Child**/Pediatric Definition: ≤ 14 years of age

- **Priority 3 patients:** Priority 3 criteria alone does not mandate transfer to the trauma center. The purpose of allowing medic discretion is to encourage initial triage of patients potentially requiring hospital admission to an appropriate receiving center and to give the provider a way to alert the hospital they are bringing in a trauma patient needing immediate evaluation.

Consider **UPGRADING one level if:**

- **Child/**Pediatric: age ≤ 14yrs
- Adult: age ≥ 65yrs
- Significant co-morbidities
- Anti-coagulation ***other*** than Aspirin
- Hypothermia/Hyperthermia
- EMS PROVIDER DISCRETION

Priority 1 Activation

Airway/Breathing

- ***Actual*** or **potential** airway compromise:
  - Acute Hypoxia
  - RR < 10 or > 29 (adult)
  - Severe maxillofacial injuries
- Intubated/Supraglottic Airway/BVM
- Suspected inhalation injury

MOI/Event/Injuries/Findings

- Penetrating injury to head, neck, or torso
- High voltage electrical injury
- Bilateral femur fractures
- Complete amputation above the wrist or ankle
- Open skull fracture
- **Child:** Flail chest/Pelvic fracture/Pulseless extremity

Circulation/Shock

- CPR by medical provider
- Hypotension:
  - Adult: SBP < 90mmHg, HR > 130
  - **Child SBP:**
    - Age 1-9yrs: SBP ≤ 70 + (2x age in years)

    - Age < 1yr: SPB ≤ 70mmHg
  - **Child HR:**
    - Child HR: 0-12mths: > 180 or < 80bpm
    - ≥ 12mths-5yrs: > 160 or < 60bpm
    - 6-10yrs: > 140 or < 60bpm
    - ≥ 11yrs: > 120 or < 60bpm
- *Any* patient receiving blood/vasopressors

Disability

- GCS ≤ 12 *attributable to trauma*
- *Bilateral* extremity paralysis or suspected spinal cord injury

Priority 2 Activation

MOI/Event/Injuries/Findings

- Penetrating injury ***proximal*** to elbow/knee
- Unilateral motor deficit
- 2 or more broken extremities (any)
- Application of a tourniquet
- Open or displaced pelvic fracture
- Open femur or humerus fracture
- Crushed or mangled extremity
- Flail chest and/or palpable crepitus
- Burn involvement of face, airway, hands, feet, genitalia;
  OR
  Adult: ≥ 20% TBSA
  Child: ≥ 10% TBSA
- Pregnant (≥ 20wks) **with** vaginal bleeding
- Submersion *with* traumatic mechanism

Priority 3 Activation

Event/Injuries/Findings

- Penetrating injury ***distal*** to elbow/knee
- Closed isolated femur fracture
- Loss of consciousness after injury
- GCS 13-14 **after** injury
- Pregnant (≥ 20wks) ***without*** vaginal bleeding
- Burn:
  Adult: ≤ 20% TBSA
  Child: ≤ 10% TBSA
- Amputation of one or more digits
- Sensory deficit of an extremity

Mechanisms/ MOI/

- Motor vehicle crash with death of co-occupant
- Broken/bent steering wheel
- Rollover
- Extrication time > 20 minutes
- > 12” intrusion into occupant space
- Non-enclosed transport accident > 20mph
- Ejection from enclosed vehicle
- Motor vehicle vs. pedestrian/bike
- Fall 2x patient’s height
- Significant animal-related injury

APPENDIX

16

TSE and Code Critical Criteria

TSE Field Trauma Triage Guidelines

Priority 1 (Focus: Physiology)

Airway/Breathing
- Actual or potential airway compromise:
  - Acute Hypoxia
    - RR < 10 or > 29 (adult)
  - Serve maxillofacial injuries
- Intubated/Supraglottic Airway/BVM
- Suspected inhalation injury

Event/Injuries/Findings
- Penetrating injury to head, neck, or torso
- High voltage electrical injury
- Bilateral femur fractures
- Complete amputation above the wrist or ankle
- Open skull fracture
- Child: Flail chest/Pelvic fracture/Pulseless extremity

Circulation
- CPR by medical provider
- Hypotension:
  - *Adult*: SBP < 90mmHg, HR > 130
  - *Child*: Age 1-9yrs: SBP ≤ 70 + (2x age in years)
    - Age < 1yr: SPB ≤ 70mmHg
  - *Child HR*: 0-12mths: > 180 or < 80bpm
    - ≥ 12mths-5yrs: > 160 or < 60bpm
    - 6-10yrs: > 140 or < 60bpm
    - ≥ 11yrs: > 120 or < 60bpm
- Any patient receiving blood/vasopressors

Disability
- GCS ≤ 12 attributable to trauma
- Bilateral extremity paralysis or suspected spinal cord injury

Priority 2 (Focus: Anatomy)

Event/Injuries/Findings
- Penetrating injury proximal to elbow/knee
- Unilateral motor deficit
- 2 or more broken extremities (any)
- Application of a tourniquet
- Open or displaced pelvic fracture
- Open femur or humerus fracture
- Crushed or mangled extremity
- Flail chest and/or palpable crepitus
- Burn involvement of face, airway, hands, feet, genitalia; **OR**
  - *Adult*: ≥ 20% TBSA
  - *Child*: ≥ 10% TBSA
- Pregnant(≥ 20wks) with vaginal bleeding
- Submersion with traumatic mechanism

*Pediatric is considered age ≤ 14yrs

Consider UPGRADING one level if:
- *Pediatric: age ≤ 14yrs*
- *Adult: age ≥ 65yrs*
- *Significant co-morbidities*
  - *Anti-coagulation other than Aspirin*
  - *Hypothermia/Hyperthermia*
  - *EMS DISCRETION*

Priority 3 (Focus: Mechanism)

Event/Injuries/Findings
- Penetrating injury distal to elbow/knee
- Closed isolated femur fracture
- Loss of consciousness after injury
- GCS 13-14 after injury
- Pregnant(≥ 20wks) without vaginal bleeding
- Burn: *Adult*: ≤ 20% TBSA
  - *Child*: ≤ 10% TBSA
- Amputation of one or more digits
- Sensory deficit of an extremity

Mechanisms
- Motor vehicle crash with
  - Death of co-occupant
  - Broken/bent steering wheel
  - Rollover
  - Extrication time > 20 minutes
  - > 12" intrusion into occupant space
  - Non-enclosed transport accident > 20mph
- Ejection from enclosed vehicle
- Motor vehicle vs. pedestrian/bike
- Fall 2x patient's height
- Significant animal-related injury

Version 4, Nov 2019

APPENDIX 17

Appendix: 17

TITLE: Selective Spinal Motion Restriction Protocol

REVISED: November 1, 2017

Selective Spinal Motion Restriction

1. BACKGROUND:

This protocol is intended to allow selective exclusion of spinal motion restriction in patients with a low index of suspicion for spinal injury and to use the long spine board and/or scoop stretchers for extrication purposes only.

2. INDICATIONS:

Mechanism of Injury

There is insufficient evidence to support absolute criteria for mechanism of injury (MOI) either as an inclusion or exclusion criteria for any spinal motion restriction consideration. That said, a prudent prehospital provider should carefully evaluate the role of mechanism of injury in the total clinical presentation **with a tendency to err on the side of spinal motion restriction**, particularly with the **frail, chronically bedridden, or extremes of age (< 12 or >65 years of age)**.

Other MOI of concern would include *are not limited to*:

1. Falls greater than 3 feet or 5 stairs
   a. *Any* fall for the frail, chronically bedridden, or elderly (>65 years of age) may be concerning
2. Motorsports and extreme-sports injuries
3. High impact MVC
   a. defined as > 60 mph (100 km/hr)
   b. or with intrusion > 6 inches
   c. Rollover or Ejection
   d. Vehicle vs. Pedestrian
4. Bicycle and motorcycle accidents.
5. Football and high impact athletic activities
6. Suspected Axial Loading injuries.
   a. *Note: Diagnostic axial loading of cervical spine is not recommended.*

Cervical Spine:
In order for providers to defer cervical spinal motion restriction in patients with mechanical potential for injury, **ALL** of the following criteria must be evaluated and individually documented.

1. No posterior neck pain or tenderness.
2. No intoxication.
3. No altered level of alertness.
4. No focal neurologic deficit.

5. No painful distracting injuries.

Thoracic and Lumbar Spine:
In order for providers to defer thoracic and lumbar spinal motion restriction in patients with mechanical potential for injury, ALL of the following criteria must be evaluated and individually documented.

For any patient with:

1. No tenderness of midline upper, mid or lower back.
2. No intoxication.
3. No altered level of alertness.
4. No neurologic deficit or incontinence.
5. No painful distracting injuries.

3. PROCEDURE

Cervical Spine:

If the above exclusion criteria are met, then extricate/assist the patient to the stretcher with the least manipulation of the spine as possible.

If the patient does not meet the exclusion criteria, apply a c-collar. Then utilize the appropriate transfer/extrication device (long spine board, KED, slider board or scoop stretcher, *etc.*) to move the patient to the stretcher with the least manipulation of the spine as possible.

Thoracic and Lumbar Spine:

If the above exclusion criteria are met, then extricate/assist the patient to the stretcher with the least manipulation of the spine as possible.

If the patient does not meet the exclusion criteria, utilize the appropriate transfer/extrication device (long spine board, KED, slider board or scoop stretcher, *etc.*) to move the patient to the stretcher with the least manipulation of the spine as possible.

Once the patient with suspected/known cervical, thoracic or lumbar spine injury is placed on the stretcher, remove the extrication device *as soon as safely possible* (provider discretion). **Keep the patient in the supine position** for transport/transfer to the appropriate destination. Any further transfers of the patient with a known or suspected spinal injury should be done with a slider board observing precautions not to manipulate the spine.

4. DEFINTIONS:

"Posterior neck pain or tenderness" is present if the patient reports pain on palpation of the midline neck from the nuchal ridge to the prominence of the first thoracic vertebra or any cervical spinous process. Absence of posterior neck pain or tenderness alone may not preclude the presence of an injury, particularly in the elderly.

Patients should be considered intoxicated if they have either of the following:

1. A history provided by the patient or an observer of intoxication or recent ingestion of alcohol or other mind altering substances such as benzodiazepines, narcotics or recreational drugs.
2. Evidence of intoxication on physical examination such as an odor of alcohol, slurred speech, ataxia, dysmetria, or other cerebellar findings or behavior consistent with intoxication.

An altered level of alertness can include any of the following:

- A Glasgow Coma Scale score of 14 or less.
- Disorientation to person, place, time, or events, including chronic disorientation (i.e. Dementia)
- A delayed or inappropriate response to external stimuli, or other findings.

When presented with an altered level of alertness in a traumatic patient, providers should err on the side of cervical spinal motion restriction (i.e. a cervical collar).

A focal neurologic deficit is any neurologic finding on motor or sensory examination that is abnormal. This includes sensory or motor abnormalities or autonomic dysfunction.

No precise definition of a painful distracting injury is possible. This category includes any condition thought by the provider to be producing pain or anxiety sufficient to distract the patient from a second (neck) injury. Such injuries may include, but are not limited to: any long-bone fracture, a significant abdominal injury, a large open wound or crush injury, large burns, or any other injury causing acute functional impairment.

While **any** injury may be considered distracting in the right context, specific injuries of concern would be:

1. Any moderate injury to the proximal upper extremity, shoulder, clavicle, or lateral neck
2. Facial injuries suspicious for fracture or significant discomfort.
3. Any injury requiring analgesia

APPENDIX

17

Selective Spinal Motion Restriction

Physician PEARLS:

NOTE WELL: Absence of posterior midline neck pain alone does not exclude the possibility of injury.

Providers should have a low threshold for placing the cervical collar, even in the absence of posterior neck pain.

In patients at extremes of age (< 12 or > 65), or patients with any underlying baseline mental dysfunction such as: dementia, other chronic neurologic conditions, rheumatoid arthritis, chronic steroid therapy, severe osteoporosis, those who are chronically bedridden require a higher level of concern. For possible cervical spine injuries in these patients a lower threshold for using a c-collar should be instituted.

Padding (inflatable mattress, towel rolls, blankets, *etc.*) is recommended when Appropriate for patient comfort.

Patients with penetrating trauma below the clavicle and no evidence of spinal injury do not require immobilization.

Unstable trauma patients (with the exception of certain penetrating trauma patients described above)should be strongly considered for immobilization. This definition includes:

- SBP of 90 or less, respiratory rate < 10 or >30 •
- Tachycardia > 130
- Age specific hypotension in children
    - <70 mmHg + 2 x age
    - *Or*
    - HR: > 200 or < 60

References

Stiell, I., Clement, C., McKnight, R., Brison, R., Schull, M., & Rowe, B. et al. (2003). The Canadian C-Spine Rule versus the NEXUS Low-Risk Criteria in Patients with Trauma. *New England Journal Of Medicine*, *349*(26), 2510-2518. http://dx.doi.org/10.1056/nejmoa031375

Barry, T. & McNamara, R. (2005). Clinical decision rules and cervical spine injury in an elderly patient: A word of caution. *The Journal Of Emergency Medicine*, *29*(4), 433-436. http://dx.doi.org/10.1016/j.jemermed.2005.05.006

APPENDIX 18

APPENDIX: 18

TITLE: CAT Tourniquet or other similar device

REVISED: November 1, 2017

Combat Application Tourniquet

INTRODUCTION: The Combat Application Tourniquet is an adjunct tourniquet used in ACCESS.

INDICATION: Refer to the general tourniquet SWO T-5

CONTRAINDICATIONS: Refer to the general tourniquet SWO T-5

PROCEDURE: The C-A-T is to be placed 2-3" above the injury site, but not to be placed over a joint. The most effective placement for the C-A-T is as high on the injured extremity as possible.

ARM:

1-Put the injured extremity through the loop created by the tourniquet
2- Pull the free running band until the tourniquet is snug against the arm but not enough where the band exceeds the windless clip.
3-Turn the windless rod until hemorrhage stops.
4- Secure the windless rod into the windless clip.
5- Pass the free running band through the windless clip and secure the windless rod in place with the white "Time" strap.

LEG:

1-Completely un-feed/undo the tourniquet from its loop form until it is in strap form.
2-Wrap the tourniquet around the leg and feed the free running band up and down through friction adapter.
3- Pull the free running band until the tourniquet is snug against the leg. Note the band should not exceed the windless clip.
4-Turn the windless rod until hemorrhage stops.
5- Secure the windless rod into the windless clip.
6- Secure the windless rod in place with the white "Time" strap.

Physician PEARLS:

- Please assess CMS every 5-10 minutes
- The CAT is to only be used if hemorrhage cannot be controlled by traditional means.

Tourniquet Use/C-A-T

APPENDIX 18

APPENDIX 19

APPENDIX: 19

TITLE: PATELLAR REDUCTION PROCEDURE

REVISED: November 1, 2017

PATELLAR REDUCTION

I. BACKGROUND:

Dislocation of the patella is quite common**.** Lateral dislocation is the most common and may be caused by flexion and external rotation of the knee with simultaneous contraction of the quadriceps tendon. The quadriceps contraction pulls the patella laterally. Common mechanisms are rotational motion of the knee with a planted foot, often seen in volleyball, tennis, basketball, football, gymnastics, and dancers. Patellar dislocations are unlikely in patients with normal patello-femoral anatomy. Medial patellar dislocations are almost always associated with direct trauma to the patella and field relocation should be approached with caution due to the higher risk of associated fractures.

II. SIGNS & SYMPTOMS:

Clinically, patients will present with obvious deformity of the knee and a displaced patella. Swelling may be present. This injury is extremely painful.

III. COMPLICATIONS:

Fractures accompanying patellar dislocation are not uncommon, occurring in 28%-50% of patients. The vast majority of these occur when dislocation is associated with a direct blow to the patella. Intra-articular fragments can cause degenerative arthritis if not recognized. Therefore, it is important that all patients with patellar dislocation receive radiologic follow up, even if the dislocation is reduced. Significant hemorrhage into the joint may also occur. Recurrent dislocation is often a significant problem. The younger the patient at the time of the injury, the more likely a recurrent dislocation becomes.

IV. PROCEDURE FOR PATELLAR RELOCATION:

1. Palpate the patella for obvious deformity or crepitus. If obvious signs of fracture are present, **do not** attempt relocation. Splint the injury as found, ice the knee to prevent swelling, and transport to an appropriate facility for evaluation.
2. If possible, place the patient supine with the injured extremity elevated and flexed at 60-90 degrees. This will help relax the quadriceps muscle.
3. Smoothly and slowly straighten the extremity by lifting under the ankle. Light medial pressure applied to the lateral aspect of the patella may facilitate ease in reduction. The patella should “pop” easily back into place as the knee approaches full extension.

4. If the patella is not easily reduced, the reduction may be obstructed by a fracture or hemarthrosis. Splint the injury, apply cold packs to reduce swelling, and transport the patient to an appropriate facility for further evaluation.
5. After reduction, the patient will generally experience almost complete relief of pain. Tenderness may be present along medial patellar and lateral femoral lines. The knee should be splinted and iced to prevent swelling, and the patient encouraged to have the joint examined at an appropriate medical facility.

APPENDIX: 20

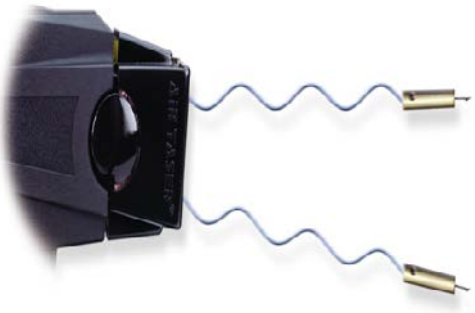
TITLE: TASER CARE SUPPLEMENT

REVISED: November 1, 2017

Scene Safety Consideration:

Before touching any patient who has been subdued using a Taser ensure that the officer/deputy has disconnected the wires from the hand held unit.

Taser and Probe:



Taser X-26 **Taser M-26**

Assessment of a Patient who has been Tasered:

- Identify the location of the probes on the patient's body. *If **<u>any</u>** of the probes are embedded in the following areas **<u>do not remove them and transport</u>** the patient to an Emergency Department:*

1. Face
2. Neck
3. Groin
4. Spinal Column
   - Confer with the officer/deputy and determine the patient's condition from the time of the Taser discharge until EMS arrival
   - Assess vital signs, including ECG monitoring for potential cardiac abnormalities. If 35 years of age or older obtain a 12-Lead for evaluation
   - Determine from the patient:
     1. Date of Last Tetanus
     2. Any Cardiac History (perform a 12-lead)
     3. Any ingestion of a mind-altering stimulant (Phencyclidine (PCP), meth, etc.)

All of these assessment findings should be documented thoroughly in the Patient Care Report.

Removal of Probe by EMS System providers:

If the probe is located in an area not specified above it can be removed by a Paramedic or EMT. To remove the probe:

- Place one hand on the patient in the area where the probe is embedded and stabilize the skin surrounding the puncture site. Place your other hand/pliers firmly around the probe
- In one fluid motion pull the probe straight out from the puncture site
- Repeat procedure with second probe
- Document removal procedure and any complications or comorbidities

Removed probes should be handled like contaminated sharps and should be placed in a urine specimen container to be provided by the officer/deputy. They will likely log the probes into evidence.

Treatment and Follow Up Instructions:

- Cleanse puncture sites and bandage as appropriate
- Place triple antibiotic ointment on the puncture sites
- If patient has not had a tetanus shot in the last five (5) years they should be advised to acquire one
- If the patient is combative and needs to be chemically restrained, then they must be transported to the *Emergency Department*
- All patients with altered mental status require a full assessment and *Emergency Department* evaluation

Other Considerations:

There have been some recent reports of deaths involving the use of a Taser on combative patients. When closely reviewed, these deaths have almost always involved improper or prone restraint, agitated delirium, hyperdynamic drugs, and hyperthermia as major co-morbid factors.

Therefore, it is imperative that these patients receive a thorough assessment for these risk factors, and are not restrained in an improper position. If a patient remains combative, or has other priority s/s (including altered LOC), then further treatment and transport is called for.

APPENDIX 21

APPENDIX: 21
TITLE: NASAL/RECTAL MEDICATION PROCEDURE

REVISED: November 1, 2017

NASAL/RECTAL MEDICATION PROCEDURE

I. BACKGROUND:

Intranasal (IN) and Rectal (PR) administration of certain medications are alternatives when traditional vascular access (IV, IO) is not available or not desired. IN and PR administration may also be utilized when other routes (IM, SQ) would take too long to reach peak effects.

IN Midazolam has a slightly slower onset of action and peak effect compared to IV Midazolam, but acts twice as fast and has a 1-3 time higher peak plasma levels than PR and oral Midazolam. Therefore the IN route is preferred over PR for Midazolam.

IN Narcan is preferred over IM or sublingual (SL) Narcan due to the lower risk of needle sticks in a high-risk population. In addition IN Narcan has a predictable and rapid absorption rate faster than IM and comparable to SL. IV access is still the preferred method due to the possible complications with an unrecognized poly-pharm overdose.

II. EQUIPMENT:

3 ml slip syringe, injection needle, or vial spike.
Lubricant (Lubifax or equivalent) [for rectal use only]
Atomizer [for nasal use only]
Medication of choice:

- VALIUM (RECTAL)
- VERSED (NASAL)
- NARCAN (NASAL)
- FENTANYL (NASAL)

III. INDICATIONS:

- Status epilepticus without vascular access
- Altered mental status with suspected opiate overdose
- Pain medication administration

IV. PROCEDURES:

RECTAL ADMINISTRATION:

- Draw Valium into a syringe (draw only the amount to be administered).
  *If subsequent doses are required, use the same Valium ampule with a new syringe/needle. This method is suitable for short-term use.
- **REMOVE THE NEEDLE.**
- Lubricate the syringe.
- **Carefully** insert the syringe (through the anus past the rectal sphincter) -- approximately 3 to 5 cm [Note: Be careful not to inject directly into stool mass as rectal absorption will be poor].
- ADMINISTER THE APPROPRIATE AMOUNT OF MEDICATION:

APPENDIX

21

NASAL/RECTAL MEDICATION PROCEDURE

NASAL ADMINISTRATION

- Draw medication into a syringe (draw only the amount to be administered).
- **REMOVE THE NEEDLE and attach the Atomizer**
- **Carefully** insert the Atomizer into a naris
- ADMINISTER THE APPROPRIATE AMOUNT OF MEDICATION:
- Place a gloved finger over the nares to keep the medication in for 1-2 minutes.
- Monitor for desired effects
- Avoid giving more than 2 ml per nares. If required, split the dose between each nares

Caution: Certain conditions may make nasal administration of a medication ineffective. Epistaxis, excessive mucous, nasal trauma, and septal abnormalities may inhibit absorption. If these conditions are present, alternative routes may be advisable.

APPENDIX: 22

TITLE: DUODOTE™ PROCEDURES

REVISED: November 1, 2017

I. BACKGROUND*:*

Nerve Agent Antidote Kit (DUODOTE™): A **DUODOTE™**kit is an alternative way to administer atropine and 2-PAM Chloride in response to symptomatic nerve agent (or similar toxin) exposure. It replaces the **MARK I** kit in all situations. Unlike the **MARK I** kit, the **DUODOTE™**is *a single auto injector*. The **DUODOTE™** contains:

- 2.1 mg of Atropine Sulfate
- 600 mg of 2-PAM Chloride (Pralidoxime)

Like the older **MARK I** kit, the **DUODOTE™** kit is specifically designed for use on the battlefield by both medical and non-medical personnel. As a result of its durability, simplicity, and similarity to other civilian medical auto-injectors (I.E. The EPI-PEN) the **DUODOTE™** kits are being deployed into civilian medical arenas as well. The **DUODOTE™** kits are particularly useful during *"dirty" or "hot zone"* medical care because no IV is needed.

The **DUODOTE™,** as well as other similar kits, may be available to ACCESS Personnel and other responders through ACCESS, civil defense authorities, FEMA sponsored groups, the military, or other agencies in a time of crisis or in response to increased terrorism threat assessments.

II. INDICATIONS

DUODOTE™: Any patient who is symptomatic from suspected exposure to a nerve agent, organophosphate poisoning, or similar toxin.

The Use of the **DUODOTE™**Kit is especially desirable in hazardous environments, as they can be given through clothes and NBC Suits.

Dose

Adults: **DUODOTE™**: Administer up to three **DUODOTE™**IM as needed.
CANA: Administer a single CANA kit IM as needed.

Children: **DUODOTE™**: A single **DUODOTE™** injector can be given IM to children over 50 pounds.

.

Infants: The adult-size **DUODOTE™**injector should not be given to infants.

NOTE WELL: The above limitations are due to the 2-PAM Chloride component of the **DUODOTE™KIT. FURTHER (APPROPRIATE) DOSES OF ATROPINE ARE PERMITTED WITHIN THE BOUNDS OF THE ACEMSS STANDING WRITTEN ORDERS OR MEDICAL DIRECTION.**

APPENDIX

22

DUODOTE™ AUTO-INJECTOR KIT

III. CONTRAINDICATIONS:

None in the Nerve Agent / Organophosphate casualty except as noted above.

IV. PROCEDURE:

Who May Use the DUODOTE™Kit?
ACEMSS personnel may self-administer ("Self Aid") the **DUODOTE™** kit if exposure to a nerve agent, organophosphate, or similar toxin is suspected. A responders **DUODOTE™** kit may be administered by another responder if the first responder is unable to do so himself ("Buddy Aid"). Regardless, a responder should never use his/her own **DUODOTE™** kit on a patient.

DUODOTE™ Kit should only be administered to non-responders (patients) by a Paramedic or other appropriately trained responder.

Administration of auto-injectors:

DUODOTE™: The **DUODOTE™** is a single injector; the procedure is essentially the same as for an individual MARK I Injector, ATROPEN, EPIPEN, or similar auto-injectors.

To use the auto-injector:

1. Remove **DUODOTE™** kit from protective pouch. Hold unit in dominant/strong hand by its "body".
2. Keep GREEN tip pointed down. This is the "needle" end of the auto-injector.
3. **REMOVE THE GRAY "SAFETY" CAP.** If the gray safety cap is in place, the auto injector will not fire.
4. Chose the location to inject. It should be a large muscle mass, the outer thigh is the most common site. Remove any wallets, pocket guides, or other potential obstructions. The **DUODOTE™** should be able to deploy through light clothing.
5. Grasp the unit and position the green tip of the injector on victim's outer thigh at an approximately 90 degree angle.
6. Push firmly until auto-injector fires.
7. Hold in place for 10 seconds to ensure Atropine has been properly delivered
8. Remove the **DUODOTE™** auto injector and inspect for the (now visible) needle from the green tip. If the needle is not visible, the auto injector has not fired. Make sure the gray safety cap is removed and repeat the process.
9. Once fired, place in appropriate sharps container.
10. Complete evacuation and decontamination procedures. Re-evaluate for need of further intervention.

V. OTHER CONCERNS:

The **DUODOTE™** Kit should be protected from temperatures below 32 degrees F. It may be necessary to carry next to body to keep warm.

Providers may hold **DUODOTE™** kit administration if Atropine and/or 2-Pam Chloride being administered by other routes, methods, or preparations.

Use of the DUODOTE™ Kit is not a substitute for decontamination and use of proper protective gear. Individuals should not rely solely upon agents such as atropine and 2-Pam Chloride to provide complete protection from chemical nerve agents and insecticide poisoning. Primary protection against exposure to chemical nerve agents and insecticide poisoning is the wearing of protective garments, including masks designed specifically for this use.

The DuoDote™ Auto-Injector is intended as an initial treatment of the symptoms of organophosphorus insecticide or nerve agent poisonings; definitive medical care should be sought immediately.

Evacuation and decontamination procedures should be undertaken as soon as possible. Medical Personnel assisting evacuated victims of nerve agent poisoning should avoid contaminating themselves by exposure to the victim's clothing.

(This Page Left Blank)

APPENDIX 23

Appendix: 23

PROTOCOL TITLE: Childbirth Procedure

REVISED: November 1, 2017

CHILDBIRTH PROCEDURE

INDICATIONS: Active labor with crowning confirmed by visual inspection.
PROCEDURE:

1. Delivery should be controlled so as to allow a slow, controlled delivery of the infant. This will prevent injury to the mother and infant.
2. Consider additional resources as there will be two potential patients.
3. Don mask, gloves, gown, eye protection.
4. Create a clean field around the vaginal opening with clean towels.
5. Prepare for delivery:
   - Have the mother lie in a modified semi-Fowler's or Trendelenburg position (knees drawn up and spread apart)
   - Elevate buttocks – with blankets or pillows.
   - The floor is actually recommended over bed for delivery
   - If an alternate position is preferred, then attempt to accommodate the mother
6. Support the infant's head as it delivers. Apply gentle palmar counter-pressure to the head to prevent an explosive delivery.
7. If the umbilical cord is around the neck, attempt to slip it over the head. If unable to free cord from the neck, double clamp the cord (about 2 inches apart) and cut between the clamps.
8. Suction the airway (mouth and nostrils) with a bulb syringe after the head has delivered.
9. While continuing to support the head, gently lower the head to encourage delivery of the anterior shoulder.
10. Once the anterior (upper) shoulder delivers gently lift the head and anterior shoulder to allow delivery of the posterior shoulder.
11. Support the infant's body while delivering the remainder of the body. Keep the body at the level of or below the vagina so prevent loss of blood back to the placenta.
12. Clamp the cord at 6 inches and 9 inches from the neonate's abdomen and cut the cord between the clamps. 2015 guidelines suggest delayed cord clamping after 30 seconds is reasonable for both term and preterm infants who do not require resuscitation at birth. Those who require resuscitation should have their cord clamped and cut immediately to facilitate resuscitation
13. Follow the **General Newborn Care** protocol for further treatment.
14. **Maternal post-partum care:**
    - Allow baby to suckle at mother's breast if possible.
    - Expect blood loss of up to 350- 500 ml with normal deliveries
    - Do not pull on the umbilical cord to facilitate delivery of the placenta
    - Do not delay transport awaiting the delivery of the placenta.
    - Following its delivery, place in a plastic bag and transport with mother
    - Apply direct pressure via pressure dressings to tears of the perineum

Fundal Massage: If the uterus has not contracted following delivery, provide firm but gentle uterine massage

- Place one hand directly above pubis symphysis and the other at the fundus (top) of the uterus (Anterior /Posterior Technique
- Cup the uterus between the two hands and massage until complete contraction occurs.
- Complete contraction has occurred when the uterus has assumed a woody hardness and has compressed to the size of a grapefruit

15. For post-partum hemorrhage in excess of 350 to 500 cc, refer to the **OB Emergencies** protocol.
16. Expedite transport following delivery of fetus. Do not delay transport for delivery of the placenta.
17. The placenta will deliver spontaneously, usually within 5-25 minutes of the infant. Do not force the placenta to deliver or pull on the umbilical cord.

COMPLICATED DELIVERIES

- Code 3 transports to the closest appropriate (surgical capabilities) for ANY of the following complications

Prolapsed Cord: Condition where the cord presents through the birth canal before delivery of the head; presents a serious medical emergency which endangers the life of the unborn fetus.

- Place mother in knee-chest position
- Check cord for pulsation and rate
- Apply gentle pressure to presenting part and relieve pressure on the cord. Insert two fingers of gloved hand into vagina to raise the presenting part off the umbilical cord.
- Recheck cord for pulsation and rate. Keep cord moist and warm
- Administer high flow oxygen
- Rapid transport in this position with rapid notification of receiving facility

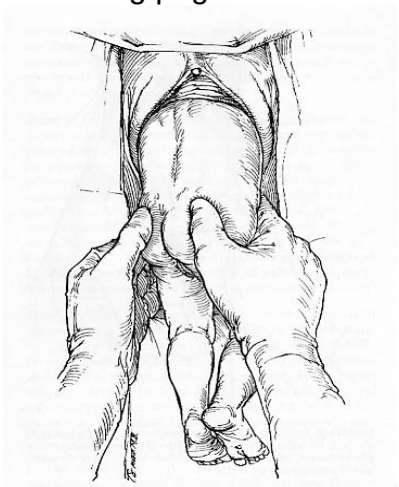
Cephalopelvic Disproportion: A condition where the babies head/body will not progress through the pelvis during delivery. Causes include large fetus, small or abnormally shaped pelvis, overdue deliveries and abnormal fetal positions.

- Immediate treatment is caesarian section
- Reposition the patient. Sometimes this will resolve the problem
- Press firmly on the Pubic Symphysis. This may open the birth canal further to allow passage of the head
-
- Rapid transport and notification of receiving facility

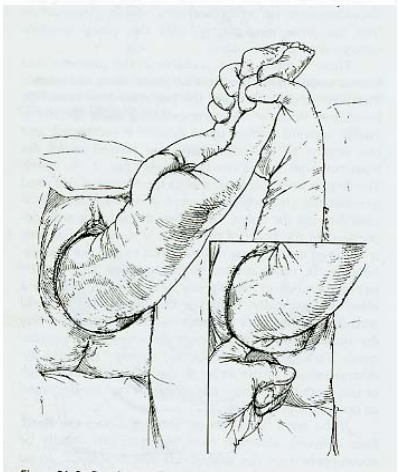
Breech/Limb Presentation: Breech presentation occurs when the buttocks or lower extremity are low in the uterus and will be the first part of the fetus delivered.

- Place mother in delivery position, elevate pelvis with pillows (Modified Trendelenburg)
- Administer high flow oxygen to mother
- See instructions/diagrams on following page

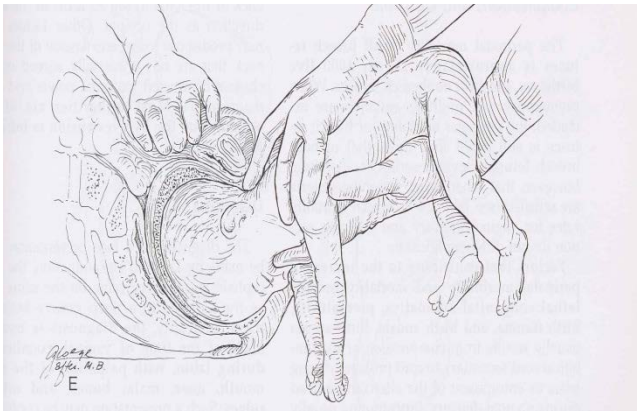
- Support the spontaneously presenting part until the back/umbilicus appear
- When providing traction, grasp the iliac wings, don't pull on the legs, or apply pressure to the soft lower back
- If possible, extract a 4-6 inch loop of umbilical cord for slack
- Continue light downward traction until shoulder blades or arm pits appear
- If head delivery is delayed, insert two fingers on each side of the infants nose to help maintain baby's airway



- Guide neonate up to deliver posterior shoulder first
- Splint humerus to side of neonate's body and try to sweep arm out of birth canal
- Now guide neonate down to deliver anterior shoulder.



- Have assistant provide gentle downward pressure on the uterus to help facilitate flexion of the head.
- Putting fingers around the mouth during delivery may prevent chin from hanging up.
- Gently swing the body upward to help permit delivery.
- Never try to pull the baby's head out during breech delivery
- If the head fails to deliver within 3 minutes, create a "V" with the fingers on either side of the nose to create an airway→Oxygen, IV, Monitor, Trendelenburg, Rapid transport.



APPENDIX

23

CHILDBIRTH PROCEDURE

APPENDIX 24

APPENDIX: 24

TITLE: Safe Haven Guidelines

REVISED: November 1, 2017

SAFE HAVEN GUIDELINES

I. Purpose:

To comply with Chapter 82, Title 39, Section 8201-8207, Idaho Code, the Idaho Safe Haven Act.

II. Introduction:

Effective July 1, 2001, the Safe Haven Act went into effect statewide. This law provides freedom from prosecution for a custodial parent (defined as apparent with whom the child resides, not necessarily the mother) who gives up a child (under 30 days old) to a designated Safe Haven.

Safe Havens are defined as:

- Hospitals
- Physicians and their staff at an office or clinic
- PA's, NP's, Nurse Midwives, Nurse Anesthesiologists
- 911 medical responders (EMT-B through Paramedic)

EMS personnel may encounter any number of situations as a result of this law.

III. Eligibility:

The Idaho Safe Haven Act offers protection from civil and criminal liability to medical personnel, law enforcement officers and staff of Safe Haven facilities as long as they are operating in "good faith". The following are required to meet that requirement:

- The presenting parent may be asked if he/she is the custodial parent (does child reside with them). Technically, only the custodial parent can submit the child and be protected under the Safe Haven Act.
- The child must be under 30 days old or if age is unknown or not disclosed, then reasonably be assumed to be less than 30 days old.
- Please ensure that the child is being given up to EMS under the Safe Haven Act. Ask specifically, "Are you giving this child up to EMS". Document any response, lack of response, language barriers, etc. This is essential to protecting EMS personnel.
- If ACP personnel are presented with a child who is not eligible for the Safe Haven Act, the child is still presented to EMS for care and normal procedures should be followed.

III. Medical Care:

The medical care of the child comes first. Follow all protocols. The Safe Haven Act provides consent for medical care under these circumstances.

- In the event that the child does not meet the Safe Haven criteria due to age or means of presentation, then follow normal procedures keeping the child's best interest in mind.
- Provide any care needed, document thoroughly and contact law enforcement ASAP. This is to ensure that the child receives any medical care required.
- Unless care priorities dictate otherwise, the child should be taken to the closes appropriate medical facility for further evaluation and care.

IV. Confidentiality:

The Safe Haven Act intent is to provide a means of parent(s) to present the child to authorities without fear of prosecution or persecution from friends or family. Experts agree that most children who are abandoned are abandoned by teenage mothers who have hidden the pregnancy. Therefore, confidentiality is essential to promote the use of this program.

- The parent(s) are not required to divulge their identity. If the parent(s) do give their identity or it is known through some other means, then document it normally. The information is subject to normal patient confidentiality procedures.
- The parent(s) are not required to divulge any further information what so ever. However, EMS personnel may ask some questions pertaining to any given name of the child, birthday, pertinent medical history of the child or parent(s), etc. The Patients are not required to respond.
- Please document on the billing sheet that this is a Safe Haven patient. No billing will be sent to the parent(s) in order to protect the identity of the parent(s).

V. Documentation:

- Any name, birthday, or medical history for the child, if disclosed.
- Name of parent(s), if disclosed.
- Any dialog offered by the parent(s) in giving the child over to EMS personnel. If there are any barriers, document them as well.
- Document that the child was turned over to hospital staff.
- Document a full and thorough head to toe exam as well as any medical care provided, per normal guidelines.

VI. Notification:

If the child is eligible for the Safe Haven program, EMS personnel should make the following notifications and document such on the chart. The notification should include that the child meets the Safe Haven guidelines.

- Law Enforcement Officer
- ACP Supervisor
- Receiving Medical Facility

VII. Protection:

The Safe Haven Act offers protection for all parties involved.
Medical providers and their staff. from civil and criminal liability as long as they were operating on "good faith in receiving this child and performing duties under this section". Also gives permission to give professional medical care.
Law enforcement officer from civil and criminal liability unless they were operating in "bad faith or in violation of the provision of this chapter".
Parent; from criminal prosecution in abandoning the child so long as it is to a Safe Haven. However, it does not provide immunity from criminal acts committed against the child before being turned over to a Safe Haven.

APPENDIX 25

APPENDIX: 25

TITLE: Patient Hand-Off Guidelines

REVISED: December 01, 2022

Purpose: Patient "hand offs" between providers have been identified as a major cause of downstream medical errors. Therefore, these guidelines provide a framework to standardize the "hand off" between regional EMS providers to reduce errors and improve patient safety and outcomes.

The use of these scripted guidelines will provide for a more cohesive and organized standard of care for the communication of both EMS providers and hospital staff throughout the region.

I. General Principles

- Proper hand offs are a crucial patient safety practice. These principles would be applied to the extend practical, to any handoff of patient care between providers.
- The patient handoff is a critical period for information transfer and should be given primary attention of all providers involved.
- A typical 30-60 second "Moment of silence" is often instituted during these handoffs, if possible.
- The provider giving the information should not be interrupted or asked questions until the initial report is complete, then clarifying questions may be asked.

II. Pre-Arrival Report:

This brief (30– 45 second) pre-arrival report is intended to provide essential information to the receiving facility to prepare the appropriate resources for the patient.
Information should be limited to the most essential "high points' with the understanding that a more complete hand off (including Medications, Allergies, PMH, etc) will be given to the team of providers directly caring for the patient at the bedside.

PATIENT HAND-OFF GUIDELINES

Call-in / Bedside Template	Examples?
D: Designator and Demographics	Unit ID Patient Age and Gender
M: **Mechanism** of Injury/Illness	Chief Complaint? Minor Trauma? CODE STEMI? CODE STROKE? CODE CRITICAL? PRORITY TRAUMA?
I: Most Severe **Injuries /Illness** Presentation	Include pertinent TSE /Code critical criteria Include Stroke assessment/VAN positive status.
S: Vital **Signs**	Last set of vitals AND lowest B/P (if applicable)
T: Major **Treatments**	Summary of interventions in route.
FYI: For Your Information (Any other Pertinent information}	ETA Need for Security Specialty Equipment (Bariatric, Lifting help, etc) Cardiologist Name?

Specialty "Radio/Phone Call-In" to area Hospitals.

Specialty radio/phone "Codes" will be for the patient meets certain predetermined clinical categories, typically in line with the State of Idaho "Time Sensitive Emergencies" criteria. These include:

- "Code STROKE"
  - This designation is used to notify appropriate receiving hospitals that the patient meets certain criteria outlined in Protocol M-4 Adult CVA and G-3 Hospital Destination Protocol
  - Example: "*Medic 13 enroute with a 34 y/o female Code STROKE Patient*"
- "Code STEMI"
  - This designation is used to notify appropriate receiving hospitals that the patient meets certain criteria outlined in "*C-4: S.T.E.M.I. Protocol*".
  - Example: *"Medic 13 enroute with a 64 y/o male Code STEMI Patient."*

- "Priority Trauma" (typically followed by a "priority category"
  - This designation is used to notify appropriate receiving hospitals that the patient meets certain criteria outlined in "*Appendix 16 – Trauma Priority Criteria*".
  - Example: "*Medic 13 enroute with a 64 y/o male Priority Three trauma patient*."
- "Code CRITICAL"
  - This designation is used to notify appropriate receiving hospitals that the patient meets certain criteria for increased morbidity and mortality, ***but who otherwise don't fall under one of the other Time Sensitive Emergency (T.S.E.) categories outlined above***.
  - Example: "*Medic 13 enroute with a 29 y/o female Code Critical Patient*."

III. Bedside Handoff Report.

This 45 to 60 second verbal report by the EMS provider will follow the same guideline template that is used for the **"Pre-Arrival Report"**

Call-in / Bedside Template	Examples?
D: Designator and Demographics	Unit ID Patient Age and Gender
M: **Mechanism** of Injury/Illness	Chief Complaint? Minor Trauma? CODE STEMI? CODE STROKE? CODE CRITICAL? PRORITY TRAUMA?
I: Most Severe **Injuries /Illness** Presentation	Discussion of assessment findings Include pertinent TSE /Code critical criteria Include Stroke assessment/VAN positive status.
S: Vital **Signs**	Last set of vitals AND lowest B/P (if applicable
T: Major **Treatments**	Detailed discussion of interventions in route. Include ongoing interventions (vent settings, IV fluids, etc). Include total amount of medications administered and time of last administration of medications.
FYI: For Your Information (Any other Pertinent information}	ALLERGIES DNR/DNI/POST status Mandatory Reporting concerns (i.e. Abuse, etc)

	Need for Security/Sitter for fall risk
	Specialty Equipment
	Cardiologist Name?
	A.M.P.L.E.Hx
	Family/Social considerations
	Location of personal belongings/paperwork

IV. After the Handoff.

The lead EMS provider should confirm understanding and answer any questions as needed. In the case of high acuity or specialty patients, the EMS provider and team should standby until hospital team has completed their initial assessment to be readily available to answer new questions.

V. Handoff between healthcare providers

While rare, when receiving a patient from another healthcare provider either in the field (from a first responding unit) or in hospital (i.e. during a emergent interfacility transport) providers on both sides of the transfer should use the D-MIST-FYI format as described above.

APPENDIX 26

APPENDIX: 26

TITLE: IN-FIELD DEATH/POST/DNR

REVISED: November 1, 2017

I. OVERVIEW:

In the course of duty, EMS providers will encounter patients who are not candidates for resuscitation. For the purposes of this protocol, these candidates are broken into 4 categories. Patients who are not in one of these four categories should be resuscitated. These categories are:

- Obvious death / Non-salvageable patients
- Interfacility transfer with a non-POST/DNR
- POST/DNR
- Patients who are refractory to field interventions

EMS providers should not endanger themselves to determine death of a patient. Examples of unreasonable danger include, but are not limited to:

- Bystanders or family who are hostile
- Scenes where traffic is not reasonably controlled, or where a likelihood of an accident exists
- Situations with a potential for exposure to weapons, fire, explosives, radiological, biological or chemical hazard where the rescuer lacks the resources or training to deal with the situation
- Steep or vertical environments, “confined spaces”, swift water or other technical rescue environments where the rescuer lacks the resources or training to deal with the situation

II. OBVIOUS DEATH / NON-SALVAGEABLE PATIENTS:

When a possible DOA is encountered, personnel should avoid disturbing the scene or the body as much as possible, unless it is necessary to care for and assist other victims. The determination that a patient is DOA rests with the EMS provider on scene. In the case of a MCI, this responsibility lies with the triage team or officer. The following may be used as a guideline to support the determination that the patient is DOA:

- Absence of respiratory effort (MCI only)
- Injury incompatible with life (i.e., decapitation, severe head trauma, evisceration of the heart or brain, or burned beyond recognition)
- The patient shows signs of decomposition, rigor mortis, or dependent lividity
- Whenever resuscitative measures (CPR) are instituted, they should be continued until arrival at a hospital, until directed by a physician to stop the resuscitation, or other circumstances dictate, unless the above criteria apply

III. INTERFACILITY NON-COMFORT ONE DNR/DNI:

Occasionally, during transports between hospitals or between a hospital and other facilities (i.e. HOSPICE or a nursing home), a patient may die and resuscitation may be undesired and inhumane. The following procedure will be followed:

- **When possible:** EMS personnel will secure and maintain possession of a physician order for a DNR status or DNR documentation from the patient's chart with a physician signature
- Traditional comfort care will be done regardless of the patient's DNR status

When a patient ceases to have signs of life **or** meets the requirement for aggressive airway management, **EMS personnel will then:**

- Contact the receiving physician (unless an order is secured in advance) for permission not to institute resuscitative measures. Document such interaction
- If there is a delay, contact medical control at receiving facility
- Unless an order is pre-established, begin resuscitative efforts until contact with medical control is established

Out of state / Foreign DNR's:

- Out of state DNR orders: Per Idaho Code 56-1033 a DNR order or DNR identification prepared from any other state, district or territory of the United States with a physician signature may be honored.

- Foreign DNR Orders: If EMS personnel receive a patient with a DNR from another country; contact will be made with the receiving physician or Medical Control.

- If contact is delayed begin resuscitative efforts.
- If the DNR is unreadable, begin resuscitative efforts.

IV. IDAHO COMFORT ONE PROGRAM:

Idaho Code (Idaho Code, Title 56-1020 to 56-1035) permits DNR (Do Not Resuscitate) orders to be written for terminally ill individuals in non-institutional situations and to be honored by EMS personnel. This enables "the physician of a terminally ill person, with authorization of the person or their legal representative, to be able to issue a directive, in advance, instructing emergency medical services personnel not to perform resuscitation if called to attend those persons." This law is the only law that applies to EMS personnel outside of the hospital setting.

A LIVING WILL HAS NO LEGAL STATUS IN THE **PREHOSPITAL ENVIRONMENT** AND CANNOT BE USED (BY ITSELF) BY EMS PERSONNEL TO WITHHOLD RESUSCITATION.

The State of Idaho's **POST/DNR** order is the only document that can be honored by EMS personnel, except during an interfacility transfer situation as noted above. The law has a grandfather clause whereby Comfort-One/DNR orders that are signed before July 1, 2007, may be honored regardless of their format. **Signed and dated copies of the original form can be honored.**

V. PATIENTS WHO ARE REFRACTORY TO FIELD INTERVENTIONS

At times, the paramedic may have begun ALS measures on a patient who does not meet the requirements for Obvious death / Non-salvageable. After extensive ALS interventions without improvement, the likelihood of survival is minimal or non-existent. Examples include:

- Patients who have been without any vital signs for at least 20 minutes (confirmed) with ongoing ALS interventions.

  OR

- Patients who are in Asystole (confirmed in two leads) for at least 10 minutes and have received appropriate ALS intervention.

  OR

- Any other unforeseen circumstances where the likelihood of survival is minimal or non-existent and aggressive ALS measures have been attempted.

In this case the paramedic should contact medical control for permission to stop resuscitation efforts. Document thoroughly.

APPENDIX

26

IN-FIELD DEATH/POST/DNR

APPENDIX 27

APPENDIX: 27

TITLE: S.O.A.P. GUIDELINES

REVISED: November 1, 2017

Run Report Organization shall (when appropriate) contain the following information. Computerized charting may differ somewhat due to software parameters:

S.O.A.P. Format: DOCUMENT AS APPROPRIATE PER CALL

SUBJECTIVE:

Subjective information:

- Medic unit responding
- Reason for call
- Chief complaint (C/C)
- History of C/C
- Pertinent Negatives
- Information obtained from bystanders and other sources
- Other pertinent history and information
- Response Times (Dispatch, On scene, etc.)

Misc. information (unless included elsewhere)

- Allergies
- Medications
- Past Medical History
- Last meal,
- OPQRST (Onset, Provokes, Quality, Radiation, Severity, Time since onset)

OBJECTIVE:

Physical Exam Including:

- LOC
- Level of distress
- Skin
- HEENT
- Chest/lung sounds
- Spine C-T-L
- ABD
- Pelvis
- Extremities
- Neurological Assessments
- Cardiovascular Assessments

Diagnostics including:

- BG
- EKG
- SPO2
- 12-Lead EKG
- Vitals
- Motor Function
- ET CO2

ASSESSMENT:

Working field diagnosis - consistent with your findings and treatments

S.O.A.P. GUIDELINES

APPENDIX 27

S.O.A.P. GUIDELINES

PLAN:
Plan should include:

- Document patient contact time.
- ALL treatments, including name and agency of person performing ALS treatment, routes, number of attempts, medications, and doses.
- Treatment per SWO, V.O. (Verbal Order) or specific protocol.
- Results of/response to the treatment and justification for treatment.
- Equipment used.
- Method of removing patient to MICU.
- Destination hospital noted and reason for choice (i.e. patient request).
- Type of transport (non-emergency vs. emergency).
- Any changes or incidents while enroute.
- Report given to whom.
- Disposition of patient on discharge from ALS care, including the patency/position of ET tubes, mental /hemodynamic status, etc.
- Any personal possessions left, removed, or transferred to hospital staff.
- Patients, who refuse care or are treated-and-released, require documentation of informed refusal of services, etc.

Some further notes on SOAP charting:

- Correct spelling, grammar, legibility, proper use of medical terminology, and approved abbreviations will be used.
- Written reports should be written in BLACK ink.
- Complete patient reports and submitting a copy to the destination hospital in a reasonable amount of time.
- Most BLS reports should be completed within 30 minutes, most ALS reports in about 45 minutes.
- Reports with three (3) or more errors will be re-written.
- Reports will include a printed signature block with the printed name and Ada Number corresponding to the signature.
- Responses to treatment should include both subjective and objective changes when possible.

NARRATIVE DOCUMENTATION (If documenting in the narrative form)

<u>Standardization of Narrative</u>

The following summarizes the information designated for inclusion into the Narrative portion of ESO.

Reason for dispatch
Pt appearance
Environment
Chief complaint
HPI
Improved limb lead description (if desired)

Compliance with meds or new dosing (if relevant)
Recent trauma/illness (if relevant)
MD List
Pt safety (if relevant)
Access to medical care (if relevant)
Information generated from a review of systems
How pt moved
Hospital destination (a necessary repeat)
Pt improvement/deterioration
Anything not otherwise documented that is pertinent

It is no longer necessary to revisit a list of treatments in the Narrative portion of ESO. Further, it is generally not necessary to document negative findings.

Physician Pearls:

"No abnormality" can only be documented if all the areas of a standardized physical exam, or a more detailed exam that is injury/illness specific, have been completed and nothing abnormal identified. This assumes that the Paramedic is able to identify grossly abnormal conditions at the examined body locations or reviewed systems.

"No abnormality" may be a relative term. The pt may have an abnormal condition that is normal for them. The finding should be documented as an abnormality (a finding) with reference to onset or the pt's description of the finding as pre-existing or "normal".

The physical examination pick lists offered in the current web-based documentation program may be utilized, however that list supplements the areas of exam found in the standardized physical exam/history.

APPENDIX

27

S.O.A.P. GUIDELINES

APPENDIX 28

APPENDIX: 28

TITLE: ABBREVIATIONS

REVISED: December 01, 2022

ABBREVIATIONS

@	AT
a̅	before
AAA	abdominal aortic aneurysm
ABC	airway, breathing, circulation
ABD, abd	abdomen
AC	antecubital
ACP	Ada County Paramedics
ACL	anterior cruciate ligament
ACLS	Advanced Cardiac Life Support
ACS	Acute Coronary Syndrome
ACSO	Ada County Sheriff's Office
AED	Automatic External Defibrillator
ADD	Attention Deficit Disorder
ADHD	Attention Deficit Hyperactive Disorder
admin	administration
AEMT	Advanced Emergency Medical Technician
AIDS	Acquired Immunodeficiency Syndrome
ALOC	Altered Level of consciousness
ALS	Advanced Life Support
am	morning
AMA	against medical advice
AMI	Acute Myocardial Infarct
AMS	Altered Mental Status
amp	ampule
ant	anterior
A/O	alert and oriented
APAP	acetaminophen
approx	approximately
appy	appendectomy
ARDS	Adult Respiratory Distress Syndrome
ASA	aspirin
ASAP	as soon as possible
ASHD	Arteriosclerotic Heart Disease
AV node	atrial ventricular node
BBS	bilateral breath sounds
BCP	birth control pills
BFD	Boise Fire Department
BG	blood glucose
BGL	blood glucose level
bicarb	bicarbonate
b.i.d.	twice per day
bilat	bilateral
BiPAP	biphasic positive airway pressure
BLE	bilateral lower extremities
BLS	Basic Life Support
BM	bowel movement
BP	blood pressure
bpm	beats per minute
BPD	Boise Police Department
brady	bradycardia
BS	breath sounds
Bx	biopsy
C	Celsius
C-1 to C-7	cervical vertebrate
C section	cesarean section
C-spine	cervical spine
Ca++	calcium
CA	cancer
CABG	coronary artery bypass graph
CAD	coronary artery disease
caps	capsule(s)

APPENDIX 28

ABBREVIATIONS

cath	catheter
cc	cubic centimeter
C/C	chief complaint
CCU	Coronary Care Unit
CCSO	Canyon County Sheriff's Department
CF	Cystic Fibrosis
CFD	Caldwell Fire Department
chemo	chemotherapy
CHF	Congestive Heart Failure
chol	cholesterol
C	circulation
CI	chlorine, chloride
cm	centimeter
cmH2O	centimeters of water
CMS	circulation, movement sensation
CNS	central nervous system
c/o	complains of
CO	carbon monoxide
C02	carbon dioxide
COPD	chronic obstructive pulmonary disease
CP	chest pain
CPAP	continuous positive airway pressure
CPR	cardiopulmonary resuscitation
CSF	cerebrospinal fluid
CT	computed axial tomography
CTA	clear to auscultation
C-T-L	cervical, thoracic, lumbar spine
CVA	cerebrovascular accident, Stroke
DNR	do not resuscitate
DO	Doctor of Osteopathy
DOA	dead on arrival
DOB	date of birth
DOE	dyspnea on exertion
DPOA	Durable Power of Attorney
DPOAHC	Durable Power of Attorney for Healthcare
Dr.	doctor
DT	delirium tremens
DTP	diphtheria, pertussis and tetanus
DUI	driving under the influence
DVT	deep vein thrombosis
Dx	diagnosis
D5W	5% dextrose in sterile water
E	east
EBL	estimated blood loss
EFD	Eagle Fire Department
ECG	electrocardiogram
ED	emergency department
EEG	electroencephalogram
EENT	eyes, ears, nose, throat
EMS	Emergency Medical Services
EMT	Emergency Medical Technician
EOM	extra ocular movement
Epi	epinephrine
ER	emergency room
ET	endotracheal
EtC02	end tidal carbon dioxide
ETT	Endotracheal Tube
CETT	cuffed endotracheal tube
etc	etcetera
ET0H	ethanol alcohol
eval	evaluation
ext	extremities, external

APPENDIX 28

ABBREVIATIONS

F	Fahrenheit
FBAO	Foreign Body Airway Obstruction
Fe++	iron
FHx	Family history
Ft	feet
f/u	follow up
Fx	fracture
g	gram
ga	gauge
GCS	Glasgow Coma Scale
GCPD	Garden City Police Department
gest	gestation, gestational
GI	gastrointestinal
GLF	ground level fall
GSW	gunshot wound
Grav (I, II…)	number of pregnancies
gtt(s)	drops
GU	genitourinary
GYN	gynecology
h	hour
H+	hydrogen
HA	headache
HAZMAT	Hazardous Materials
HAZMED	Hazardous Materials Medical Team
HC03-	bicarbonate
HEENT	head, eyes, ears, nose, throat
Hg	mercury
HHN	handheld nebulizer
HIPAA	Health Insurance Portability & Accountability Act
HIV	human immunodeficiency virus
HR	heart rate
Hx	history
H_20	water
H_20_2	hydrogen peroxide
I & O	intake and output
ICP	intracranial pressure
ICU	Intensive Care Unit
ID	identification
IDDM	insulin dependent diabetes mellitus
IDOC	Idaho Department of Corrections
IDOC-CO	Idaho Department of Corrections – Correctional Officer
i.e.	that is, for example
IM	intramuscular
IN	intranasal
in	inches
inf	inferior
ISP	Idaho State Police
IO	intraosseous
IV	intravenous
JVD	jugular venous distension
K+	potassium
kg	kilogram
KFD	Kuna Fire Department
KVO	keep vein open
l	liter
L	left
L-1 to L-5	lumbar vertebrae
lab	laboratory
lac	laceration

APPENDIX 28

ABBREVIATIONS

LAD	left anterior descending coronary artery
lap	laparotomy
lat	lateral
lb(s)	pounds
LCA	left coronary artery
LEO	Law Enforcement Officer
lg	large
LLE	left lower extremity
LLL	left lower lobe
LLQ	left lower quadrant
LOC	***Loss*** of consciousness
m	meter
MAE	moves all extremities
MAX	maximum
mcg	microgram
MD	Medical Doctor
med	medicine
mEq	milliequivalent
mg	milligrams
Mg++	Magnesium
Mg/dL	milligrams per deciliter
MI	Myocardial Infarct
MICU	Mobile Intensive Care Unit
min	minute
ml	milliliter
mm	millimeter
mmHg	millimeters mercury
mod	moderate
MFD	Meridian Fire Department
MOI	mechanism of injury
MOM	Milk of Magnesia
MP	Military Police
MPD	Meridian Police Department
Mph	Miles per hour
MRI	magnetic resonance imaging
MS	Multiple Sclerosis
MVA	Motor Vehicle Accident
MVC	Motor Vehicle Collision
N	north
NFD	Nampa Fire Department
NICU	Neonatal Intensive Care Unit
NIDDM	Non-insulin dependent diabetes mellitus
NKA	no known allergies
NKDA	no known drug allergies
noct	nocturnal
NP	Nurse Practitioner
NPA	Nasal Pharyngeal Airway
NPD	Nampa Police Department
NPO	nothing by mouth
NRB	non-rebreather mask
NSAID	non-steroidal anti-inflammatory drug
NTG	nitroglycerine
N/V	nausea & vomiting
Na+	sodium
NaCl	sodium chloride
NaHCO3	Sodium Bicarbinate
NAD	no apparent distress
n/c	nasal cannula
Neb	nebulizer
neg	negative
neuro	neurology
NG	nasogastric tube
O2	oxygen
O2 sat	oxygen saturation
OB	Obstetrics
OB/GYN	Obstetrics & Gynecology

APPENDIX 28

ABBREVIATIONS

OCTC	Orchard Combat training Center Fire Department
OD	overdose
OLMC	On-Line Medical Control
OPA	Oral Pharyngeal Airway
OR	operation room
ORA	On Room Air
ortho	orthopedics
OTC	over the counter
oz	ounce
$\overline{p}$	after
PA	Physician's Assistance
PAD	peripheral artery disease
palp	palpation, palpated
para (I, II…)	prior births
path	pathology
PASG	pneumatic anti-shock garment
p.c.	after meals
PCL	posterior cruciate ligament
PCN	penicillin
PCP	Primary Care Physician
PDR	Physician's Desk Reference
PE	pulmonary embolism
ped(s)	pediatrics
PEEP	Positive End Expiratory Pressure
PERRL	Pupils equal, round, reactive to light
PERRLA	Pupils equal, round, reactive to light *with accommodation*
pH	hydrogen ion concentration (acidity)
PICU	Pediatric Intensive Care Unit
PID	pelvic inflammatory disease
PMHx	past medical history
PMD	Primary Medical Doctor
PMS	pulses, movement, sensation
PND	paroxysmal nocturnal dyspnea
p.o.	by mouth
POC	Position of comfort
postop	post-operative
preop	pre-operative
p.r.n., PRN	as needed
prox	proximal
psi	pounds per square inch
psych	psychiatry
Pt, pt	patient
P.T.	Physical Therapist or therapy
PTA	Prior to arrival
PVD	peripheral vascular disease
PX, px	physical examination
q	every
QA	quality assurance
q.d.	every day
q.h.	every hour
q2h	every 2 hours
q.i.d.	four times a day
q.o.d.	every other day
QRU	quick response unit
quad	quadriplegic
R	right
RA	Rheumatoid Arthritis
RBC	red blood cell
RCA	right coronary artery
re:	regarding
rehab	rehabilitation
resp	respiration(s)
RLE	right lower extremity
RLL	right lower lobe
RLQ	right lower quadrant
RML	right middle lobe
RN	registered nurse
R/O, r/o	rule out

APPENDIX 28

ABBREVIATIONS

ROM	range of motion
RR	respiration rate
RT	respiratory therapist
RUE	right upper extremity
RUL	right upper lobe
RUQ	right upper quadrant
Rx	prescription
s	without
S	South
SARMC	St. Alphonsus Regional Medical Center
SAEMP	St. Alphonsus Eagle Medical Plaza
SAGMC	St. Alphonsus Garrity Medical Center
SANMC	St. Alphonsus Nampa Medical Center
sat	saturation
sec	second
SERT	Special Emergency Response Teams
SID	Sudden Infant Death Syndrome
SL	sublingual
SLMMC	St. Luke's Meridian Medical Center
SLNMC	St. Luke's Nampa Medical Center
SLRMC	St. Luke's Regional Medical Center
Sp02	pulse oximetry
SpCO	CO-oximetry
SOB	shortness of breath
SOT	Special Operations Team
S/P, s/p	status post
SQ, sq	subcutaneous
SRO	School Resource Officer
staph	staphylococcus
SFD	Star Fire Department
STAT	immediately
STD	sexually transmitted disease
STEMI	ST Elevation Myocardial Infarct
strep	streptococcus
SW	stab wound
Sx, sx	symptom
Sz, sz	seizure
S1 – S5	sacral vertebrae
s/s	signs & symptoms
tab (s)	tablet
TACMED	Tactical Medical Team
TB	tuberculosis
tbsp	tablespoon
TCA	Tricyclic antidepressant
temp	temperature
TIA	Transient Ischemic Attack
t.i.d.	three times a day
TKO	to keep open
TMJ	temporomandibular joint
tsp	teaspoon
TV	tidal volume
Tx, tx	treatment
T1 – T12	thoracic vertebrae
U	unit
UA	urinary analysis

Unilat	unilateral
U/O	urine output
URI	upper respiratory infection
UTI	urinary tract infection
VAMC	Veterans Administration Medical Center
vent	ventilator
vert	vertical
VO	voice order
VS	vital signs
W	west
WVMC	West Valley Medical Center
w/	with
w/o	without
w/p/d	warm, pink, dry
wk (s)	week (s)
WNL	within normal limits
wt	weight
X	times
y/o	year old
yrs	years
<	less than
>	greater than
=	equals
+	positive
-	negative
“	inches
‘	feet
%	percent
1^0	primary
2^0	secondary
3^0	tertiary
→	leads to/followed by
✓	check
↑	increase
↓	decrease
≅	approximately equal to
~	approximately
△	change
♀	female
♂	male
⊘	no or none

APPENDIX

28

ABBREVIATIONS

CARDIAC ABBREVIATIONS

A-fib	atrial fibrillation
AT, A-tach	atrial tachycardia
AV	atrial-ventricular
BBB	bundle branch block
1 AVB	first degree heart block
2 AVB	second degree heart block
3 AVB	third degree heart block
LBBB	left bundle branch block
RBBB	Right bundle branch block
MAT	multi-focal atrial tachycardia
NSR	normal sinus rhythm
PAC	premature atrial contraction
PAT	paroxysmal atrial tachycardia
PEA	pulseless electrical activity
PJC	premature junctional contraction
PVC	premature ventricular contraction
VF, V-fib	ventricular fibrillation
VT, V-tach	ventricular tachycardia
WAP	wandering atrial pacemaker
WPW	Wolf-Parkinson-White

Appendix

29

APPENDIX: 29

TITLE: POLICE REQUESTED BLOOD DRAW

REVISED: November 1, 2017

- An investigating officer MUST be present when drawing the specimen.
- Confirm the officer has lawful authority to request you perform a blood draw.
- Use kit provided by the law enforcement officer.
- Check the tubes in the kit for expiration date.
- Cleanse the blood collection site with the alcohol-free pad. DO NOT USE ALCOHOL.
- Perform the venipuncture. Allow the tubes to fill to maximum volume.
- Immediately after blood collection, assure proper mixing of anticoagulant powder by slowly and completely inverting the blood tube at least five times. DO NOT SHAKE VIGOROUSLY.
- Hand the tubes to the officer while you draw the next specimen tubes or hold them in your hand within view of the patient and officer.
- Transfer the tubes directly to the officer if you haven't already done so.
- Discard sharps in proper container.
- Specimen seals will require collector's initial where indicated.
- On the Toxicology submittal form fill out the "Sample Collected by (name, title and facility)" and Date/Time of Sample Collection. The officer is responsible for completing all other relevant information on the form.
- Document procedure on a PCR.

POLICE REQUESTED BLOOD DRAW

Title POLICE REQUESTED BLOOD DRAW

Appendix 29

APPENDIX: 30

TITLE: High Performance Resuscitation

REVISED: NOVEMBER 01, 2019

Clinical Indications:

- Cardiac arrest in a patient > 8 years of age.
  (* Many of these concepts can be adapted freely to pediatric arrest)

Contraindications:

- none

Notes/Precautions:

- High Performance CPR can be broken down into 5 major considerations; they are: *Rate, Depth, Recoil, uninterrupted, Ventilation Control.* Focus is on:
  - Minimally interrupted compressions
  - Appropriate depth, rate (target 110/min) and quality of compressions
  - Consider compressor fatigue and change compressors as needed
- small patients and morbidly obese may require modification of the procedure due to size
- This procedure is based on a 3-person crew of providers (if a 4th person is available, they should assist with setting-up airway device and rotate into a Compressor position)
- If LUCAS device is available, Position 1 (or appropriate qualified provider who is NOT the Code Commander) becomes the operator of LUCAS
- Cardiac arrest scenes are dynamic, unpredictable and fluid. Providers may have to adapt this protocol to the circumstances at hand while continuing to focus on the primary concepts.

Procedure:

1. First arriving providers:
2. Established prior to arriving at patient's side, the following responsibilities:

Position 1 (P1) - patient's right side

- assesses responsiveness/pulses
- initiates chest compressions immediately (performs 2 minutes of UNINTERUPTED chest compressions)
- alternates chest compressions with Position 2 every 2 minute cycle
- ventilates BVM when not performing chest compressions
- assembles, applies & operates LUCAS

Position 2 (P2) patient's left side

- applies AED/Defibrillator pads
  - perform entire 2 min of uninterrupted CPR prior to <u>initial</u> defibrillation
- operates AED after each 2 minute cycle of compressions if no ALS present
- Compressions during AED charging

* Boise Fire Dept uses Philips AEDs which do not allow compressions during charging. The analyze, charge and shock cycle is < 10 sec.

- alternates chest compressions with Position 1 every 2 minute cycle
- ventilates BVM when not performing chest compressions

Position 3 (P3) patient's head

- assembles/checks and applies all equipment for airway and ventilations within their scope of practice (OPA, BVM, Suction, O2, supra-glottic airway(SGA), airway securing device, ETCO2)
- opens/clears airway
- inserts OPA
- assembles and applies BVM
- maintains two-hand BVM mask seal while position 1 or 2 ventilates
- inserts & secures SGA when ready (and appropriately skilled provider)

Position 4 (P4) - if available

- rotates and assists and needed
- may function as team leader
- keeps time and record of interventions and CPR

3. ALS Integration (if not initially present):
   Establish prior to arriving at patient's side, the following responsibilities:
   - **Code Commander** (Paramedic in control of coordinating resuscitation) communicates/interfaces with providers performing CPR and intervention paramedic.
     May be any paramedic, but must not be at Position 1-4
     Organizes/makes all patient treatment decisions
     Sets up & operates monitor/defibrillator
     Apply 4-lead; switch pads from AED after the 2 min shock/no shock evaluation)
   - **Intervention Paramedic** (positioned at feet when possible)
     Initiates IV/IO access (if not already established)
     Administers medications at the direction of the code commander
     May place advanced airway as needed
     - In the event that there is only 1 paramedic on-scene, the Code Commander may need to perform some interventions

If using an ALS monitor, may "pre-charge" to defibrillation energy prior to rhythm/pulse check so that you may analyze manually and shock immediately if VF/VT.

"Calling 200": Calling "200" on the 200th compression and then counting down sets the tone for the next pause, notifies all providers to prepare for next changeover, and improves coordination.

Physician Pearls

- Design based on three person crew (more is better but the 3 person core model holds – these positions do not change)
- If initially only TWO responders on scene, priorities are AED and compressions (Positions 1 & 2). After applying AED, Position 2 may assemble BVM and oxygen and perform single person ventilations during the first 200 compressions. Positions 1 & 2 then switch as above with the non-compressing position performing single rescuer ventilations with BVM.
    - Two people put the patient in position for CPR (ensure there is sufficient space around the patient)
    - Compressor/CPR Position 1 (right side of patient) begins CPR (approximate rate fof 100 – 120 compressions/minute)
    - Compressor/CPR Position 2 (left side of patient) applies and turns on the AED or monitor and then ventilates when the airway person is ready at 6-10 breaths per minute (once every 10-20 compressions, or 6-10 seconds)
- **Asynchronous ventilations** at 6-10 breaths per minute; **bag through compressions**
    - This may mean "Short" or "upstroke" ventilations due to compression force. This is OK
    - No pauses for ventilations. This is OK.
- Airway position places OPA, BVM mask and ensures the bag is hooked to oxygen (the Airway person is the logical "Team Leader" unless there are four people on scene). This person DOES NOT BAG – Position 1 or 2 does.
    - If paramedic or AEMT is initially present, this is the best role for them as they will perform airway intervention and can see/control the monitor to direct defibrillation as necessary.
    - The *airway position* uses Two Handed C-E or T-E techniques
- At 2 minute rhythm analysis, AED will automatically analyze (no compressions until shock/no shock). Continue compressions while AED is charging* (*BFD Philips AED analyzes, charges, and shocks in the same 8 second pause). If ALS crew present, charge defibrillator to appropriate VF/VT initial shock for the device PRIOR TO stopping for rhythm analysis. This allows for continued compressions through the charging and limits time off the chest. The "peri-shock pause" (time without compressions on either side of defibrillation) and specifically the "pre-shock pause" (time without compressions prior to defibrillation) improves outcomes when reduced.
- After shock/no shock P1 or P2 (alternating from prior cycle) ***immediately*** begins compressions and the other begins ventilations
- Continue as above, switching out personnel when fatigued
- This Pit Crew procedure is based on UNWITNESSED arrest. If arrest is witnessed, positions are the same, but CPR is done only as long as it takes to apply AED and analyze rhythm. Do not delay defibrillation for compressions in a witnessed arrest.

APPENDIX

30

HIGH PERFORMANCE RESUSCITATION

- When ALS Arrives:
  - Check in with the designated Team Leader
  - One Paramedic at the feet: perform IV/IO and meds
  - One Paramedic ("Code Commander") to apply the defibrillator and direct the resuscitation
  - Neither should interfere with airway management or CPR unless there is a complication or ROSC has been achieved
  - ALS will work around the established two minute CPR cycles in order to limit compression interruptions and maximize chest compression fraction.
- **De-emphasize the airway and ventilation**. BVM is adequate for initial resuscitation. SGA may be placed as convenient after other priorities completed (compressions and AED/monitor placement).
  - Airway placement is only done ***while compressions are on going*** **o**r during planned pulse/rhythm check for less than 10 seconds.
  - **EXCEPTION:** If unable to use BVM or place SGA during resuscitation (CPR), ETT may be attempted without interruption of compressions and should ideally occur after 6 min of resuscitation.
- LUCAS Integration:
  - Back plate can be placed at the 4 minute rhythm check or any 2 minute check thereafter.
  - Chest piece should be placed at the appropriate rhythm check 2 minutes after the back plate is placed.

APPENDIX: 31

TITLE: TREAT-AND-RELEASE CHECKLISTS

REVISED: December 01, 2022

HYPOGLYCEMIA TREAT-AND-RELEASE CHECKLIST

Name: _____ ***DOB:*** _____ ***Date:*** _____

YES	NO		
☐	☐	1.	Is there a clear reason for the hypoglycemic episode?
☐	☐	2.	Is the patient alert and oriented and have capacity for decision making?
☐	☐	3.	Is the patient's repeat BG above 80 mg/dl
☐	☐	4.	Has the patient's BG been well controlled prior to this episode?
☐	☐	5.	Is the patient able to eat on complex carbohydrate meal?
☐	☐	6.	Does the patient have a regular, on-going physician care?
☐	☐	7.	Is the patient comfortable with non-transport by EMS?
☐	☐	8.	Is the patient/guardian willing to sign a release form?
☐	☐	9.	Is there another responsible person with the patient?
☐	☐	10.	Is the patient's temperature within normal limits? Normal= 95° to 100.4° F

Any "No" answer above requires contact with Medical Control prior to release.

Time: _____

Facility: _____

Physician: _____

Additional Comments: _____

_____

_____

_____

APPENDIX

31

TREAT-AND-RELEASE CHECKLISTS

EPISTAXIS TREAT-AND-RELEASE CHECKLIST

Name: _____ ***DOB:*** _____ ***Date:*** _____

YES	NO		
☐	☐	1.	Has the epistaxis stopped?
☐	☐	2.	Is the epistaxis ***non***-traumatic in origin?
☐	☐	3.	Is the patient alert and oriented?
☐	☐	4.	Is the patient's systolic blood pressure *below* 180 mmHg?
☐	☐	5.	Is the patient's diastolic blood pressure *below* 110 mmHg?
☐	☐	6.	Is the airway stable and without compromise from bleeding?
☐	☐	7.	Is the patient on blood thinners (excluding Aspirin)?
☐	☐	8.	Is the patient free of other active bleeding, such as GI bleeding, hematuria, etc.?
☐	☐	9.	Does the patient have regular, on-going physician care?
☐	☐	10.	Is the patient comfortable with non-transport by EMS?
☐	☐	11.	Is the patient/guardian willing to sign a release form?

Any "No" answer above requires contact with Medical Control prior to release.

Time: _____

Facility: _____

Physician: _____

Additional Comments: _____

_____

_____

_____

_____

_____

_____

PD EVAL TREAT AND RELEASE CHECDKLIST

Name: _____ ***DOB:*** _____ ***Date:*** _____

YES	NO	
☐	☐	1. Under age 18 or have a legal guardian? - *Minors cannot be released without Guardian/LE taking responsibility*
☐	☐	2. Disoriented or altered LOC? – *altered LOC does not allow Treat/Release*
☐	☐	3. BG below 80mg/dl with altered LOC? – *Low BG must be corrected and patient mentation normal for Treat/Release (see M-06 & Hypoglycemia T&R)*
☐	☐	4. Any high-risk medical history?
☐	☐	5. Vital signs outside expected or normal limits? *HR<100; SBP<160, DBP<100; R unlabored 10-24 bpm; SPO2 >92%, CO<5% (<8% smoker)*
☐	☐	6. Use of mind-altering substances?
☐	☐	7. Does the patient request transport by EMS?
☐	☐	8. Is there any injury needing physician evaluation? - *(x-ray, stiches, pain medication, etc.)*
☐	☐	9. If in custody: Does the Officer want the patient transported?
☐	☐	10. Any other priority symptoms?

All items shall be considered, and any abnormal answers or complaints need to be thoroughly documented in EHR if patient is released. If provider feels it necessary, a signed refusal may be completed, but not required for evaluation with no care.

Additional Comments:

APPENDIX 32

APPENDIX: 32

TITLE: Mechanical Ventilator Use

REVISED: November 1, 2017

Mechanical Ventilator Use

I. Introduction:

Mechanical Ventilation is the use of an automated device to deliver positive pressure ventilation to a patient. Proper use of a mechanical ventilator has shown improved oxygenation, ventilation, and patient comfort compared to a BVM. Mechanical ventilation has an increased complexity and risk, and should only be used by paramedics familiar with both the general concepts of mechanical ventilation and the specific ventilator in use.

II. Mechanism of Action:

Mechanical Ventilation works by providing increased positive pressure ventilation at the level of the lower airway structures, improving gas exchange in the alveoli.

III. Indications:

Due to the complexities of patient management and dynamics of each individual call, there are no *absolute* indications for mechanical ventilation. A provider may choose to continue to use a bag-valve-mask (BVM) or other device as the clinical and practical situation dictates.

NOTE: If not used, provider must document reason(s) for deferring mechanical ventilation in a patient with an advanced airway

Mechanical ventilation **should be considered** for patients who have an advanced airway (ETT or SGA) *and*:

- Suffer from apnea or agonal respiratory effort during cardiac or respiratory arrest.
- Are at risk of hyperventilation during cardiac arrest resuscitation

Mechanical ventilation **may be considered** for:

- Patients who are intubated or have an advanced airway placed for other etiologies, particularly those who are likely to be in the providers care in for prolonged periods of time (excess of 15 minutes).
- Face Mask /Nu-Mask Ventilation
    - Should only be considered when manpower is limited.
    - Oral or nasal adjuncts, as well as proper positioning of the patient are essential.
- Patients who are already in the community (i.e. at home or in a nursing home) on a vent.
- Administration of Continuous Positive Airway Pressure (See *appendix 6*) if the mechanical ventilator has that capability.

APPENDIX 32

Mehchanical Ventilator Use

IV. Contraindications:

- Suspected Pneumothorax (untreated/developing)
- Pulmonary Over pressurization/barotrauma (Blast Injuries, rapid ascent dive injury)

IV. Cautions

- Patients who are being ventilated should be attended by **at least two providers at all times**, one of whom should be an ACCESS Agency Paramedic.
- Use of positive pressure ventilation, including mechanical ventilation, increases the risk of pneumothorax.
- Increased intrathoracic pressure from positive pressure ventilation, PEEP, and overventilation may have severe hemodynamic effects.
- All patients who are being mechanically ventilated should be monitored closely with frequent auscultation, vital signs, SPO2, and waveform ETCO2.

V. Procedure:

General

1. Treat the *patient*.
2. Asses for indications and contraindications (especially suspected pneumothorax)
3. Inspect and prepare ventilator for use prior to application to the patient.
    i. Ensure proper functioning by inspecting settings and cycling a few breaths with the “test lung”.
    ii. Insure adequate oxygen supply, and location of back up oxygen supply if needed.
4. Select proper patient type and mode for the patient. Double check settings visually. Default for prehospital use is AC/V. Other settings to be adjusted as needed.
    i. I:E ratio
    ii. Tidal Volume (6-8 mL/kg ideal or predicted body weight)
    iii. Respiratory Rate.
    iv. FiO2 (Target patient saturation 94-99%)
    v. PEEP (MAX 10 cm H2O)

    NOTE: SIM/V may be used on spontaneously breathing patients who are already on a ventilator of some type in the community or in interfacility settings and are already in this or similar mode of operation.

5. Pre-oxygenate the patient as needed.
6. Transition the patient from manual ventilation to mechanical ventilation.
7. Assess breath sounds and reconfirm airway placement.

8. Adjust respirator settings as clinically indicated.
    i. It is required that patients on a transport ventilator should be monitored continuously through Capnography and Pulse Oximetry.
    ii. The ventilator rate should adjusted to maintain a pulse oximetry of 94-99 (or as high as possible up to 99%) while maintaining an ETCO2 of 35-45.
9. If any worsening of patient condition, decrease in oxygen saturation, or any question regarding the function of the respirator, remove the respirator and resume bag-valve mask ventilations until situation is resolved.
10. Document time, complications, and patient response on the patient care report (PCR).
11. An in line nebulizer may be run simultaneously with the CPAP.
12. Treatment should be given continuously throughout transport to ED.

VI. Documentation:

Documentation on the patient care record should include:

- Tube depth (CM at teeth/gums) during intubation and on transfer of care.
- Tube confirmation (be specific)
- CPAP/PEEP level →(0-10cmH2O)
- F_iO_2 →(60-100%)
- Vent settings (I:E, Tidal volume, RR)
- Vital Sign q5 minutes, including ETCO2 and SPO2
- Tolerance of Ventilation
- Any adverse reactions
- Justification for sedation, paralysis, etc. Be specific.

VII. Special Notes

The following are special considerations and noted when using a mechanical ventilator.

- Tidal volume should be based on ideal body weight. To do this we use the NIH estimate for predicted body weight (PBW) by gender. The morbidly obese do not have substantially larger lungs compared to patients of more normal mass.
- The provider must be familiar with the ventilator at hand. If in doubt, the provider should secure expertise from other personnel or facility staff prior to taking responsibility for the patient.
- An in line nebulizer may be run simultaneously with the CPAP and mechanical ventilation. **Monitor airway pressures closely**.
- When transitioning to Mechanical ventilation, discontinue all unnecessary oxygen consumption off of the same line or tank. Multiple drains of oxygen will shorten oxygen supply, and will lower “line pressures” required to operate the mechanical ventilator.
- Persistent alarms, particularly **pressure alarms** should never be discounted.

APPENDIX

32

Mehchanical Ventilator Use

- **Proper paralysis and sedation is essential to good ventilator management**, balanced against the patient's hemodynamic status. Indicators of poor sedation or paralysis include:
    i. Tachycardia
    ii. ETCO2 for the "Curare Cleft" and other signs of spontaneous breathing
    iii. Tears, grimacing, coughing, or other motor movements.
- The first step of troubleshooting a ventilator is to place the patient back on the BVM and conduct a modified *DOPES* check. Therefore all ventilated patients should have a complete BVM (with mask) at bedside at all times.

    D - Displacement of tube: Attach end-tidal CO2 to verify and check depth (cm at lip)

    O - Obstruction of tube/circuit : Use suction catheter to remove mucus plug, or make sure patient not biting down, Insure that in line suction catheter is not partially blocking ETT tube.

    P – Pneumothorax : Auscultate, assess, visualize chest wall, and perform needle decompression if needed.

    E - Equipment failure :Connect to BVM to buy time to evaluate your patient and the ventilator

    S - Stacked breaths - Auto-PEEP especially in COPD/Asthma: Disconnect from ventilator and allow open circuit exhalation. Increase I:E ratio (1:4 or 1:6), Decrease Respiratory rate or Tidal volume (or both) if tolerated. Consider bronchodilators and/or ETT suctioning.

Monitor closely for:

- Stacked Breaths (Auto Peep). Especially in COPD and Asthma.
- Pneumothorax
- Hypotension
- Decompensation

Tidal Volume Chart

Pediatrics (6-8 ml/kg Tidal Volume) **Age 1-5:** PBW = (Age x 2)+8 ***Age 6-12:*** PBW (age x3)+7					
Age	IBW (KG)	Est. Tidal Volume	**Age**	IBW (KG)	Est. Tidal Volume
1	10	60-80 ml	**7**	28	168-216 ml
2	12	72- 96 ml	**8**	31	186-248 ml
3	14	84-112 ml	**9**	34	204-272 ml
4	16	96- 128 ml	**10**	37	222-296 ml
5	18	108-144 ml	**11**	40	240-320 ml
6	25	150-200 ml	**12**	43	285-344 ml
NOTE: **e600 preset Tidal Volume is 100 ml for infant and 250 ml for child settings**					

Adult **Male :** PBW= 50 + 2.3 (height in inches - 60) (6-8 ml/kg Tidal Volume)					
Height (Feet)	PBW (KG)	Est. Tidal Volume	**Height**	PBW (KG)	Est. Tidal Volume
5'0	50	300-400 ml	**6'0**	78	460-620
5'1	52	310-420 ml	**6'1**	80	480-640
5'2	55	330-440 ml	**6'2**	82	490-660
5'3	57	340-460 ml	**6'3**	85	500-680
5'4	59	350-480 ml	**6'4**	87	520-700
5'5	62	370-490 ml	**6'5**	89	530-710
5'6	64	380-510 ml	**6'6**	91	550-730
5'7	66	400-530 ml	**6'7**	94	560-750
5'8	68	410-550 ml	**6'8**	96	570-770
5'9	71	420-570 ml	NOTE:		
5'10	73	440-590 ml	e600 preset Tidal Volume is 500 ml for Adult		
5'11	75	450-600 ml			

Adult **Female:** PBW = 45.5 + 2.3(height in inches - 60) (6-8 ml/kg Tidal Volume)					
Height (Feet)	PBW (KG)	Est. Tidal Volume	**Height**	PBW (KG)	Est. Tidal Volume
5'0	46	270-370	**6'0**	73	440-590
5'1	48	290-380	**6'1**	75	450-600
5'2	50	300-400	**6'2**	78	470-620
5'3	52	310-420	**6'3**	80	480-640
5'4	55	330-440	**6'4**	82	500-660
5'5	57	340-460	**6'5**	85	510-680
5'6	59	360-480	**6'6**	87	520-700
5'7	62	370-490	**6'7**	89	540-720
5'8	64	380-510	**6'8**	92	550-730
5'9	66	400-530	NOTE:		
5'10	63	410-550	e600 preset Tidal Volume is 500 ml for Adult		
5'11	71	430-570			

APPENDIX

32

Mehchanical Ventilator Use

APPENDIX 33

APPENDIX: 33

TITLE: Monitoring of Thoracostomy Tubes

REVISED: November 1, 2018

Monitoring of thoracostomy tubes

I. INDICATIONS:

- Intra-facility Transfer of a patient with a thoracostomy tube (AKA Chest tube) in place

II. CONTRAINDICATIONS/CONSIDERATION: *medical problems complicating the situation*

III. MEDICATIONS:

- Thoracostomy tubes may be painful. Consider analgesia by protocol or physicians orders, as stability allows.

IV. PROCEDURES:

- Patient shall be placed and maintained on cardiac and pulse oximetry monitors during transport.
- Signed transfer order from the transferring physician must be obtained prior to transport.
- Maintenance of chest tube either to occlusion, gravity or mechanical suction drainage is permitted.
- Occlusion
    - Chest tubes may be clamped and occluded for very short, emergent transports.
- Gravity Drainage (i.e. Pleurovac):
    - Collection receptacle must be kept below level of the chest to prevent drained fluid from re-entering the pleural space.
    - Do not allow the collection receptacle to tip over.
- Mechanical Suction Drainage:
    - By Idaho Emergency Medical Services Physician Commission (EMSPC) standards, transport of a patient with a chest tube connected to powered suction is a critical care skill, unless being transferred under the *Time Sensitive Emergency* (TSE) clause.
        - Otherwise, without specialty personnel present and assisting the EMS crew, the patient should be transitioned to gravity drainage prior to transport or occluded.
    - If mechanical suction drainage, the amount of mechanical suction must be specified.
    - Mechanical suction rate should remain constant during the transport.

APPENDIX 33

Monitoring of thoracostomy tubes

- Avoid/Do Not:
  - Allow pulling/tension on thoracostomy tube as this can cause accidental dislodgement of the tube.
  - Restrict gravity or suction drainage from the chest by the use of clamps, dependent loops or kinks in tubing as this will interfere with flow of drainage and may lead to increased pleural pressure, tension pneumothorax, or formation of clots.
  - Disconnect the drainage system or puncture tubing. Tape all connections securely to prevent violation of sterility and loss of negative pressure
- If the patient becomes dyspneic,
  - Assess for tube dislodgement
  - Assess for tension pneumothorax and treat accordingly.
- If hemorrhage occurs through the chest tube:
  - Observe for signs and symptoms of shock and treat according to protocol
- If the thoracostomy tube is partially dislodged:
  - Do not push the tube back into the chest.
  - - Secure the site
- If the thoracostomy tube is completely pulled out, place an occlusive dressing over the insertion site

APPENDIX: 34

TITLE: IV Infusion Pumps

REVISED: NOVEMBERr 01, 2019

I. INDICATIONS:

- Care of a patient requiring specific medication infusions to assure that medication and fluid deliver is at a safe and therapeutic rate.
- Inter-facility transport where an IV Infusion pump is already in place.

II. CONTRAINDICATIONS:

- Lack of trained and credentialed staff.
- Rapid infusion of IV Fluids exceeding maximum flow rate of infusion pump needed

III. CONSIDERATIONS

- The use/monitoring of an *"IV Programmable Volume Infusion Device*" (AKA IV Infusion pump) in either the prehospital or inter-facility setting is considered a paramedic Level of care, and requires a paramedic to be in attendance.
- The use of an IV Infusion pump in the prehospital setting is an "Optional Module" and requires credentialing through the ACCESS system.
- When possible, the paramedic should use the "drug library" or other "smart pump" functions to reduce the chance of medication error.
- When possible, the paramedic should ***"cross check"*** all medication infusions with another provider, preferably either the sending facility staff or another ALS provider if available, to reduce the chance of medication error.

IV. MEDICATIONS:

The use of an IV Infusion pump is intended for medication maintenance infusions, not for loading dose infusions or bolus doses unless specifically indicated. The following infusions are ***excluded*** from requiring an infusion pump to administer (but may be used at the paramedic's discretion or physician order):

- Crystalloid Infusions
- Dextrose solutions (i.e. D10, D10NS) without other medications.
- Magnesium Sulfate *loading dose* in the setting for the treatment of eclampsia or refractory bronchospasm.
- Blood Products (still requires a filter)
- Anti-histamine infusions in the setting of allergic and anaphylactic reactions.
- Oxytocin in the setting of post-partum hemorrhage.
- Antibiotic Infusions

Other medication infusions require the use of an IV Infusion pump.

APPENDIX

34

IV INFUSION PUMPS

IV. PROCEDURES:

- Patient shall be placed and maintained on cardiac and pulse oximetry monitors during transport.
- Follow manufacturer's guidelines for the safe use of the infusion pump.
- All infusions should be documented in the EPCR flow chart and the Narrative.
- If a patient suffers undesired effect as a result of an infusion, consider discontinuation of the infusion, treat per ACCESS SWOs, and contact medical control immediately.
- IFT Transport:
    - When a patient already has an IV infusion pump in place, it should be left in place for the transport. If the paramedic is unfamiliar with the particular model of pump, the staff should be incorporated to familiarize the paramedic with the pumps basic operation prior to transport.
    - Note all drips and document any discontinuations/modifications prior to departure.
    - **Verify** all drip rates / doses with sending facility staff (i.e. Nursing staff or physician) before departure.
    - Paramedics may not titrate medications not in the ACCESS formulary without a direct physician medical order.

APPENDIX 35

APPENDIX: 35

TITLE: Viral Infectious Disease Screening and Triage

REVISED: November 1, 2020

VIRAL INFECTIOUS DISEASE

I. Intent:

II. Definitions

a. Viral Infectious Disease of Concern
   i. Influenza
   ii. Coronavirus (including SARS, MERS, COVID-19)
   iii. Ebola Virus Disease (EVD)

III. Inclusion / Exclusion Criteria

Inclusion Criteria

a. Dispatch Flag
   i. Dispatch Card

b. Staff/Family/Caregivers report:
   i. Patient is suspected or confirmed to have a viral infectious disease of concern by a medical provider.
   ii. Patient or close contact is a Person of Interest (PUI) or patient with suspected or confirmed viral infection
   iii. Having *direct* unprotected contact/Exposure with infectious secretions (including but not limited to blood, urine, saliva, vomit, sweat, semen, and diarrhea) with a patient known or suspected to have a viral infectious disease of concern.
   iv. Location Based Flags
      1. Residence in, or travel to, a country or area with widespread community spread of infectious disease of concern
      2. Designated locations with increased rates of spread.
   v. Specific criteria determined by the medical directors

c. Patient Complains of (2 or more):
   i. – Loss of smell
   ii. – Fever
   iii. – Difficulty Swallowing
   iv. – Cough
   v. – Fatigue
   vi. – Upper/Lower Respiratory Symptoms
   vii. – Nausea, Vomiting
   viii. – Lower GI symptoms (diarrhea)

d. Provider Discretion

Exclusion Criteria

a. Signs of a severe illness, injury, or Time Sensitive Emergency (TSE) such as Stroke, Major Trauma, or suspected STEMI.
b. Clinical Instability
c. Emergency Interfacility transport

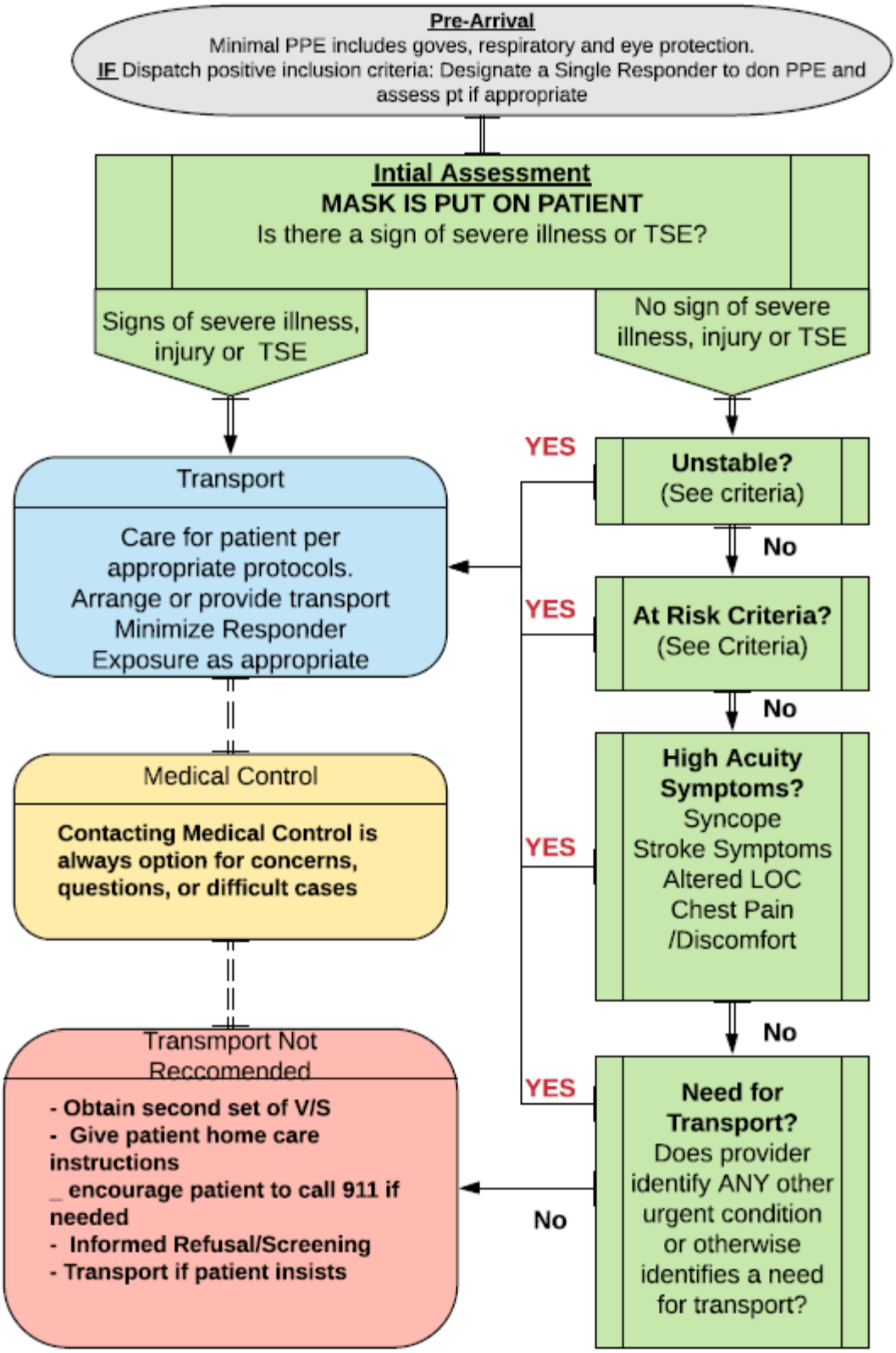
IV. Clinical Assessments and Screening

Is the patient "Stable"?: This screening tool is intended for stable patient only, but “Stable” is a fluid definition that can change during the course of the patient contact. No patient can be judged stable without a minimum assessment. This minimum assessment includes:

a. **Visual assessment:** May be performed visually at > 6 feet until PPE is donned.
    i. Fully alert, oriented, and calm. GCS 15.
    ii. No respiratory distress. Breathing at a normal rate, volume, and effort.
    iii. Speaking without significant effort
    iv. Able to mobilize at baseline.
b. Lung Sounds
    i. Clear
    ii. Non-Labored
c. Neurological /Mental assessment
    i. Fully alert, oriented at baseline.
    ii. Stroke Assessment Benign No signs new focal motor deficits.
    iii. No Syncope
    iv. Able to ambulate easily at baseline.
d. Vital Signs
    i. SPO2: Unsupported (without O2) SPO2 > 92%
    ii. HR: < 110/minute or age appropriate rate for children < 14
    iii. RR: 10-20 / Minute or age appropriate rate for children < 14
    iv. SBP > 90 mm Hg age appropriate SBP for children < 14
    v. Temperature 95 – 102 F.

V. **At Risk/High Risk patients:** Certain patients have been identified as having elevated risk and increased mortality from viral infectious diseases or having other areas of concern.

a. Age:
    i. < 14 years of age
    ii. > 55 years of age
b. Medical History
    i. Chronic Lung Disease (asthma, COPD, Cystic Fibrosis)
    ii. Requires > 2 LPM O2 for any reason
    iii. Cardiovascular Disease (MI, Arrythmias, HTN)
    iv. Diabetic
    v. Renal disease
    vi. Immunocompromised, (HIV, etc)
    vii. Bedridden, Clinically Frail, On Hospice
    viii. Pregnant or post-partum up to 2 weeks
c. Social
    i. Homeless (without shelter or accommodations)
    ii. No other responsible party/support system for patient



A.C.C.E.S.S. Infectious Disease Screening tool
Version 2.01

APPENDIX

35

VIRAL INFECTIOUS DISEASE

VIRAL INFECTIOUS DISEASE SCREENING AND TRIAGE

NAME:_____ **DOB-**_____ **DATE:** _____

YES	NO		
☐	☐	1.	Is the patient < 14?
☐	☐	2.	Are there signs of severe illness, injury, or other Time Sensitive Emergency?
☐	☐	3.	Does the patient meet the criteria for "unstable" under this protocol?
☐	☐	4.	Does the patient have any "*High Acuity Symptoms*"?
☐	☐	5.	Does provider identify ANY other urgent condition or otherwise identifies a need for transport?
☐	☐	6.	Is there increased work of breathing, speech dyspnea, orthopnea, or other signs of respiratory distress?
☐	☐	7.	**O2 Use:** Is the patient on O2 > 2 LPM for *any* reason?
☐	☐	8.	**SPO2:** Is the SPO2 < 94% (with or without O2)?
☐	☐	9.	**Heart Rate:** Is the heart rate greater than 110 / minute or less than 50/minute?
☐	☐	10.	**RESPIRATORY RATE:** Is the Respiratory Rate less than 10 or greater than 20?
☐	☐	11.	**BLOOD PRESSURE:** Is the systolic BP less than 90 mm Hg?
☐	☐	12.	Is the patient alone/unattended by a responsible adult?
☐	☐	13.	Are there other concerns for the patient's safety?

Any "YES" answer above requires excludes the patient from transport to an alternative destination or discharge home under this protocol. Normal refusal procedures and considerations still apply

Time:_____

Additional Comments:_____

_____

_____

Facility:_____

Physician:_____

Outcome: _____

APPENDIX 36

APPENDIX: 36

TITLE: Alternative Destination Screenings

REVISED: November 1, 2020

INTIMATE PARTNER, SEXUAL ASSAULT, AND STRANGULATION SCREENING

Name: _____ ***DOB:*** _____ ***Date:*** _____

YES	NO	
☐	☐	1. Is the patient a **<** 18??
☐	☐	2. Is the patient Disoriented or altered in their LOC?
☐	☐	3. Is the patient unable able to complete 3 separate cognitive exams? *(Simple Math, 3 item identification, follows simple 3 step commands)*
☐	☐	4. Is the patient incapacitated in regard to medical decision making to make clinical decisions? *(Suicidal, homicidal, delirious, violent, or gravely disabled)*
☐	☐	5. Are there any of acute motor deficits (neuro and stroke assessment)?
☐	☐	6. Was /there loss of vision during or after the event?
☐	☐	7. Was there loss of bowel or bladder control during or after the event?
☐	☐	8. Is there difficulty swallowing?
☐	☐	9. Is there Difficulty speaking?
☐	☐	10. Is there difficulty breathing?
☐	☐	11. Is there evidence of petechial/subconjunctival hemorrhage?
☐	☐	12. Is there any gross swelling/deformity/asymmetry of the neck?
☐	☐	13. Other Priority Symptoms? (Explain below)
☐	☐	14. Sustained heart rate < 50 or >150 BPM?
☐	☐	15. Sustained systolic BP < 100 mm Hg or > 200 mm Hg?
☐	☐	16. Sustained diastolic BP < 50 mm Hg or > 100 mm Hg?
☐	☐	17. Respiratory Distress/sustained rate < 10 or > 24 breaths/minute?

Any "YES" answer above excludes the patient from transport to an alternative destination (FACES, etc) unless medical control is consulted.

Time: _____

Facility: _____

Physician: _____

Outcome: _____

Additional Comments: _____

ALTERNATIVE DESTINATION

This document is for reference only. Please refer to SWO's for specific indications, dosages, and applications

RX

Drug Name: **Acetylsalicylic Acid**
Trade Name: **Aspirin, ASA**
REVISED: **01May18**
Class:

- NSAID (Analgesic, anti-inflammatory)
- Anti-platelet aggregation agent
- Antipyretic

Mechanism of Action:

- Aspirin inhibits the formation of COX, which is responsible for the conversion of arachidonic acid to prostaglandin (the first step in the arachidonic acid cascade).
- Blocks the formation of Thromboxane A_2 & prostacyclin. Thromboxane A_2 causes platelet aggregation and vasoconstriction. Prostacyclin inhibits platelet aggregation and vasodilation. Clinically the blockage of Thromboxane A_2 predominates.
- By suppressing the formation of prostaglandins near the hypothalamus, aspirin promotes a return to a normal body temperature set point.
- The effects of pain relief and anti-inflammation are also related to the blockage of the arachidonic acid cascade.

Indications:

- Chest pain suggestive of AMI

Contraindications:

- Active bleeding disorders
- Under 18 y/o (Reye's syndrome)
- Pregnancy (D)
- Known hypersensitivity

Relative Contraindications:
Asthma (Aspirin triad—hypersensitivity, asthma, nasal polyps)

Precautions:

- Use with caution in patients who report allergies to any NSAID.

Dosage:

Adults:

- Four 81 mg tablets PO, chewed & swallowed.

Pediatrics:

- Not administered to children with an acute viral illness including varicella & influenza (Reye's Syndrome)

Onset:

- 15-30 minutes

Duration:

- 4-6 hours

Side Effects:

- GI Irritation (i.e. Heartburn)
- GI Bleeding
- N/V
- Hypersensitivity Reaction—bronchospasm, urticaria.
- Prolonged bleeding time

DRUG: ACETYLSALICYLIC ACID

REFERENCE ONLY

RX

This document is for reference only. Please refer to SWO's for specific indications, dosages, and applications

DRUG: ACETYLSALICYLIC ACID

Interactions:

- When administered together, ASA & other anti-inflammatories may cause increased side effects, and increased blood levels of both drugs.
- Administration of ASA with antacids may reduce blood levels by reducing GI absorption.

PEARLS:

- ***ASA should be administered to ALL ACS patients in the acute setting even if they are regularly taking ASA. Unless ASA has been taken by the patient immediately prior to or after the onset of symptoms.***
- ***Previously, if the patient was on other anticoagulants (i.e. Plavix, Warfarin) ASA would be withheld. That is no longer the case. ASA should be administered (when indicated) even if the patient is on other anticoagulants.***
- ***Toxicology:***
  - ***150-300 mg/kg—mild toxicity***
  - ***300-500 mg/kg—serious toxicity***
  - ***> 500 mg/kg—lethal toxicity***

This document is for reference only. Please refer to SWO's for specific indications, dosages, and applications

RX

Drug Name: **Adenosine**

Trade Name: **Adenocard**

Revised: **July 24, 2017**

REVISED: **November 1, 2017**

Class:

- Supraventricular Antiarrhytmic
- Endogenous purine nucleoside (present in all cells, wide range of metabolic roles, formed as a breakdown product of ATP.)

Mechanism of Action:

Slows tachycardias associated with the AV node via modulation of the autonomic nervous system without causing negative inotropic effects. It acts directly on sinus pacemaker cells and vagal nerve terminals to decrease chronotropic & dromotropic activity. Thus it:

- Slows conduction through the AV node
- Blocks reentry pathways through the AV node
- Can slow conduction in the SA node somewhat

Indications:

- PSVT (including WPW) refractory to vagal maneuvers

Contraindications:

- 2nd or 3rd degree heart block (without a functioning pacemaker)
- Sick sinus syndrome
- Known hypersensitivity
- Pregnancy (C)
- Known atrial fibrillation or atrial flutter (not effective in managing these arrhythmias)
- Irregular Wide-complex tachycardias

Precautions:

- **May cause refractory bronchospasm. Use with caution with COPD and Asthma.**

Dosage:

Adults:

- IV: 6 mg RAPID IVP
- Repeat at 12 mg in 3-5 minutes two times PRN (total 30 mg)
- Follow each dose with a flush of at least 20-60 ml

Pediatrics:

- 0.1 mg/kg.
- Max intial dose: 6 mg
- if no effect, 0.2 mg/kg x 2 PRN
- Maximum single dose: 12 mg

Rapid administration (over 1-2 seconds) is imperative due to the extremely short half-life. It should be given as proximal to the heart as possible (i.e. Antecubital veins)

DRUG: ADENOSINE

RX

This document is for reference only. Please refer to SWO's for specific indications, dosages, and applications

DRUG: ADENOSINE

Onset:

- 30 seconds or less

Duration:

- 10 seconds

Side Effects:

- Flushing
- Chest Pain
- Dyspnea
- Headache
- Diaphoresis
- Metallic Taste
- Dizziness, Lightheadedness
- Numbness
- Nausea/Vomiting
- Palpitations

Interactions:

- Additive Effects—digoxin, calcium channel blockers
- Antagonistic Effects—methylxanthines (caffeine, theophylline)
- Potentiating Effects—dipyridamole (Persantine)

PEARLS:

- ***Advising patient of the side effects of adenosine prior to administering can help minimize patient anxiety.***
- ***Large bore IV, antecubital access if possible.***
  - ***Adenosine has been successfully administered via the IO route and smaller veins if needed.***
- ***IV wide open during administration. It may help to have your partner administer the fluid bolus***
- ***Start your EKG printout before administration, and continue printing through bolus and conversion.***
- ***Administration of adenosine may cause a period of asystole & various conversion dysrhythmias, be patient, most will transiently resolve. Those that don't convert (rare) are treated symptomatically.***
- ***Be prepared to treat life threatening problems.***

This document is for reference only. Please refer to SWO's for specific indications, dosages, and applications

RX

Drug Name: **Albuterol Sulfate**

Trade Name: **Albuterol, Proventil, Ventolin**

REVISED: **November 1, 2017**

Class:

- $Beta_2$ Agonist
- Sympathomimetic

Mechanism of Action:

Acts selectively on $Beta_2$ receptor sites in the lungs, relaxing bronchial smooth muscle, decreasing airway resistance, & relief of bronchospasm. Although Albuterol is beta selective, it will cause some CNS stimulation, cardiac stimulation, increased diuresis, & gastric acid secretion.

Indications:

- Bronchial asthma
- Bronchospasm in acute exacerbation of COPD (chronic bronchitis, emphysema)
- Bronchospasm associated with cardiac asthma
- Bronchospasm in:
  Anaphylaxis
  Burns

Toxic Inhalations

Contraindications:

- Known hypersensitivity
- Tachydysrhythmias

Precautions:

- HTN
- Lactation & Pregnancy (C)
- Diabetes
- Seizures
- Known cardiac disease
- Hyperthyroidism
  For the above reasons, use with caution in geriatric patients.

CAUTION: All patients receiving inhaled beta agonists and/or anticholinergic medications should be observed for a least one hour following treatment for return of symptoms.

Dosage:

Adults:

- MDI—1-2 inhalations, 1 minute each, repeated every 15 minutes as needed.
- Nebulizer—2.5 mg via nebulizer, O_2 flow @ 8 L per min, normally takes 8-12 minutes to administer. May repeat as needed.
- Hyperkalemia (Intubated): 4 unit doses (10 mg) directly down CETT followed by hyperventilation.

Pediatrics:

- MDI—compliance with MDI difficult to achieve, nebulizer preferred.
- Nebulizer—Local respiratory experts have seen no reason to specify a different dosage for pediatrics.

DRUG: ALBUTEROL

RX

This document is for reference only. Please refer to SWO's for specific indications, dosages, and applications

DRUG: ALBUTEROL

Onset:

- 5-15 minutes after inhalation, usually with some prompt improvement

Duration:

- 3-4 hours

Side Effects:

Mostly sympathetic responses including:

- Palpitations, Tachycardia
- Anxiety, Nervousness
- Dizziness
- HA
- Tremor
- N/V

Less frequent, but more concerning:

- HTN
- Dysrhythmias
- Chest pain

Interactions:

- Antagonistic Effects—Beta blockers including propranolol & esmolol.
- Additive Effects—MAOI's, TCA's, other sympathomimetics

PEARLS:

- ***The first dose is administered in conjunction with atrovent. Second and subsequent nebulizers are with albuterol only.***
- ***The nebulizer system can be adapted to accommodate a mask if the patient is too fatigued or working too hard to hold the nebulizer. It can also be adapted to CETT administration. Both CETT & mask nebulizer treatments should have an O2 flow rate of 8-10 L/min.***
- ***The medication chamber should be kept upright to ensure efficient medication administration, patients have a tendency to tilt the chamber, recheck it often. "Tap" the container toward the end of the treatment to ensure complete administration.***
- ***Monitor for dramatic increase in heart rate, development of frequent ventricular ectopy, or development of serious CNS symptoms.***
- ***Albuterol can cause hyperglycemia and hypokalemia. Both of these effects occur from stimulation of beta$_2$-receptors, resulting in gluconeogenesis and intracellular movement of potassium. These effects occur most commonly with inhalation (via nebulization) of relatively large doses of albuterol (e.g., 5—10 mg).***

This document is for reference only. Please refer to SWO's for specific indications, dosages, and applications

RX

Drug Name: **Amiodarone**

Trade Name: **Cordarone, Pacerone**
REVISED: **NOVEMBER 01, 2019**

Class:

- Class III antidysrhythmic.

Mechanism of Action:

- Prolongs duration of the action potential.
- Prolongs effective refractory period.
- Non-competitively inhibits alpha & beta receptors and possesses vagolytic & calcium channel blocking properties.
- Negative dromotrope, chronotrope, & vasodilator.

Indications:

- Pulseless ventricular tachycardia (VT) and ventricular fibrillation (VF).
- Ventricular tachycardia (VT) with a pulse.

Contraindications:

- Pulmonary Congestion
- Cardiogenic Shock
- Amiodorone Sensitivity
- Bradycardia
- Procainamide use
- TCA Overdose

Precaution:

- Hypotension
- Heart failure
- Long QT syndrome

Dosage:

Adults:

Pulseless VT/VF:

- IV/IO : 300 mg IV/IO initial dose, consider repeat dose of 150 mg 3-5 minutes after initial dose.

Post ROSC: To be initiated if V-fib/V-Tach resolves after administration of Amiodarone

- **Loading dose:** A loading dose of 150 mg over 10 minutes may also be considered if max 300 mg bolus has not been administered.
- **Maintenance Infusion**: 1 mg/minute titrated for effect.

Wide Complex Tachycardia (with a pulse):

- **LOADING DOSE -** IV/IO:150 mg IV infusion over 10 minutes.
    - o May repeat **once** as needed. (max dose loading dose of 300 mg).

AMIODARONE

RX

This document is for reference only. Please refer to SWO's for specific indications, dosages, and applications

AMIODARONE

- Convert to maintenance infusion once complete.
- **MAINTENANCE INFUSION**: IV/IO: 1 mg/min
  - **To Mix**: 450 mg/250 cc, infuse via infusion pump.

Pediatrics:

Pulseless VT/VF:

- 5 mg/kg IV/IO. May repeat doses up to 15 mg/kg (max dose of 300 mg).

Wide Complex Tachycardia (with a pulse):

- 5 mg/kg IV/IO over 30 min. May repeat dose up twice (up to 15 mg/kg)
- Max total loading dose of 300 mg.

Side Effects:

- Hypotension
- Headache
- Dizziness
- Bradycardia
- AV nodal conduction abnormalities
- QT prolongation
- Flushing
- Salivation

Interactions:

- Potentiates bradycardia and hypotension with calcium channel blockers and beta blockers.
- Increases risk of AV nodal blockade with calcium channel blockers.
- May increase anticoagulation effects of Warfarin.
- May increase serum levels of Phenytion, Procainamide, Quinidine, and Theophylines.
- Should not be used with other medications which prolong the QT interval.
- Should not run through the same IV line in which Sodium Bicarb or Furosemide have been used.

Precautions:

- Rapid infusion may lead to hypotension.
- Terminal elimination is extremely long (half-life lasts up to 40 days).

PEARLS:

- Evidence for one particular antiarrhythmic over another is inconclusive.
- A maintenance infusion is not typically needed

REFERENCE ONLY

This document is for reference only. Please refer to SWO's for specific indications, dosages, and applications

RX

Drug Name: **Atropine Sulfate**
Trade Name: **Atropine**
REVISED: **June 01, 2019**
Class:

- Parasympatholytic
- Anticholinergic Agent

Mechanism of Action:

- Atropine is a competitive inhibitor of acetylcholine @ muscarinic receptor sites.
- The increase of sympathetic activity seen with atropine administration is due to the drug's parasympatholytic effects.
- In the setting of *symptomatic bradycardias*, atropine decreases vagal effects on the heart resulting in increased chronotropy & dromotropy (with little or no inotropic effects).
- It is used in *cholinergic exposures* as a direct antidote for the poison.

Indications:

- Symptomatic Bradycardias
- Pre-intubation in children > one month of age
- Poisoning with:
  Organophosphates *Nerve gas*
  Carbamates *Other cholinergic agents*
  Mushrooms

Contraindications:

- In the arrest setting, there are no contraindications

Non-arrest contraindications:

- Myasthenia gravis
- Closed-angle glaucoma
- Atrial fibrillation & flutter
- Known hypersensitivity
- Thyrotoxicosis
- Urinary tract obstruction

Precautions:

- Atropine may actually worsen 2nd degree Type II & 3rd degree AV blocks. *Many experts go as far as to indicate atropine is relatively contraindicated in this setting & transcutaneous pacing is preferred.*
- Cardiovascular disease including: CAD & CHF
- COPD
- HTN
- Renal/hepatic disease
- Geriatrics
- Pregnancy I
- Minimum Doses <0.5 mg in adults
  <0.1 mg in children

Smaller doses can cause a paradoxical bradycardia.

DRUG: ATROPINE SULFATE

RX

This document is for reference only. Please refer to SWO's for specific indications, dosages, and applications

DRUG: ATROPINE SULFATE

Dosage:

Adults:

- Symptomatic Bradycardia: **IV**: 0.5 mg to 1 mg every 3-5 minutes.
  Max dose: 0.04 mg/kg (full vagal blockade).
- Poisonings: **IV/IM/ETT/IO:** 1-2 mg as needed to decrease cholinergic symptoms.
  AUTOINJECTOR (MARK 1 KIT): 2 mg

Pediatrics:

- Symptomatic Bradycardias: **IV/IO:** 0.02 mg/kg repeated every 3-5 minutes as needed.
  Child: Minimum—0.1 mg Maximum—0.5 mg
  Adolescent: Minimum—0.1 mg Maximum—1 mg
  ETT: 2-3 times the IV dose diluted in 3-5 ml NS
- Poisonings: **IV/IM**: 0.05 mg/kg IV every 3-5 minutes as needed to decrease cholinergic symptoms.
- Pediatric Pre-Intubation: **IV/IO:** 0.02 mg/kg

Onset:

- Rapid

Duration:

- 2-6 hours

Side Effects:

- Anticholinergic Effects: Remember the mneumonic:
  DRY AS A BONE—Dry mucous membranes, urinary retention, constipation
  MAD AS A HATTER—Restlessness, tachycardia, palpitations, HA, dizziness
  RED AS A BEET—Flushed, hot, & dry skin
  BLIND AS A BAT—Pupillary dilation (mydriasis), blurred vision (cycloplegia), photophobia
- Tachydysrhythmias, Ventricular Tachycardia/Fibrillation
- Of course…N/V

Interactions:

- Anticholinergics increase vagal blockade.
- Potential adverse effects when administered with digitalis, cholinergics, neostigmine.
- Enhanced effects are possible with antihistamines, procainamide, quinidine, antipsychotics, antidepressants, benzodiazepines, phenothiazines.
- When administered too soon after NaHCO3 (i.e. Without allowing sufficient fluid to flush the line), a precipitate will form.

RX

DRUG: ATROPINE SULFATE

PEARLS:

- ***To recognize cholinergic poisonings remember the SLUDGE, DUMBELS, and Days of the week mnemonics.***
- ***Pushing a less than the minimum dose or pushing atropine too slowly may elicit a paradoxical bradycardia.***
- ***Remember most bradycardias in pediatrics are a result of hypoxia/hypoxemia rather than a primary cardiac problem. Ventilation is always preferred over pharmacological intervention.***
- ***Avoid being splashed in the eyes with atropine.***
- ***Be prepared, on physician order, to deliver massive amounts (10-40mg) in the setting of cholinergic poisoning.***

Mnemonics for nerve agent/organophosphate/Carbamate exposure

"S.L.U.D.G.E".
Salivation (excessive production of saliva)
Lacrimation (excessive tearing)
Urination (uncontrolled urine production)
Defecation (uncontrolled bowel movement)
Gastrointestinal distress (cramps)
Emesis (excessive vomiting)

"B.A.M."
Breathing Difficulty (wheezing)
Arrhythmias (Bradycardia, ventr. Arrhythmias, AV Blocks.)
Miosis (pinpoint pupils)

"Three C's" of CNS effects
Confusion
Convulsions
Coma

"D.U.M.B.E.L.S." (Muscarinic)
Diarrhea
Urination
Miosis
Bradycardia/Bronchospasm/Bronchorrhea
Emesis
Lacrimation
Salivation, Secretion, Sweating

Days of the Week (Nicotenic)
Mydriasis
Tachycardia
Weakness
Hypertension, Hyperglycemia
Fasciculations

RX

DRUG: ATROPINE SULFATE

(This Page Left Blank)

This document is for reference only. Please refer to SWO's for specific indications, dosages, and applications

RX

Drug Name: **Calcium Chloride**

Trade Name: **Calcium Chloride, Calcium, CaCl2**

REVISED: **November 1, 2017**

Class:

- Electrolyte replacement

Mechanism of Action:

- Increase the force of cardiac contractility, by initiating myofibril shortening
- In normally functioning hearts calcium will produce positive inotropic and vasoconstrictive effects and increase systemic arterial blood pressure
- In abnormally functioning hearts calcium will produce positive inotropic effects may increase or decrease systemic vascular resistance
- It also appears to increase ventricular automaticity

Indications:

- Hyperkalemia
- Hypermagnesemia (Antidote for respiratory depression due to $MgSO_4$ administration)
- Hypocalcemia (Ca Blocker Overdose)

Contraindications:

- Hypercalcemia
- Digitalis toxicity
- VF during resuscitation

Precautions:

- May induce digitalis toxicity in patients receiving digoxin
- Can cause tissue necrosis & sloughing
- Pregnancy (C)
- Respiratory disease
- Cor pulmonale
- Respiratory Failure

Dosage:

Adults:

- Hyperkalemia, Asystole/PEA with suspected hyperkalemia, and Calcium Channel BLOCKER Overdose--500-1000 mg slow IV push

Pediatrics:

- 20 mg/kg infused slowly over 10 minutes (no faster than 100 mg/min) Max--1 g / dose

Onset:

- 5-15 minutes

Duration:

- Dose dependent (effects may persist for 4 hrs. after IV administration)

DRUG: CALCIUM CHLORIDE

RX

This document is for reference only. Please refer to SWO's for specific indications, dosages, and applications

DRUG: CALCIUM CHLORIDE

Side Effects:

- Metallic taste
- Burning
- "Heat waves"
- Bradycardia (may cause asystole)
- Hypotension
- Cardiac arrhythmias
- Increased digitalis toxicity
- Extravasation with necrosis and sloughing
- Vasospasm in coronary and cerebral arteries.
- N/V

Interactions:

- Precipitates with sodium bicarbonate, epinephrine and potassium phosphate
- When given to a patient on Digoxin, can cause elevated Digoxin levels and possibly digitalis toxicity
- May antagonize the effects of Verapamil

PEARLS:

- ***Standard medical control and deviation guidelines apply unless otherwise stated.***
- ***To prevent tissue necrosis, make sure to administer the drug through an IV that is patent and flowing well.***
- ***Flush well between administration of calcium & sodium bicarb to avoid precipitate.***
- ***May sometimes be requested by medical control to be co-administered with Cardizem to offset hypotension in hypotensive patients.***

This document is for reference only. Please refer to SWO's for specific indications, dosages, and applications

RX

Drug Name: **Hydroxocobalamin 5 g**
Trade Name: **Cyanokit®**
REVISED: **November 1, 2017**

Class:

- Antidote (for known or suspected cyanide poisoning)

Mechanism of Action:

- Action of Cyanokit is the ability to bind cyanide ions
- Each hydroxocobalamin ion can bind one cyanide ion by substituting it for the hydroxo ligand linked to the trivalent cobalt ion
- Bind forms cyanocobalamin
- Cyanocobalamin is excreted in the urine

Indications:

- Known or suspected cyanide poisoning
  - Can be inhalation, ingestion or dermal exposure
- Can be used even if the presence or extent are not known
- Signs of cyanide ingestion include:
  - *Altered LOC, seizures, coma, cardiovascular collapse, vomiting, *mydriasis, tachypnea(early), bradypnea(late), hypertention(early), hypotention(late)
- Symptoms include:
  - Headache, *confusion, dyspnea, chest tightness, nausea

(**considered significant symptoms*)

Contraindications:

- None

Precautions:

- Known anaphylactic reactions to hydroxocobalamin or cyanocobalamin
  - Allergic reaction include: anaphylaxis, chest tightness, edema, urticarial, pruritus, dyspnea, rash
- Substantial increases in blood pressure may occur following Cyanokit administration
- Patients with renal insufficiency

Dosage and Administration:

Adults:

- Add 200 mL of 0.9% Sodium Chloride into the vial
  - Vial contains 5 g of medication
- Shake for at least 60 seconds to reconstitute
- **Infuse into patient over 15 minutes**
- One vial is a complete starting dose
  - Depending on the severity of the poisoning and patient response, a second dose over 15 minutes may be infused for a total dose of 10 g.

DRUG: Cyanokit®

REFERENCE ONLY

RX

This document is for reference only. Please refer to SWO's for specific indications, dosages, and applications

DRUG: Cyanokit®

Pediatrics:

- **No recommended dose**

Onset:

- Depends on severity of exposure

Side Effects:

Minor:

- Chromaturia(red colored urine)
- Erythema(red skin)
- Headache
- Nausea

Major:

- Hypertention

Interactions:

- Interacts with a number of medications and blood products
- Must use a separate intravenous line or flush existing line adequately

PEARLS:

- ***Pediatric doses have not been established in US***
- ***Non-US: doses at 70 mg/kg have been used to treat pediatrics***
- ***No adjustment of dose is required for Geriatric patients***

This document is for reference only. Please refer to SWO's for specific indications, dosages, and applications

RX

Drug Name: **Dextrose 50% in Water**
Trade Name: **Dextrose, D50, D50W, Glucose**
REVISED: **01MAY2018**

Class:

Monosaccharide, principal form of carbohydrate used in the body

Mechanism of Action:

Increases serum blood glucose levels

Indications:

- Hypoglycemia confirmed by glucometer
- Coma or seizure of unknown etiology
- Refractory cardiac arrest (controversial)

Contraindications:

- Intracranial hemorrhage
- Closed head injury

Precautions:

- Can precipitate severe neurologic impairment in alcoholic patients (Wernicke-Korsakoff's syndrome)
  - This is related to thiamine deficiency and thiamine should be given before D50 in these cases
- If smaller veins are used, local venous irritation may occur
- Infiltration may cause necrosis

Dosage:

Adults

- **IV/IO:** 12.5-25 g slow IV push or infusion

Pediatrics

- **Birth to 3 months:** (D10) 10ml/kg slow IV/IO push
- **> 3 months:** (D10) 10 ml/kg or (D25) 4 ml/kg slow IV/IO push
- *Refer to PEARLS for D10 quick-mix directions*

Onset:

- Can be a minute or less to see immediate improvement; usually 5-20 minutes to see complete resolution of signs and symptoms

Duration:

- Depends on the degree of hypoglycemia. Sometimes long acting insulin may cause a recurrence of hypoglycemia after the initial glucose is metabolized

Side Effects:

- Pain, warmth, burning upon administration
- Phlebitis, sclerosis, and thrombosis of vein can occur
- Rhabdomyositis
- Infiltration can cause necrosis & extravasation

Interactions:

- No significant interactions

PEARLS:

- *It is permissible to mix D50% to a D10% solution for adult patient's. This is particularly preferred with small and fragile veins.*
- *Symptomatic hypoglycemia nearly always means an altered mental status. Altered mental status often means a scene safety issue.* ***Make sure you are aware of your environment****, have the assistance you need, and leave if you become uncomfortable.*
- *Check a glucometer reading before administering D50 if at all possible. Repeat at least 10 minutes after.*

DRUG: DEXTROSE 50%

RX

This document is for reference only. Please refer to SWO's for specific indications, dosages, and applications

DRUG: DEXTROSE 50%

- *Use a reasonably large bore IV & and a reasonably large vein.*
- *Run fluid wide open while administering D50. Check venous patency often.*
- *Also, it is acceptable to revive a hypoglycemic patient without using the full dose. This is done based on the promptness of the patient response.*
- *If the patient refuses transport it is required to get them something substantive to eat, and that someone will be with them for a while after EMS departure.*
- *Commonly, there is an explanation for hypoglycemia if you look for it. Poor compliance, increased stress, decreased sleep, illness, change in insulin regiment, etc.*
- *If a patient becomes symptomatically hypoglycemic from oral hypoglycemics, they should generally be transported.*
- *The effects of long acting insulin are difficult to predict. Therefore, the effects of an intentional overdose on long acting insulin are prolonged and beyond the normal capability of the paramedic to treat and release.*
- *Also if a patient's family, friends, or relatives are present, they can be a good source of information about the patient's habits and their normal recovery from hypoglycemia.*
- *Follow the Diabetic Treat and Release protocol for diabetics who do not desire transport.*
- ***OPTIONAL* QUICK REFERENCE FOR MIXING D10 SOLUTION:**

  In a 250cc bag of NS: remove 50 cc of NS from a 250 cc bag, and replace with 50 cc (one ampule) of D50 (25 g of Dextrose)

  In a buretrol chamber with 100cc of NS: add 80 cc of NS to a buretrol chamber with 20 cc (10 g of Dextrose) of D50.

  Remember to mix your drug *prior* to attaching and flushing your drip set. There is approximately 20 cc of space in a drip line. Flushing your drip line first will affect the concentration of medication in the bag or buretrol chamber

This document is for reference only. Please refer to SWO's for specific indications, dosages, and applications

RX

Drug Name: **Diazepam**
Trade Name: **Valium, Diastat**
REVISED: **November 1, 2017**

DRUG: DIAZEPAM

Class:

Benzodiazepine (nonbarbiturate sedative-hypnotic agent)
Anticonvulsant
Skeletal Muscle Relaxant
Schedule IV Controlled Substance

Mechanism of Action:

Acts at the level of the limbic, thalamic, and hypothalamic regions of the CNS through potentiation of GABA (inhibitory neurotransmitter).

Decreases neural cell activity in all regions of CNS.

Anxiety is decreased by inhibiting cortical and limbic arousal.

Promotes relaxation through inhibition of spinal motor reflex pathway, also depresses muscle & motor nerve function directly.

As an anticonvulsant, augments presynaptic inhibitions of neurons, limiting the spread of electrical activity. However, they do not alter the electrical activity of the seizure's focus.

Indications:

- Major motor seizures
- Status Epilepticus
- Acute anxiety
- Skeletal muscle relaxant
- Management of alcohol withdrawal symptoms
- Vertigo

Contraindications:

- Shock
- Coma
- Respiratory Depression
- Hypersensitivity
- Closed Angle Glaucoma

Precautions:

- Reduced dose for Geriatrics (some sources advocate 50%)
- Use caution when administering to patients with:Hepatic dysfunction
- Current Substance Abuse (CNS depressants, including alcohol)
- Renal insufficiency
- History of drug addiction
- Parkinson's Disease
- Myasthenia gravis
- Pregnancy (D)

Dosage:

Adults: (No faster than 5 mg/min)

- Seizures: 2-10 mg slow IV (5-10mg rectally). **Max 20 mg**
- Behavioral Emergencies: 2-5 mg slow IV every 5-10 minutes repeated once in 20 minutes, **Max 20 mg**
- Sedation/Cardioversion/Pacing: 2-5 mg slow IV every 5-10 minutes **Max 10 mg**

RX

This document is for reference only. Please refer to SWO's for specific indications, dosages, and applications

DRUG: DIAZEPAM

Dosage:

Pediatrics:

- Seizures—0.2 mg/kg slow IV/IO (every 5 min.)
  0.5 mg/kg PR.
- **Max 10 mg**

Valium can be given IM, but absorption via this route is variable.

Onset:

IV—5 min

Duration:

IV—15-60 min

Side Effects:

Minor:

- CNS Depression
- Dizziness
- Drowsiness
- Lethargy
- Ataxia

Major:

- Respiratory Depression
- Apnea
- Hypotension
- Cardiac Arrest
- Valium Rage

Interactions:

Incompatible with all other drugs, NS flush should precede and follow administration.

Additive with other CNS depressants

PEARLS:

When administering diazepam rectally, REMOVE THE NEEDLE & LUBRICATE THE SYRINGE. The syringe must be inserted 3-5 cm, injected slowly (count slowly to three), removed slowly (count slowly to three), and the buttocks held together (again count slowly to three). Avoid injecting the medication into a stool mass.

Diazepam pushed rapidly will have more "dramatic" effects than pushed slowly.

When giving an IM injection of diazepam, use a large muscle mass (i.e. gluteal). Versed or Ativan are both more readily absorbed through the muscle mass, and may be considered a better choice in certain situations.

"Diastat" is a pre-filled tube of Diazepam specifically designed for rectal administration. It is pre-measured, and is often made available to parents by their family physician to administer to children with severe seizure disorders. Preliminary studies show it **MAY** have less incidence of respiratory depression, but all precautions still apply.

Physician Preference: While Versed is preferred in cases without IV access due to rapid absorption IM and IN, Diazepam is still acceptable as well. If unable to control seizures after max dose of any single benzodiazepine, call medical control to continue with another benzodiazepine.

This document is for reference only. Please refer to SWO's for specific indications, dosages, and applications

RX

Drug Name: **Diltiazem**

Trade Name: **Cardizem, Dilacor XR, Tiazac, Cartia XT,**

REVISED: **November 1, 2017**

DRUG: DILTIAZEM

Class:

- Calcium Channel Blocker
- Class IV antidysrhythmic

Mechanism of Action:

- Diltiazem inhibits the influx of extracellular calcium across both the myocardial and vascular smooth muscle cell membranes. Resulting in dilation of the coronary and systemic arteries; improved oxygen delivery to the myocardial tissue; and decreased total peripheral resistance, systemic blood pressure, and afterload.
- It is a negative dromotrope & creates refractoriness in the AV node. Its effects on calcium channels in SA and AV nodes, and peripheral vasculature are equipotent.

Indications:

- Atrial fibrillation & atrial flutter with a rapid ventricular response
- Multifocal atrial tachycardia
- PSVT

Contraindications:

- 2nd or 3rd degree AV block *(in the absence of a functioning pacemaker)*
- Sick Sinus Syndrome *(in the absence of a functioning pacemaker)*
- Cardiogenic shock
- Hypersensitivity
- Atrial fibrillation or atrial flutter associated with WPW or short PR syndrome (Lown-Ganong-Levine Syndrome)
- Ventricular tachycardia
- Wide-complex tachycardia of unknown origin
- AMI *(associated with CHF or left ventricular dysfunction)*
- Advanced aortic stenosis
- Hypotension (less than 90 mmHg)

Precautions:

- CHF
- Elderly
- Renal / Hepatic Impairment
- Pregnancy (C)

Dosage:

Adults:

RX

This document is for reference only. Please refer to SWO's for specific indications, dosages, and applications

DRUG: DILTIAZEM

Pediatrics:

- **DOSE**: IV: 10 mg slow over 2 minutes. Repeat every 10-15 minutes PRN rate control. **MAX 40 mg.**

- **(Medical Control Order)**
- **0.25 mg/kg IV over 2 minutes (Usual dose about 20 mg). May repeat in 15 minutes @ 0.35 mg/kg IV over 2 minutes**

Onset:

- 2-5 minutes

Duration:

- 1-3 hours

Side Effects:

- First or second degree AV block
- Bradycardia
- Ventricular dysrhythmias
- CHF, Edema
- Hypotension, Syncope
- Flushing
- Chest pain
- Dyspnea
- Sweating
- N/V
- Dizziness
- Nervousness
- Xerostomia
- HA

Interactions:

- May prolong the sedative effects of midazolam.
- May enhance the effects of ASA and prolong bleeding time.
- Additive effects with antihypertensives, alpha-blockers, & diuretics.
- Should not be used in combination with IV beta-blockers. The negative inotropic, chronotropic, & hypotensive effects can induce heart failure.
- Calcium salts can antagonize the hypotensive effects, but do not seem to have an effect on AV conduction.
- Incompatible with simultaneous furosemide injection.

PEARLS:

- As always, unstable tachycardias with serious signs or symptoms warrant cardioversion.
- Hypotension may result and warrants careful monitoring of vital signs.
- PVCs may be present on conversion of PSVT to sinus rhythm.
- Medical Control may order (occasionally, physician preference) a pretreatment of calcium chloride for hypotensive or borderline hypotensive patients.
- Infusions are often not required prehospital with abbreviated transport times. Bolus Diltiazem has (in some studies) been shown to maintain therapeutic levels for 24-48 hours.
- ***For reference only: AHA dosing for adults: 0.25 mg/kg IV over 2 minutes (Usual dose about 20 mg). May repeat in 10-15 minutes @ 0.35 mg/kg IV over 2 minutes.***

REFERENCE ONLY

This document is for reference only. Please refer to SWO's for specific indications, dosages, and applications

RX

Drug Name: **Diphenhydramine Hydrochloride**
Trade Name: **Benadryl**
REVISED: **November 1, 2017**

DRUG: DIPHENHYDRAMINE

Class:

Antihistamine
H1 Antagonist

Mechanism of Action:

- Blocks H1 receptors
  - ❖ H1—causes bronchoconstriction, contraction of gut
  - ❖ H2—causes peripheral vasodilation, secretion of gastric acid
    - o ERs use cimetidine (Tagamet) for H2 blockade
- H1 antagonists have anticholinergic properties in varying degrees
  - ❖ Probably accounts for antidyskinetic effects.
  - ❖ Also may be responsible for anti-emetic effects.

Indications:

- Anaphylaxis
- Allergic reactions
- Urticaria
- Sedation
- Motion Sickness / Vertigo
- Nausea and Vomiting
- Histamine release secondary to DXM Use.
- Extrapyramidal (Dystonic) reaction (pseudoparkinsonism--opisthotonos)

Contraindications:

Hypersensitivity
Acute asthma attack
Lower respiratory tract disease
Newborns & nursing mothers

Precautions:

HTN
Cardiac disease
Renal disease
Bronchial asthma
Seizures
Pregnancy category - C
Closed angle glaucoma (avoid if at all possible)

Dosage:

Adults:
25-50 mg IV or IM

Pediatrics:
1-2 mg/kg IV/IM/IO max dose 25 mg
PO: (If available) 25 mg (for mild cases)

Onset:

IM—30 min
IV—Immediate

Duration:
IM—4-7 hrs
IV—4-7 hrs

REFERENCE ONLY

RX

This document is for reference only. Please refer to SWO's for specific indications, dosages, and applications

DRUG: DIPHENHYDRAMINE

Side Effects:

- Drowsiness
- Dizziness
- Incoordination
- Confusion
- Dry mouth
- Drying of bronchial secretions
- Blurred vision
- Urinary retention
- Hypotension
- Tachycardia
- Bradycardia

Interactions:

Additive effects—other CNS depressants
MAOIs—prolong the anticholinergic effects

PEARLS:

Adjunctive therapy to epinephrine in anaphylaxis & severe allergic reactions. The Epinephrine causes immediate bronchodilation by activating B_2 receptors, while the diphenhydramine inhibits further histamine response.

Sometimes given with Phenergan, Inapsine, and Haldol as pre-treatment for dystonic effects, and for additional sedation.

This document is for reference only. Please refer to SWO's for specific indications, dosages, and applications

RX

Drug Name: **Dopamine Hydrochloride**
Trade Name: **Dopamine, Intropin**
REVISED: **NOVEMBER 01, 2019**
Class:

Adrenergic Dopaminergic Catecholamine Sympathomimetic

Mechanism of Action:

Naturally occurring catecholamine that is the chemical precursor of norepinephrine. Is generally dose dependent on its effects.

1-2 μg/kg/min--dopaminergic receptors--dilation of renal, mesenteric, and cerebral arteries

2-10 μg/kg/min--beta receptors--inotropic, chronotropic

10-20 μg/kg/min--alpha & beta--vasoconstriction of renal, mesenteric, and peripheral arteries and veins

>20 μg/kg/min--Mimics pure alpha effects similar, to norepinepherine like effects. It is occasionally used at this range in-hospital.

Indications:

- Cardiogenic Shock
- Cardiogenic Shock w/ Pulmonary Edema (CHF)
- Hypovolemic Shock / Hypotension (after fluid resuscitation)
- Neurogenic Shock
- Septic Shock

Contraindications:

Women on oxytocin
Tachydysrhythmias
VF/VT
Uncorrected hypovolemia
Patients with known pheochromocytoma

Precautions:

MAOIs,TCAs, other cardiac stimulants, vasopressors, will cause increased heart rate, and SV dysrhythmias

Will precipitate in basic, alkaline solutions

May cause necrosis, sloughing at infusion site

Pregnancy (C)

Dosage:

Adults:

2-20 μg/kg/min, occasionally up to 50 μg/kg/min, generally not exceeding 20 μg/kg/min without medical control guidance. Titrated to effect, run through a large vein.

Generally add two vials 200 mg to 250 ml NS, yielding 1600 μg/ml, although some alternative methods exist

Pediatrics:

2-20 μg/kg/min, with 10 μg/kg/min is a reasonable starting dose, titrated to effect, generally not exceeding 20 μg/kg/min.
Add 6 mg x weight in kg diluted to 100 ml, to create drip.
1gtt/min (ml/hr) equals 1 μg/kg/min.

Onset:

2-4 min.

DRUG: DOPAMINE

REFERENCE ONLY

RX

This document is for reference only. Please refer to SWO's for specific indications, dosages, and applications

DRUG: DOPAMINE

Duration:

10-15 min

Side Effects:

Dysrhythmias	Flushing
HTN, Headache	Angina, AMI
Nausea & Vomiting	Pain
Dizziness	Ectopy
Tremors	Bradycardia

Tachycardia, Including ventricular fibrillation, ventricular tachycardia

Interactions:

Potentiating effects--TCAs, MAOIs, bretylium
Precipitates in Alkaline Solutions
Dopamine may cause hypotension when used concomitantly with phenytoin (Dilantin)

PEARLS:

- **Dopamine infusions should be administered by infusion pump only.**
- **Preferred Concentration:** 400mg/250 ml or 800/500 ml for a 1600 mcg/1 ml concentration.
  - May also be available in 80 mg/250 ml for a 3200 mcg/1 ml concentration**. Confirm concentration prior to administration.**
- Can cause tissue necrosis and sloughing. Take care to avoid infiltration, use central intravenous access or the large veins of the arm
- Titrate dosage to patient's hemodynamic response

This document is for reference only. Please refer to SWO's for specific indications, dosages, and applications

RX

Drug Name: **Droperidol**

Trade Name: **Inapsine, Droleptan**

REVISED: **November 1, 2021**

Class:

- Neuroleptic (tranquilizer)
- Anti-Emetic
- Anti-Psychotic (Butyrophenone Class)

Mechanism of Action:

- Dopamine receptor blockade in brain, predominantly dopamine-2 receptors
- Anti-serotonergic

Indications:

- Nausea/Vomiting

Contraindications:

- Prior sensitivity or adverse reaction
- Hypotension (uncorrected)
- Long/Prolonged QT syndrome
- Significant CNS depression
- Parkinson's
- Prior EPS

Precautions:

- Use of CNS depressants
- Bradycardia
- Pediatrics
- Renal Failure
- Drugs that prolong QT interval
- Use of other Butyrophenone Class medications (i.e. Haldol)

Dosage:

Adults:

Nausea/Vomiting

- **IV/IO:** IV/IO: 0.625 mg – 1.25 mg, repeat every 5-10 minutes PRN, max total dose 5 mg
- **IM:** 2.5 mg, repeat once in 5-10 minutes PRN, max total dose 5 mg

Pediatrics: Not currently approved for pediatrics in ACCESS SWOs

Onset:

- IV/IO: 1-2 min
- IM/SQ: 3-10 Minutes, Peak in 20-30 minutes

Duration:

- IV/IM/SQ: 5-10 min

Side Effects:

- CNS depression
- Extrapyramidal Symptoms (EPS)

REFERENCE ONLY

DRUG: Droperidol

RX

This document is for reference only. Please refer to SWO's for specific indications, dosages, and applications

DRUG: Droperidol

- May prolong QT at very high doses

Interactions:

- May potentiate CNS depression, particularly with alcohol and benzodiazepines
- May prolong QT interval when administered in very high doses or other medications that also prolong QT interval (i.e. Amiodarone, TCAs)

PEARLS:

- **Overall Drug Class:** Droperidol (Inapsine) is a first-generation antipsychotic in the butyrophenone class, similar to haloperidol. Therefore, it has many of the risks (sedation, EPS, etc.) that Haldol does.
- **QT Prolongation:** The risk of QT prolongation is minimal at low doses typically used by EMS; however, the astute provider should be cautious when administered in a patient who is already at risk for QT prolongation due to other medications or pathology. Droperidol should be deferred in patients who have a history or who have a prolonged QT.
- **Pediatrics**: While Droperidol has been used in older pediatrics (> 8 years of age) it is not currently approved in the ACCESS protocols due to the risk of significant sedation.
- **Hypotension:** Mild to moderate hypotension and occasionally (reflex) tachycardia has been observed following the administration of Droperidol. This reaction usually subsides spontaneously. However, should hypotension persist, the possibility of hypovolemia should be considered, and appropriate fluid replacement administered.
- **Elderly:** Observational studies suggest that elderly patients with dementia-related psychosis treated with antipsychotic drugs are at an increased risk of death. Risk factors that may predispose this patient population to increased risk of death when treated with antipsychotics include
    - age > 80 years,
    - sedation,
    - concomitant use of benzodiazepines,
    - concomitant of CNS depressants (i.e., Alcohol, etc.)
    - presence of pulmonary conditions (e.g., pneumonia, with or without aspiration).

This document is for reference only. Please refer to SWO's for specific indications, dosages, and applications

RX

Drug Name: **Epinephrine**

Trade Name: **Adrenalin, Epi**

REVISED: **November 1, 2021**

Class:

- Adrenergic Catecholamine
- Sympathomimetic

Mechanism of Action:

- β1—increases contractility (positive inotrope), AV conduction (positive dromotrope), and automaticity
- β2--bronchodilation, skeletal muscle vasodilation
- α--peripheral vasoconstriction, fight or flight response
- Small doses, beta effects dominate--vasodilation
- Large doses, alpha effects dominate--vasoconstriction, increases systemic vascular resistance and blood pressure

Indications:

- Hypersensitivity reactions (anaphylaxis)
- Acute bronchospasm associated with asthma or COPD (refractory to first-line agents)
- Asystole, VF, pulseless VT, PEA
- Croup & epiglottitis

Contraindications:

- None in cardiac arrest or severe anaphylaxis
- Hypersensitivity

Precautions:

- HTN
- Ischemic heart disease
- Cerebrovascular insufficiency
- Pulmonary edema
- Pregnancy (C)
- Geriatrics
- Protect from light
- Deactivated/precipitates with alkaline solutions (NaHCO3)
- Increases myocardial oxygen demand

Onset:

- IV/IO: 1-2 min
- IM/SQ: 5-10 min

Duration:

- IV/IM/SQ: 5-10 min

Side Effects:

- Anxiety
- Tachycardia
- HTN
- Angina
- Arrhythmias
- V-Fib
- N/V
- Fear
- Headache
- Pallor
- Dizziness
- Tremors

Interactions:

- Potentiated by MAOIs and TCAs
- Antagonized by beta blockers
- Precipitates in alkaline solutions

DRUG: EPINEPHRINE

RX

This document is for reference only. Please refer to SWO's for specific indications, dosages, and applications

DRUG: EPINEPHRINE

Dosage:

Adults:

Pulseless Rhythms

- **IV/IO:** 1 mg (1:10,000) every 3-5 minutes

Anaphylaxis

- **IM/SQ:** 0.3 mg (1:1,000), repeat once at 10 minutes if s/s do not improve
- **IV Infusion:** IV/IO: 0.05-1 mcg/kg/min titrate for effect
  - **For persistent hypotension and/or severe refractory Cases**
  - **To Mix**: 1 mg epinephrine in 250 cc NS bag
- **Neb:** *For laryngeal edema only*, 3 mg epinephrine 1:1,000 (3 ml) mixed with 3 ml NS for 6ml solution total

Acute bronchospasm associated with asthma or COPD (refractory to first-line agents)

- **IM/SQ:** 0.3-0.5 mg (1:1,000)

Persistent/Refractory Hypotension

- **IV Infusion:** IV/IO: 0.05-1 mcg/kg/min, titrate for effect
- **To Mix**: 1 mg epinephrine in 250 cc NS bag

Symptomatic Ca Channel Blocker/Beta Blocker OD refractory to other interventions

- **IV Infusion: IV/IO: 0.05-1 mcg/kg/min titrate for effect**
- **To Mix**: 1 mg epinephrine in 250 cc NS bag

Pediatrics:

Pulseless Rhythms:

- **IV/IO:** 0.01 mg/kg (1:10,000) every 3-5 minutes
- **NEONATES**: 0.01-0.03 mg/kg (1:10,000) IV/IO every 3-5 minutes

Anaphylaxis

- **IM/SQ:** 0.15 mg IM
- **Neb:** *For laryngeal edema only,* 3 mg epinephrine 1:1,000 (3 ml) mixed with 3 ml NS for 6ml solution total

Persistent/Refractory Hypotension

- **IV Infusion:** 0.05-1 mcg/kg/min, titrate for effect
- **To Mix**: 1 mg epinephrine in 250 cc NS bag

Croup & Epiglottitis:

- **Neb:** *For laryngeal edema only,* 3 mg epinephrine 1:1,000 (3 ml) mixed with 3 ml NS for 6ml solution total

RX

Refractory Bronchospasm (Severe):

- **IM/SQ:** 0.01 mg/kg (1:1000, 0.1 ml/kg)

Airway Management:

"Push Dose" Epinephrine: Epinephrine 1:100,000 to treat peri-airway management hypotension, and as a bridge to vasopressor infusions in peri-airway management.

- **IV/IO:** Initial dose of 20 mcg (2 ml) followed by 5 mcg (0.5 ml) repeated 2-3 minute as needed for hypotension and/or bridge to infusion (if appropriate).
- **To Mix:** 1 ml (0.1 mg) of 1:10,000 Epinephrine ("Cardiac Arrest Epi") in a 9 ml NaCL Flush for a 10 mcg/cc concentration. **LABEL SYRINGE.**

PEARLS:

CAUTION: All patients receiving inhaled beta agonists and/or anticholinergic medications should be observed for a least one hour following treatment for return of symptoms.

ALS evaluation is indicated if Epi administered either PTA or by EMS, and transport strongly encouraged. Refusals require medical control contact.

- I.M. Epi is be more effective than SQ Epi in shock situations, such as anaphylaxis.
- Sodium bicarbonate or Furosemide will inactivate epinephrine, flush line well between administration.
- Use an IV Infusion pump when administering Epi Infusions.

DRUG: EPINEPHRINE

RX

This document is for reference only. Please refer to SWO's for specific indications, dosages, and applications

THIS PAGE IS BLANK\

DRUG: EPINEPHRINE

This document is for reference only. Please refer to SWO's for specific indications, dosages, and applications

RX

Drug Name: **Etomidate**
Trade Name: **Amidate**
REVISED: **December 1, 2022**
Date
Class:

- Anesthetic
- Non-narcotic sedative hypnotic

Mechanism of Action:

- Etomidate appears to facilitate GABA-minergic neurotransmission by increasing the number of available GABA receptors, possibly by displacing endogenous inhibitors of GABA binding *(Remembering that GABA is an inhibitory neurotransmitter)*
- Etomidate is short acting and its effects are at least partially due to depression of the reticular activating system
- Induces sedation & amnesia
- It has minimal cardiac & respiratory depressive effects and causes no histamine release

Indications:

- Induction agent for intubation

Contraindications:

- Hypersensitivity
- Labor / Imminent Delivery
- Induction agent for intubation in patients with septic shock

Precautions:

- Elderly
- Hepatic/Renal disease
- Pregnancy (C)
- Safety not established under the age of 10

Available Forms

- 2 mg/ml vials

Dosage:

Intubation:
Adults/Peds:

- **IV/IO: 0.2 – 0.4 mg/kg slow IV over 30-60 seconds**
- **Repeat ONCE as needed.**
- **HOLD for patients < 2 years of age.**

Onset:

- 30 seconds

Duration:

- 3-5 minutes

Side Effects:

- N/V (especially with rapid administration)
- Dyspnea *(mostly relieved with airway positioning)*
- Dysrhythmias
- Hypotension or Hypertension
- Temporary involuntary muscle movements

DRUG: ETOMIDATE

REFERENCE ONLY

RX

This document is for reference only. Please refer to SWO's for specific indications, dosages, and applications

DRUG: ETOMIDATE

Interactions:

- Potentiates with other CNS depressants.
- Concurrent use of antihypertensives agents may cause hypotension

PEARLS:

- ***Pregnancy Class C:*** Pregnancy Category C. Etomidate has been shown to have an embryocidal effect in rats when given in doses 1 and 4 times the human dose. There are no adequate and well-controlled studies in pregnant women. Etomidate should be used during pregnancy only if the potential benefit justifies the potential risks to the fetus (Source: FDA)
- ***Pediatrics***: Etomidate is not currently recommended for pediatrics under the age of 2
- ***Sepsis/Shock:*** Can suppress adrenal hormone synthesis.
- As with other sedative hypnotics, carefully monitor airway, breathing, & circulation when administering etomidate (i.e. SpO2, EKG, blood pressure). Be prepared to manage the airway aggressively
- Should be given through a large, proximal vein to avoid pain at the injection site

This document is for reference only. Please refer to SWO's for specific indications, dosages, and applications

RX

Drug Name: **Famotidine**
Trade Name: **Pepcid**
REVISED: **November 1, 2017**

Class:

Antihistamine
H2 Antagonist

Mechanism of Action:

- Metabolized minimally in the liver, Excreted primarily via the Renal system. Renal in insufficiency may impair clearance.
- Selective inhibition of H2 receptors without significant inhibition of H1 receptors.
  - ❖ H1—causes bronchoconstriction, contraction of gut
  - ❖ H2—causes peripheral vasodilation, secretion of gastric acid

Indications:

- Anaphylaxis
- Allergic reactions
- Urticaria

Contraindications:

- Hypersensitivity
- Acute asthma attack
- Lower respiratory tract disease/Pneumonia
- Newborns & nursing mothers

Precautions:

- Concurrent use of other H2 inhibitors
- HTN
- Cardiac disease
- Renal disease (prolonged clearance)
- Bronchial asthma
- Seizures
- Pregnancy category - C
- Closed angle glaucoma (avoid if at all possible)

Dosage:

Adults:

20 mg Slow IV/IO Every 12 hours.
May dilute to 100 or 250 cc and administer over 15 minutes.
PO: (If available) 20-40 mg (for mild cases)

Pediatrics:

0.5 mg/kg Slow IV/IO to MAX of 20 mg every 12 hours
May dilute to 100 or 250 cc and administer over 15 minutes.
PO: (If available) 20 mg (for mild cases)

Onset:

IV— 5-10 minutes to reach peak effect.
PO – 1-3 hours to reach peak effect

Duration:

IV—8-10 hours

DRUG: Famotidine

RX

This document is for reference only. Please refer to SWO's for specific indications, dosages, and applications

DRUG: Famotidine

Side Effects:

The following adverse reactions have been reported to occur in more than 1% of patients on therapy with famotidine, and may be causally related to the drug: headache (4.7%), dizziness (1.3%), constipation (1.2%) and diarrhea (1.7%). Other side effects listed occur with less frequency.

- Blistering, peeling, or loosening of the skin
- blood in the urine or stools
- chest pain
- cough or hoarseness
- diarrhea
- fever and/or chills
- general feeling of tiredness or weakness
- itching
- joint or muscle pain
- lower back or side pain
- painful or difficult urination
- pale skin
- pinpoint red spots on the skin
- red, irritated eyes
- shortness of breath
- sore throat, sores, ulcers, or white spots on the lips or in the mouth
- swollen glands
- unusual bleeding or bruising

Interactions:

MAOIs—prolong the anticholinergic effects
Zanaflex (Tizabidine) - May precipitate symptomatic hypotension. Zanaflex is a muscle relaxer.

PEARLS:

- ***Famitodine, once removed from a cool temperature controlled environment (i.e. refrigeration) should be discarded after 3 months (90 days).***
- ***Unlike other histamine antagonists, Famotidine is <u>NOT</u> to be administered Intramuscular injection (IM).***
- ***When time and stability allow, a provider may dilute Famitodine in 250 cc NS or 100 cc NS and administer over 15 minutes. Otherwise, IV push administration is permissible (slowly over 1 – 2 minutes).***
- ***Famotodine is an adjunctive therapy to Benadryl (with or without epinephrine) in anaphylaxis & severe allergic reactions. It is not a stand-alone intervention.***
- **While the pathology of anaphylaxis is still being understood, some patients will experience prolonged or even multi-phasic reactions. The combination of an H1 and an H2 blocker has been shown in clinical trials to reduce the severity as well as the reoccurrence of anaphylactic symptoms over a significant period.**
- **A common misconception is that the majority of symptoms in anaphylaxis are the result of H1 receptors. In reality, both H1 and H2 receptors are equally important. *H2 blockers combined with H1 blockers have additive benefit over H1 blockers alone in treating anaphylaxis in general. H2 receptors are useful in treating vasodilation, possibly some cardiac effects, and glandular hypersecretion.***

This document is for reference only. Please refer to SWO's for specific indications, dosages, and applications

RX

Drug Name: **Fentanyl Citrate**
Trade Name: **Sublimaze, Atiq (Lollypop form for Peds)**
REVISED: **November 1, 2017**

Class:

- Synthetic Opiate, Narcotic Analgesic
- Opiate
- Schedule II Controlled Substance

Mechanism of Action:

Fentanyl is a powerful synthetic opiate with mechanism of action similar to Morphine. It is considered both faster acting and of shorter duration than Morphine. Interacts with opiate receptors decreasing pain impulse transmission at the spinal cord level and higher in the CNS. Fentanyl is a potent μ-opiate receptor agonist. Also causes peripheral vasodilatation increasing venous capacitance and decreases venous return (chemical phlebotomy) by depressing the responsiveness of alpha-adrenergic receptors. Since it decreases both preload and afterload it may decrease myocardial oxygen demand.
Fentanyl is metabolized in the liver, excreted by the kidneys, and stored in body fat.

Indications:

- Moderate to Severe Pain
- Adjunct for Intubation

Contraindications:

- Hypovolemia
- Hypotension (except as an adjunct in RSI)
- Hypersensitivity
- Head injury
- Myasthenia Gravis (causes severe muscle rigidity/)
- Patients who have taken MAOI (Anti-depressants such as Nardil and Parnate) within 14 days. MAOIs may cause paradoxical excitation, and in some cases seizures, hyperthermia, hypertension, and death.

Precautions:

- Respiratory depression
- Severe heart disease
- Geriatrics
- Pregnancy (C) *(increases to D if used for prolonged periods or high doses close to term)*
- May worsen bradycardia or heart block in inferior MI *(vagotonic effect)*
- Liver Failure/Kidney failure (may prolonged duration)

Dosage:

Adults:

- IV/IO/IMIN: 1 mcg/kg initial dose (max initial dose 100 mcg)
- Give slowly over 2 min (with the exception of the IN route)
- May repeat every 10 min PRN. Max total dose 200 mcg.

Pediatrics (Greater than 2 years of age):

- IV/IO/IM/IN: 1-2 mcg/kg initial dose (Max initial dose 75 mcg)
- Give slowly over 2 min (exception with IN route)
- May repeat every 10 min PRN Max dose 150 mcg.

DRUG: FENTANYL

RX

This document is for reference only. Please refer to SWO's for specific indications, dosages, and applications

DRUG: FENTANYL

Onset:

- IV, IN, IO: 1-3 minutes
- IM:10-20 minutes

Duration:

- 1-2 hours (typical, see precautions)
- Peak effects in 30 minutes

Side Effects:

- Dizziness
- Altered L. O. C.
- Hallucinations
- Euphoria
- Mental impairment
- Hypotension
- Seizures (rare)
- Lightheadedness
- Bradycardia, Tachycardia
- N/V
- CNS Depression
- Respiratory Depression
- Muscle Rigidity

Interactions:

- CNS depressants may enhance effects (antihistamines, antiemetics, sedatives, hypnotics, barbiturates, and alcohol.
- No not mix in line with heparin

PEARLS

- **Fentanyl MUST be given slowly, as chest wall muscle rigidity, seizures, and hypotension have been associated with rapid administration.**
- Fentanyl is significantly more potent than Morphine (approx. 50-100 times as potent, mg to mg). At clinically equivalent doses, Fentanyl is similar in effectiveness to morphine, with a quicker onset and shorter duration.
- Compared to other opiates (e.g. Demerol or Morphine), it has less profound adverse effects, minimal histamine release, and does not adversely affect the seizure threshold.
- Apnea and significant respiratory depression have been noted with doses > 5 mcg/kg.
- Any opiate analgesics can cause spasm of the sphincter of Oddi and the renal tract. Fentanyl is not believed to have any more adverse effect on this than Morphine.
- Narcotic analgesia used to be considered contraindicated in the prehospital setting for abdominal pain of unknown etiology. It was thought that analgesia would hinder the ER physician or surgeon's evaluation of abdominal pain. It is now becoming widely recognized that severe pain actually confounds physical assessment of the abdomen and that narcotic analgesia rarely diminishes all of the pain related to the abdominal pathology. It would seem to be both prudent & humane to "take the edge off of the pain" in this situation, with the goal of reducing, not necessarily eliminating the discomfort. Additionally, in the practice of modern medicine the exact diagnosis of the etiology of abdominal pain is rarely made on physical examination alone, but also includes laboratory tests, x-ray, ultrasound, and CT scan, essential in the diagnosis of abdominal pain. **Therefore medication of abdominal pain is both humane and appropriate medical care.**

This document is for reference only. Please refer to SWO's for specific indications, dosages, and applications

RX

Drug Name: **Glucagon**
Trade Name: **Glucagon**
REVISED: **June 01, 2019**

Class:

Pancreatic Hormone *(α_2 cells in pancreas)*

Mechanism of Action:

Increases blood glucose by stimulating glycogenolysis
Inhibits conversion of glucose to glycogen
Stimulates gluconeogenesis *(metabolism of glucose in the liver)*
Relaxes smooth muscle of the GI tract *(mechanism unknown)*
Positive inotrope & chronotrope *(mechanism unknown)*

Indications:

Hypoglycemia
β-Blocker or Calcium Channel Blocker Toxicity *(not listed in protocols)*

Contraindications:

Known hypersensitivity
Known Insulinoma *(can precipitate hypoglycemia secondary to insulin relsease)*
Known Pheochromocytoma *(can precipitate substantial hypertension secondary to catecholamine release)*

Precautions:

Cardiac Disease / CAD
Geriatrics
Malnutrition
Alcoholism
Hepatic disease
Renal Insufficiency
Pregnancy (B)

Dosage:

Adults:

Hypoglcemia:
1 mg IM
If ineffective may re-administer in 5-20 minutes.

β-Blocker or Calcium Channel Blocker Overdose as ordered by medical control
1-2 mg IV/IM, repeated every 5 minutes PRN. Do not use diluent (e.g. propylene glycol) supplied with single use kits. Use saline Instead.

Pediatrics:

Hypoglcemia
0.02 mg/kg IV/IM/SQ up to 1 mg

β-Blocker or Calcium Channel Blocker Overdose as ordered by medical control
0.02 mg IV/IM/IO, up to 1 mg repeated every 5 minutes PRN. Do not use diluent (e.g. propylene glycol) supplied with single use kits. Use saline Instead.

Onset:

IV—5-20 min
IM—30 min
SubQ—30-45

Duration:

1-2 hours

DRUG: GLUCAGON

REFERENCE ONLY

RX

This document is for reference only. Please refer to SWO's for specific indications, dosages, and applications

DRUG: GLUCAGON

Side Effects:

N/V
Angina (rare)
Urticaria (rare)
Dizziness (rare)

Interactions:

Beta blockers may interfere with glucagon's actions

PEARLS:

Glucagon only works when there are normal liver stores of glycogen. Will not work in patients with chronic hypoglycemia, malnutrion, starvation. May not work in chronic alcoholism for similar reasons including hepatic disease.

First line treatment is always glucose. Use it as a last resort in insulin-dependent diabetics. They already have depleted stores of glycogen. Glucagon will deplete glycogen stores further and it takes some time for the stores to regenerate.

Treatment of a beta-blocker or calcium channel overdose with glucagon will require a call-in.

This document is for reference only. Please refer to SWO's for specific indications, dosages, and applications

RX

Drug Name: **Haloperidol**
Trade Name: **Haldol**
REVISED: **November 1, 2017**
Class:

High-potency antipsychotic
Major tranquilizer

Mechanism of Action:

Blocks postsynaptic dopamine receptors (D_2) in the mesolimbic system (associated with mood & behavior).
The decrease in dopamine neurotransmission has been found to correlate with the antipsychotic effects.
Haloperidol possesses extremely weak anticholinergic and alpha-adrenergic receptor blocking effects.

Indications:

- Acute Psychosis (Consideration for patient & rescuer safety)

Contraindications:

Coma
Severe toxic CNS depression
Parkinson's disease *(dopamine blockade can dramatically worsen the condition)*

Precautions:

- Severe cardiovascular disorders *(EKG monitoring is recommended in these patients)*
- Pregnancy (C)
- Seizure disorder *(slight lowering of seizure threshold)*
- Elderly patients may require reduce dosage

Available Forms:

- 5 mg/ml (5 mg) in 1.0 ml ampules

Dosage:

Adults:

- 5-10 mg IV or IM maximum dosage 20 mg (reduce dosage to 0.5 to 2 mg in geriatrics)

Pediatrics:

- 0.5 mg IM ***(Not covered in ACCESS SWO's)***
- One reference suggested in children 6-12 years of age: 1-3 mg IV or IM ***(Not covered in ACCESS SWO's)***

Onset:

IM—10-20 minutes (one reference suggests 30-60 minutes)
IV—Data not available since it is not an FDA approved use

Duration:

- 12-24 hours

Side Effects:

Extrapyramidal reactions
Neuroleptic malignant syndrome *(hyperthermia, severe extrapyramidal dysfunction, alterations in consciousness, altered mental status, and autonomic instability)*
Orthostatic hypotension
Insomnia, restlessness
Sedation
Seizures
Respiratory depression

DRUG: HALOPERIDOL

REFERENCE ONLY

RX

This document is for reference only. Please refer to SWO's for specific indications, dosages, and applications

DRUG: HALOPERIDOL

Side Effects: ***Continued***

Anticholinergic effects
Tachycardia

Interactions:

Additive effects—may induce hypotension in patients taking antihypertensives
May decrease the activity of warfarin
Patients taking lithium may develop encephalopathic syndrome

PEARLS:

IM dosage may take 10-20 minutes (or longer) to take effect. Make sure you have plenty of help on scene.

Use of Haldol with patients under the active influence of hyperdynamics is relatively contraindicated due to these drugs effects on seizure threshold, heat production and general side effects that may complicate care.

This document is for reference only. Please refer to SWO's for specific indications, dosages, and applications

RX

DRUG NAME: **Hydromorphone**
TRADE NAME: **Dilaudid**
REVISED: **November 1, 2017**

NOTE: *Due to the shortage of Fentanyl Citrate in the EMS System of Ada County, the Medical Directorate has decided to utilize the trade name "Dilaudid" as an alternate narcotic pain medication; until "Fentanyl Citrate" becomes readily available*.

Class:
- Narcotic Analgesic
- Opiate
- Schedule II Controlled Substance

Mechanism of Action: Mu Opoid Receptors

Interacts with opiate receptors decreasing pain impulse transmission at the spinal cord level and higher in the CNS. Dilaudid is a potent μ- opiate receptor agonist. Also causes peripheral vasodilation increasing venous capacitance and decreases venous return (chemical phlebotomy) by depressing the responsiveness of alpha-adrenergic receptors.

Indications
- Moderate to severe pain in place of Fentanyl Citrate
- When morphine is contraindicated

Contraindications:
- Hypovolemia
- Hypotension
- Hypersensitivity
- Head injury with altered mental status
- Patients with status asthmaticus

Precautions:

USE EXTREME CAUTION IF THE PATIENT HAS TAKEN ANY BENZODIAZEPINES DUE TO RISK OF OVERSEDATION. THEREFORE ADMINISTRATION OF ADDITIONAL BENZODIAZEPINES SHOULD BE AVOIDED.

- **Approximately 7 times more potent that morphine sulfate and half-life of 4-6 hours**
- **Not to be used in pediatrics**
- **Care must be taken to monitor for respiratory depression**
- **Use extreme care in geriatrics, pregnancy, hepatic or renal failure situations, patient with unstable or ongoing cardiac associated chest pain.**
- **Use cautiously in patients with renal impairment**
- **Continuous pulse oximetry is necessary with administration**

Dosage:

Adult: IV/IM: 0.5 mg, slow IV push over 2-3 minutes, Q 10 minutes PRN for pain to a maximum of 2 mg *(Limit dosage to 2 mg in severe pain)*

Dilaudid is prepared as a concentrated solution and needs to be diluted in 9 ml of normal saline to ensure accurate dosing

Pediatric: Not Indicated

Onset: Approximately 10 to 15 minutes with peak effect in 30 minutes to 1 hour.

Hydromorphone (Dilaudid)

REFERENCE ONLY

RX

This document is for reference only. Please refer to SWO's for specific indications, dosages, and applications

Hydromorphone (Dilaudid)

Duration:

- **Half-life is 2.3 hours in a typical patient**
- **Half-life may be up to 4-6 hours and 40 hours in patients with renal impairment**

Side Effects:

- Dizziness
- Drowsiness
- Altered LOC
- Hallucinations
- Euphoria
- Mental Impairment
- Lightheadedness
- Bradycardia
- Tachycardia
- Hypotension
- N/V
- CNS Depression
- Respiratory Depression
- Transient Hyperglycemia

Interactions:

CNS depressants may enhance effects of antihistamines, antiemetics, sedatives, hypnotics, barbiturates, and alcohol.

This document is for reference only. Please refer to SWO's for specific indications, dosages, and applications

RX

Drug Name: **Ipratropium Bromide**
Trade Name: **Atrovent**
REVISED: **June 15, 2021**

DRUG: IPRATROPIUM BROMIDE

Class:

- Anticholinergic

Mechanism of Action:

- Ipratropium antagonizes the action of acetylcholine by blocking muscarinic cholinergic receptors resulting in bronchodilation & drying of respiratory tract secretions.

Indications:

- Bronchial Asthma
- Bronchospasm in acute exacerbation of COPD (chronic bronchitis, emphysema)
- Bronchospasm in:
  Anaphylaxis
  Burns
  Toxic Inhalations
- *Bronchospasm associated with cardiac asthma*

Contraindications:

- Known hypersensitivity to atropine, atropine derivatives, or bromide.

Precautions:

- All patients receiving inhaled beta agonists and/or anticholinergic medications should be observed for a least one-hour following treatment for return of symptoms.
- Use with caution when administering it to:
  - Elderly patients
  - Individuals with cardiovascular disease or hypertension
- Pregnancy (B)

Dosage:

Adults:

- Nebulizer—0.5 mg via nebulizer, O_2 flow @ 8 L per min, normally takes 8-12 minutes to administer. Do not repeat. Subsequent nebulizers are with albuterol only.

Pediatrics:

- Identical dosage.

Onset:

- 5-15 minutes

Duration:

- 4-6 hours

RX

This document is for reference only. Please refer to SWO's for specific indications, dosages, and applications

DRUG: IPRATROPIUM BROMIDE

Side Effects:

- Palpitations
- Cough, Dry Mouth
- Blurred Vision
- Anxiety, Nervousness
- Dizziness
- HA
- Rash
- N/V

Interactions:

- Few in the prehospital setting.

PEARLS:

- The nebulizer system can be adapted to accommodate a mask if the patient is too fatigued or working too hard to hold the nebulizer. It can also be adapted to CETT administration. Both CETT & mask nebulizer treatments should have an O2 flow rate of 8-10L/min.
- The medication chamber should be kept upright to ensure efficient medication administration, patients have a tendency to tilt the chamber, recheck it often. "Tap" the container toward the end of the treatment to ensure complete administration.
- All patients receiving nebulizer beta agonists and/or anticholinergics should be observed for at least one hour after treatment.
- Patients, when appropriate, should have a cardiac monitor and have venous access established along with bronchodilator treatment
- Monitor for dramatic increase in heart rate, development of frequent ventricular ectopy, or development of serious CNS symptoms.
- Atrovent has some immediate effects, but peak effects are delayed. Therefore, atrovent is more appropriate for maintenance treatment than for acute bronchospasm. Thus, administration of atrovent alone is not useful in our setting. In combination with albuterol, atrovent promotes more effective, maintainable bronchodilation than albuterol alone.

This document is for **reference only**. Please refer to SWO's for specific indications, dosages, and applications

RX

DRUG NAME: **Ketamine Hydrochloride**

TRADE NAME: **Ketamine, Ketanest, Ketaset, Ketalar**

REVISED: **May 01, 2022**

KETAMINE HYDROCHLORIDE

Class:

- Dissociative anesthetic
- NMDA receptor antagonist

Mechanism of Action: Exact mechanism unknown.

Ketamine acts on cortex and limbic receptors, producing dissociative analgesia and sedation. Higher doses act on the Mu opioid receptor.

Indications:

- For use in medication assisted intubation in conjunction with a paralytic
- Analgesia

Relative Contraindications:

- Most contraindications are related to the release of catecholamines increasing hypertension and tachycardia **or** sedation/apnea when administered either inappropriately or with sedative medications, drugs or alcohol.
  - Hypertensive Crisis
  - Under the influence of methamphetamine or stimulant drug
  - Recent ingestion or administration of opiates, benzodiazepines or alcohol
- Acute globe injury or glaucoma
  - Increased intraocular pressure
- When significant elevations in BP might prove harmful:
  - Aortic dissection
  - Acute Myocardial Infarction, angina
  - Intracranial hemorrhage
- Schizophrenia
  - Increases psychosis

Onset:

- 45-60 seconds

Duration:

- 5-20 minutes IV

Side Effects:

- Vivid Dreams
- Hallucinations
- Delirium
- Recovery Agitation
- Tachycardia
- Hypertension
- Dysphoria
- Hypersalivation
- N/V
- Anaphylaxis
- Reemergence phenomenon
- Arrhythmias
- CNS Depression
- Respiratory Depression

RX

This document is for reference only. Please refer to SWO's for specific indications, dosages, and applications

KETAMINE HYDROCHLORIDE

Interactions:
Additive/Potentiation Effects:

- Any medication that stimulates catecholamine release will result in hypertension, tachycardia and arrhythmias
- Ketamine/benzodiazepine/narcotic medications increase respiratory and CNS depression. The administration of ketamine in combination with a benzodiazepine or narcotic (or alcohol) may result in excessive sedation and/or respiratory depression or apnea.

Dosage:

RSI/MAI
Adults/Peds:

- 2mg/kg slow IV/IO push one minute prior to paralytic administration

Analgesia
Adults:

- IV/IO 0.2 mg/kg (Max single Dose 30 mg)
  - Dilute to at least 10 ml and give slowly over 2 minutes
  - May repeat every 20 minutes as needed

Or

- IM: 0.5 mg/kg
  - repeated every 30 minutes PRN
  - Max single dose 50 mg

- **PEDS** (do not use in patients under 1 year of age)
  - IV/IO: 0.2 mg/kg (Max single Dose 25 mg)
    - Dilute to at least 10 ml and give slowly over 2 minutes
    - May repeat every 20 minutes as needed.

  Or

  - IM: 0.5 mg / kg
    - repeated every 30 minutes PRN
    - Max single dose 50 mg

This document isfor reference only. Please refer to SWO's for specific indications, dosages, and applications

RX

KETAMINE HYDROCHLORIDE

Physician PEARLS:

- As with most sedatives/analgesics, IV/IO route is the preferred route of administration if possible due to ability to administer slowly and titrate dosage.
- Despite earlier research, Ketamine has proven safe to use in closed head injury patients.
- Because of the dissociative state many patients sedated with ketamine do not close their eyes
- Ketamine is the only anesthetic producing analgesia, hypnosis and amnesic effects
- In usual doses, protective airway reflexes, spontaneous respirations and cardiopulmonary functions are maintained, however *rapid administration of Ketamine may cause apnea or lyrngospasm*
- Ketamine lacks the progressive dose-response relationship
- Ketamine produces a dose-related increase of heart rate and blood pressure which makes Ketamine the preferred induction agent for hypotensive patients
- Ketamine has demonstrated beta-adrenergic and vagolytic properties, which includes beta-2 stimulation making Ketamine the ideal induction agent for people with reactive airway disease/asthma.
- Ketamine increases salivary and bronchial mucous gland secretion through stimulation of cholinergic receptors, however it does not require Atropine for pretreatment
- Reemergence phenomenon is a known entity. *Consider* benzodiazepines for continued sedation but be aware of cumulative CNS depression.
- Try to provide a calm, quiet atmosphere post administration to reduce anxiety and mitigate reemergence phenomena.
- A single dose of Ketamine should last 5-30 minutes
- Pregnancy Category has not been established

RX

This document is for reference only. Please refer to SWO's for specific indications, dosages, and applications

LEFT BLANK INTENTIONALLY

KETAMINE HYDROCHLORIDE

This document is for reference only. Please refer to SWO's for specific indications, dosages, and applications

RX

Drug Name: **Lidocaine Hydrochloride**
Trade Name: **Lidocaine, Xylocaine**
REVISED: **November 1, 2018**

DRUG: Lidocaine

Class:

- Antidysrhythmic (Class I-B)

Mechanism of Action:

- Decreases ventricular automaticity *(reduces the slope of phase 4 diastolic depolarization)*
- Decreases excitability, and raises fibrillation threshold
- Decreases conduction in ischemic cardiac tissue without adversely affecting normal conduction
- Does not affect contractility

Indications:

- Pulseless Ventricular Tachycardia, Ventricular Fibrillation.
- Ventricular Tachycardia with a pulse
- Malignant PVCs
- Wide complex tachycardias of unknown origin
- Pre-Intubation in the setting of closed head injuries and strokes

Contraindications:

- Advanced AV block (2nd degree Type II (Mobitz II) and 3rd degree blocks) in the absence of a functioning pacemaker
- Adams-Stokes syndrome

Precautions:

- Hypotension
- Torsades de Pointes *(if known torsade's, magnesium is the agent of choice)*

Dosage:

Adults:

- **Pulseless VT, VF:** IV/IO: 1.0 to 1.5 mg/kg IV bolus, can repeat in 3-5 minutes **not to exceed 3 mg/kg or 300 mg in 30 minutes (not including infusion)**
- **Ventricular ectopy, and Wide complex tachycardia:** 1.0-1.5 mg/kg slow IV bolus followed by additional doses of 0.5-0.75 mg/kg every 5minutes **not to exceed 3 mg/kg or 300 mg in 30 minutes (not including infusion).** If ectopy resolves, can set up a continuous infusion. (Be sure to rebolus @ 0.5-0.75 mg/kg in 8-10 minutes to maintain therapeutic levels of lidocaine)
- **Continuous infusion**: 2-4 mg/minute titrated for effect, to be initiated if V-fib/V-Tach resolves. (Start @ 2 mg/min & add 1 mg/min for each additional 1 mg/kg IV bolus)
    - 1 mg/kg bolus = 2 mg/min.
    - 1.5-2 mg/kg total bolus = 3 mg/min.
    - 2.5-3 mg/kg total bolus = 4 mg/min.
- Management of Pain with Intraosseous infusions
    - IO: 20-40 mg administered slow every 30 minutes **not to exceed 3 mg/kg or 300 mg**

RX

This document is for reference only. Please refer to SWO's for specific indications, dosages, and applications

DRUG: Lidocaine

Pediatrics:

- All Ventricular dysrhythmias:
  - IV/IO: 1 mg/kg bolus, not to exceed 3 mg/kg
- Continuous Infusion
  - IV/IO: 20-50 μg/kg/min infusion. 120 mg in 100 ml NS yielding 1.2 mg/ml.
  - *If a bolus dose of lidocaine has not been administered within the previous 15 minutes, administer a bolus of 1 mg/kg before initiation of the infusion*
- Management of Pain with Intraosseous infusions
  - IO: 0.5 mg/kg mg administered slow every 30 minutes **not to exceed 3 mg/kg**
  - MAX single dose 40 mg.

Onset:

IV—30-90 sec

Duration:

IV—10-20 minutes for bolus

Side Effects:

CNS--drowsiness, dizziness, confusion, slurred speech, seizures, respiratory depression/arrest
CV--hypotension, dysrhythmias, bradycardia, cardiac arrest
Other--Nausea, vomiting

Interactions:

Additive cardiac depression and toxicity when used concomitantly with amiodarone, procainamide, phenytoin, quinidine, & beta-blockers

PEARLS:

- Evidence for one particular antiarrhythmic over another is inconclusive.
- Previously, lidocaine was used for pre-treatment of increased inter-cranial pressure during RSI. A review of the evidence has shown no clear benefit of this practice, and a increased risk of hypotension which can be detrimental in the neuro-critically ill. **Therefore the use of Lidocaine during RSI for increased ICP is no longer recommended**.
- Always give full initial dose, but reduce all subsequent doses by ½ for elderly (>70) or with impaired hepatic function
- Lidocaine has been shown to prolong apnea when used in conjunction with neuromuscular blocking agents. This usually occurs at higher doses than the dose used for pre-intubation, but be aware
- If you have a bradycardia with PVCs, always treat the bradycardia first (atropine, pacing, etc.), prior to threatening the PVCs

This document is for reference only. Please refer to SWO's for specific indications, dosages, and applications

RX

Drug Name: **Lorazepam**
Trade Name: **Ativan**
REVISED: **01MAY2018**

Class:

- Benzodiazepine
- Anticonvulsant
- Schedule IV Controlled Substance

Mechanism of Action:

- Acts at the level of the limbic, thalamic, and hypothalamic regions of the CNS through potentiation of GABA (inhibitory neurotransmitter).
- Decreases neural cell activity in all regions of the CNS. Anxiety is decreased by inhibiting cortical and limbic arousal.
- Promotes relaxation through inhibition of spinal motor reflex pathway, also depresses muscle and motor nerve function directly.
- As an anticonvulsant, augments presynaptic inhibition of neurons, limiting the spread of electrical activity. However, it does not alter the electrical activity of the seizure's focus.
- Although lorazepam has a shorter elimination half-life than diazepam, it persists in the CNS longer due to "redistribution phenomena".

Indications:

- Major motor seizures
- Status epilepticus
- Sedation prior to cardioversion
- Acute anxiety/behavioral emergencies
- Management of alcohol withdrawal symptoms
- Sedation in mechanical ventilation

Contraindications:

- Shock
- Hypersensitivity
- Closed angle glaucoma

Precautions:

- Reduce dose for geriatrics
- Hepatic dysfunction
- Renal insufficiency
- History of drug addiction
- Parkinson's disease
- Pregnancy (D)
- Myasthenia gravis
- Respiratory depression (unless ventilated)
- Current substance abuse *(relative)*

DRUG: LORAZEPAM

RX

This document is for reference only. Please refer to SWO's for specific indications, dosages, and applications

DRUG: LORAZEPAM

Dosage:

Adults:

Status Epilepticus:

- **IV/IO:** 1-2 mg, may repeat at 10 minutes, max total dose 4 mg
- **IM:** 1-2 mg (If no vascular access)

Cardioversion/Pacing/Sedation:

- **IV/IO:** 0.5-2 mg, may repeat at 10 minutes, max total dose 2 mg
- **IM:** 2 mg (If no vascular access)

Agitation/anxiety/behavioral Emergency:

- **IV/IO:** 0.5-2 mg, may repeat at 10 minutes, max total dose 2 mg
- **IM:** 2 mg (If no vascular access)

Pediatrics:

Status Epilepticus:

- **IV/IO/IM:** 0.1 mg/kg, repeat at 5-10 min PRN, max total dose 2 mg

Cardioversion/Pacing/Sedation:

- **IV/IO:** 0.05-0.1 mg/kg, slow IV push over 2 minutes, max total dose 2 mg
- **IM:** 0.1 mg/kg, max total dose 2 mg

Sedation of mechanically ventilated patients (adults and peds):

- **IV/IO:** 0.05 mg/kg, titrate to sedation, repeat at 10 minutes PRN, max single dose 2 mg, max total dose 4 mg

Onset:

- IV--5-15 minutes
- IM--highly variable, 20-30 minutes.

Duration:

- IV--6-8 hours
- IM--24-48 hours

Side Effects:

Minor:

- CNS Depression
- Dizziness
- Drowsiness
- Lethargy
- Ataxia

Major:

- Respiratory Depression
- Apnea
- Hypotension
- Bradycardia
- Cardiac Arrest
- Paradoxical CNS stimulation (i.e. Valium Rage)

This document is for reference only. Please refer to SWO's for specific indications, dosages, and applications

RX

Interactions:

- Potentiates sedative effect of other CNS depressants.

PEARLS:

- **This drug is utilized as an alternative when drug shortages prevent carrying other benzodiazepines.**
- This drug is in common use by many health care facilities.
- Inadvertent intra-arterial injection may produce arteriospam, resulting in gangrene that may require amputation.
- **Lorazepam expires in six weeks when not refrigerated. Do not use if discolored, or if solution contains precipitate.**
- To avoid patient discomfort, lorazepam should be injected into a large muscle or large vein.
- As a dosing guideline, 2 mg of lorazepam is roughly equivalent to 5 mg of diazepam.

If unable to control seizures after max dose any single benzodiazepine, call medical control to continue with another benzodiazepine.

DRUG: LORAZEPAM

RX

This document is for reference only. Please refer to SWO's for specific indications, dosages, and applications

DRUG: LORAZEPAM

BLANK PAGE

This document is for reference only. Please refer to SWO's for specific indications, dosages, and applications

RX

Drug Name: **Magnesium Sulfate**
Trade Name: **Mag, Mag Sulfate, MgSO4, Mg++**
REVISED: **June 15, 2021**

Class:

- Antidysrhythmic
- Anticonvulsant
- CNS Depressant

Mechanism of Action:

- Anticonvulsant properties—reduces striated muscle contractions and blocks peripheral neuromuscular transmission by reducing acetylcholine release at the myoneural junction
- Antidysrhythmic properties—Physiological calcium channel blocker. Reduces SA node impulse formation, prolongs conduction time in myocardium

Indications:

- ***Torsades de Points/***polymorphic Ventricular Tachycardia
- Refractory VF, VT (with or without a pulse) *(if hypomagnesemia is suspected)*
- Refractory ventricular ectopy *(if hypomagnesemia is suspected)*
- TDP (*treatment of choice*)
- Seizure prevention and control in preeclampsia and eclampsia (*treatment of choice*)
- Suspected hypomagnesemia
- Status asthmaticus not responsive to β agonists or anticholinergics.

Contraindications:

- Heart block
- Hypermagnesemia

Precautions:

Renal insufficiency

Dosage:

Adults:

Refractory VT, VF, TDP:

- IV/IO: 2 g every 5 minutes, 1st line for Torsades or refractory V-Fib/Pulseless V-Tach.
  - Do not give faster than 1 g/minute
  - **To Mix:** 2 g (4ml), dilute to a total of 20 ml to make 10% solution.

Preeclampsia,

- ***Loading IV/IO infusion*: 4 g over 20 minutes**
  - **To Mix:** 4 g /250 ml
    - Requires the use of an infusion pump.
    - If seizures occur, proceeded to Eclampsia dose.
  - Do not give faster than 1 g/minute
- ***Maintenance IV/IO Infusion*: 2 g an hour**
  - **To Mix**: 4 g/250ml NS,
    - Requires the use of an infusion pump.
  - To be completed *after* loading dose

DRUG: MAGNESIUM SULFATE

RX

This document is for reference only. Please refer to SWO's for specific indications, dosages, and applications

DRUG: MAGNESIUM SULFATE

Eclampsia (active seizures) —

- *Loading IV/IO infusion:* 4 g over ***5*** minutes repeat as needed to max of 8 grams.
  - **To Mix:** 4 g /250 ml
  - **Does not require an IV Infusion pump.** Use 15 gtt set. Run *wide open* at approx. 50 cc/minute.
  - Do not give faster than 1 g/minute.
- *Maintenance IV/IO Infusion*: 2 g an hour
  - **To Mix**: 4 g/250ml NS
  - Requires the use of an infusion pump.
  - To be completed *after* loading dose

Refractory Broncheospasm —

- IV/IO: 2 g over 5 minutes
  - **To Mix:** 2 g /250 ml
  - **Does not require an IV Infusion pump.** Use 15 gtt set. Run *wide open* at approx. 50 cc/minute.
  - Do not give faster than 1 g/minute.

Pediatrics:

Refractory VT, VF, TDP, **Severe/Refractory Bronchospasm**

- IV/IO Infusion: 25-50 mg/kg in 250 ml over 5 minutes
- To Mix: 25-50 mg/kg in 250 ml , MAX 2 GM
- **Does not require an IV Infusion pump.** Use 15 gtt set. Run *wide open* at equivalent of 3000 ml/hour (approx. 50 cc/minute).
- Do not give faster than 1 g/minute.

Onset:

IV—Immediate
IM--3-4 hours

Duration:

IV—30-60 minutes
IM--3-4 hours

Side Effects:

Flushing/Sweating
Itching/Rash
Hypothermia
Drowsiness
Respiratory depression
Respiratory failure
Bradycardia/AV block
Cardiac arrest
Circulatory collapse
Complete heart block
Flaccid paralysis
Absence of knee jerk
Hypotension, Diaphoresis

RX

DRUG: MAGNESIUM SULFATE

Interactions:

Incompatible--alcohol, salicylates, sodium bicarbonate
Additive effects can occur with other CNS depressants
Concurrent use with nifedepine in the treatment of maternal hypertension can cause increased hypotension or pronounced muscle weakness & may harm the fetus
Can cause cardiac conduction abnormalities when used in conjunction with cardiac glycosides

PEARLS

- The 2010 (reaffirmed in 2015) ECC/AHA guidelines conclude that *"…IV magnesium sulfate can facilitate termination of torsades de pointes (irregular/polymorphic VT associated with prolonged QT interval). Magnesium sulfate is not likely to be effective in terminating irregular/polymorphic VT in patients with a normal QT interval".*
- In some case of *Torsades de Pointes* 5-9 g have been required.
- As a smooth muscle relaxant, it is also a potentially effective 2nd line intervention in cases of severe, refractory bronchospasm secondary to Asthma.
- Use aggressively in the setting of eclampsia. If eclamptic seizures are refractory to Mag Sulfate, then proceed to benzodiazepines if not already administered.

RX

This document is for reference only. Please refer to SWO's for specific indications, dosages, and applications

DRUG: MAGNESIUM SULFATE

BLANK PAGE

This document is for reference only. Please refer to SWO's for specific indications, dosages, and applications

RX

Drug Name: **Methylprednisolone**
Trade Name: **Solu-Medrol**
REVISED: **November 1, 2017**

DRUG: METHYLPREDNISOLONE

Class:

- Synthetic glucocorticoid
- Corticosteroid

Mechanism of Action:

- The anti-inflammatory actions of corticosteroids are thought to involve phospholipase A_2 inhibitory proteins, collectively called lipocortins. Lipocortins, in turn, control the biosynthesis of potent mediators of inflammation such as prostaglandins and leukotrienes by inhibiting the release of the precursor molecule arachidonic acid
- It inhibits acute & chronic inflammation, & stabilizes cell membranes
- Additionally, it potentiates vascular smooth muscle relaxation by beta-adrenergic agonists and may alter airway hyperactivity

Indications:

- Anaphylaxis
- Bronchodilator-unresponsive reactive airway disease (asthma, COPD)
- Acute spinal cord injury (with deficits)-Not covered in SWO's

Contraindications:

- Systemic fungal infections *(many clinicians believe this is relative as long as appropriate antimicrobial treatment is administered simultaneously)*
- TB
- Cushing's disease

Precautions:

Most precautions are related to long-term steroid therapy.

- Psychosis
- Renal/Hepatic disease
- Diabetes
- Seizure disorders
- Myasthenia gravis
- GI disease
- Coagulopathies
- Pregnancy (C)
- Recent MI *(has been associated with left ventricular free-wall rupture)*
- Heart failure, Hypertension *(can cause edema)*

Dosage:

Adults:

- IV/IM: 125 mg

Pediatrics:

- 1-2 mg/kg IV

Onset:

- 1-2 hours

Duration:

- 8-24 hours

RX

This document is for reference only. Please refer to SWO's for specific indications, dosages, and applications

DRUG: METHYLPREDNISOLONE

Side Effects:

Most side effects seen in long-term steroid therapy

- Sodium & water retention
- CHF
- HTN
- HA, vertigo
- Hypokalemia
- Seizures
- N/V
- Dysrhythmias

Interactions:

- Increases blood glucose levels, may require adjustment of insulin dosage
- Potassium-wasting effects can be exacerbated by concomitant administration of diuretics

PEARLS:

- ***The Brady Prehospital Pharmacology text indicates that there are no major contraindications to the use of Methylprednisolone in the emergency setting***
- ***While Solumedrol was once in common use for acute spinal cord injuries, recent clinical studies have suggested that it may be ineffective in this role, and may have adverse effects on long term recovery. The dose for this would be 30 mg/kg IV bolus (over 15 minutes) followed 45 minutes later by an infusion of 5.4 mg/kg/hr for 23 hours. Not covered in ACCESS SWO's***

This document is for reference only. Please refer to SWO's for specific indications, dosages, and applications

RX

Drug Name: **Midazolam**
Trade Name: **Versed**
REVISED: **November 1, 2017**

DRUG: MIDAZOLAM

Class:

- Benzodiazepine (nonbarbiturate sedative-hypnotic agent)
- Schedule IV Controlled Substance

Mechanism of Action:

- Acts at the level of the limbic, thalamic, and hypothalamic regions of the CNS through potentiation of GABA (inhibitory neurotransmitter).
- Decreases neural cell activity in all regions of CNS
- Anxiety is decreased by inhibiting cortical and limbic arousal
- Promotes relaxation through inhibition of spinal motor reflex pathway, also depresses muscle & motor nerve function directly
- As an anticonvulsant, augments presynaptic inhibitions of neurons, limiting the spread of electrical activity. However, it does not alter the electrical activity of the seizure's focus
- Midazolam has twice the affinity for benzodiazepine receptors than does diazepam and has more potent amnesic effects
- It is short acting and roughly 3-4 times more powerful than diazepam

Indications:

- Sedation prior to cardioversion & intubation
- Maintenance of sedation in mechanically ventilated patients
- Seizure control in pediatrics

Contraindications:

Shock
Coma
Hypersensitivity
Pregnancy (D)
Closed Angle Glaucoma

Precautions:

- Patients with respiratory insufficiency (asthma, COPD, etc.) are more susceptible to respiratory depression.
- Effects are enhanced by other CNS depressants.
- Elderly

Use caution when administering to patients with:

- Hepatic dysfunction
- Renal insufficiency
- History of drug addiction
- Parkinson's Disease
- Myasthenia gravis

Dosage:

Adults:

- **As an adjunct to intubation:**
  - **IV/IM:** IV: 0.5-5 mg, repeat every 5-10 minutes PRN,
  - **Max of 10 mg**
- **Status epilepticus, cardioversion and pacing, inner ear s/s, sedation, and muscular spasms:**
  - IV: 0.5-2.5 mg, repeat every 5-10 minutes PRN, Max of 5 mg
  - IM: 5 mg (If no vascular access)
  - **Maximum dose of 5 mg**

RX

This document is for reference only. Please refer to SWO's for specific indications, dosages, and applications

DRUG: MIDAZOLAM

Pediatrics:

- **As an adjunct to intubation:**
  - 0.1-0.2 mg/kg to a max of 5 mg/dose.
  - Repeat as needed for ongoing sedation to a max of 10 mg.
- **Seizures:**
  - IN/IM: 0.2 mg/kg repeat every 5 minutes PRN. Max 10 mg.
  - IV/IO: 0.1 mg/kg every 5 –10 minutes PRN. Max 5 mg.
- **Sedation for painful procedures, cardioversion, pacing, muscular spasms, hyperdynamic drug ingestion/exposure**:
  - IV/IO/IM: 0.05-0.1 mg/kg every 5-10 min (over 2-5 minutes if IV). Maximum dose of 2.5 mg
  - IN: 0.2 mg/kg every 5-10 min. Max dose 2.5 mg
  - Not for children under 2 yrs.

Onset:

- IV: 1-3 minutes (dose dependent)
- IN: 1-5 minutes (dependent on nasal structures)

Duration:

- IV: 2-6 hours (dose dependent)

Side Effects:

Minor:

- N/V
- Headache
- Drowsiness
- Lethargy
- Cough
- Hiccups

Major:

- Respiratory Depression
- Apnea
- Paradoxical CNS stimulation (i.e. Valium Rage)
- Hypotension
- Cardiac Arrest

Interactions:

- Additive with other CNS depressants

PEARLS:

- ***Premedication with an opiate may potentiate midazolam, reducing the dose 30-50% is suggested***
- ***Can cause phlebitis and pain at the IM injection sight.***
- ***Has more potential than other benzodiazepines to cause respiratory depression and arrest. Use with extreme caution in peds. Slower administration may reduce this***
- ***Elderly, debilitated, or patients under the influence of other CNS depressants require reduced dosages***

Physician Preference: Versed is preferred over other benzodiazepines in cases without IV access due to rapid absorption IM and IN, however may have more profound respiratory depression. Diazepam remains acceptable as well. If unable to control seizures after max dose any single benzodiazepine, call medical control to continue with another benzodiazepine.

This document is for reference only. Please refer to SWO's for specific indications, dosages, and applications

RX

Drug Name: **Morphine Sulfate**
Trade Name: **Duramorph, Morphine, MS, MSO4**
REVISED: **November 1, 2017**

DRUG: MORPHINE SULFATE

Class:

- Narcotic Analgesic
- Opiate
- Schedule II Controlled Substance

Mechanism of Action:

Interacts with opiate receptors decreasing pain impulse transmission at the spinal cord level and higher in the CNS. Morphine is a potent μ-opiate receptor agonist. Also causes peripheral vasodilation increasing venous capacitance and decreases venous return (chemical phlebotomy) by depressing the responsiveness of alpha-adrenergic receptors. Since it decreases both preload and afterload it may decrease myocardial oxygen demand.

Indications:

- Moderate to Severe Pain
- Pulmonary Edema
- Acute Coronary Syndromes

Contraindications:

- Hypovolemia
- Hypotension
- Patients who have taken MAOI within 14 days
- Hypersentivity
- Head injury

Precautions:

- Respiratory depression
- Severe heart disease
- Geriatrics
- Hepatic/Renal disease
- Pregnancy (C) *(increases to D if used for prolonged periods or high doses close to term)*
- May worsen bradycardia or heart block in inferior MI *(vagotonic effect)*
- Use with caution in patients with unstable angina.

Dosage:

Adults:

- IV/IM/IO: 0.1 mg/kg initial dose (Max initial dose 10 mg)
  - Give slowly over 2 minutes
  - May repeat every 10 min as needed at 0.05 mg/kg
  - Max total dose 20 mg

Pediatrics:

- IV/IO/IM: 0.1 mg/kg initial dose (Max initial dose 5 mg)
  - Give slowly over 2 minutes
  - May repeat every 10 min as needed at 0.05 mg/kg
  - Max total dose 15 mg

Onset:

- IV--3-5 minutes
- IM, SubQ--15-60 minutes

Duration:

- 3-7 hours

REFERENCE ONLY

RX

This document is for reference only. Please refer to SWO's for specific indications, dosages, and applications

DRUG: MORPHINE SULFATE

Side Effects:

- Dizziness
- Altered L. O. C.
- Hallucinations
- Euphoria
- Mental impairment
- Hypotension
- Lightheadedness
- Bradycardia, Tachycardia
- N/V
- CNS Depression
- Respiratory Depression

Interactions:

- CNS depressants may enchance effects (antihistamines, antiemetics, sedatives, hypnotics, barbiturates, and alcohol
- MAOIs may cause paradoxical excitation

PEARLS

- Morphine in RSI/MAI: Morphine has both a longer duration of action and a longer onset time than fentanyl. It takes as much as 3-5 minutes for morphine to adequately sedate a patient. In addition, morphine may not blunt the rise in ICP, tachycardia or hypertension as well as fentanyl
- Give the medication time to work, reduce the dose for elderly. Repeated doses without giving the initial dose a chance to work may result in profound CNS depression, hypotension, etc.
- Be judicious in your use of narcotic analgesics, the relief of pain and suffering is one of medicines primary goal, however don't "snow" people
- Opiate analgesics can cause spasm of the sphincter of Oddi. The sphincter of Oddi is the muscular valve surrounding the exit of the bile duct and pancreatic duct into the duodenum, at the papilla of Vater. In addition similar effects are believed to be true in renal tract. This is not a contraindication for the administration of Morphine in these situations, simply a consideration
- Narcotic analgesia used to be considered contraindicated in the prehospital setting for abdominal pain of unknown etiology. It was thought that analgesia would hinder the ER physician or surgeon's evaluation of abdominal pain. It is now becoming widely recognized that severe pain actually confounds physical assessment of the abdomen and that narcotic analgesia rarely diminishes all of the pain related to the abdominal pathology. It would seem to be both prudent & humane to "take the edge off of the pain" in this situation, with the goal of reducing, not necessarily eliminating the discomfort. Additionally, in the practice of modern medicine the exact diagnosis of the etiology of abdominal pain is rarely made on physical examination alone, but also includes laboratory tests, x-ray, ultrasound, and CT scan, essential in the diagnosis of abdominal pain. **Therefore medication of abdominal pain is both humane and appropriate medical care**

This document is for reference only. Please refer to SWO's for specific indications, dosages, and applications

RX

Drug Name: **Naloxone**
Trade Name: **Narcan**
REVISED: **NOVEMBER 01, 2021**

Class: Narcotic Antagonist

Mechanism of Action:
Binds competitively to opiate receptor sites, displacing narcotics & synthetic narcotics. Antagonizes all actions of narcotics

Indications:
- Complete or partial reversal of depression caused by narcotics or synthetic narcotics
- Coma of unknown etiology

Contraindications:
- Known Hypersensitivity

Precautions:
- Pre-existing cardiac disease
- Patients who have received cardiotoxic drugs
- Abrupt and complete reversal can cause withdrawal-type effects
- Pregnancy (B)
- Use with caution in polypharmaceutical overdoses

Dosage:

Adults:
- IV/IO: 0.1-2 mg slowly. Repeat as needed every 1-2 minutes to a maximum of 10 mg.
- IV/IO *in cardiac arrest*: 2 mg
- IM/IN: 2-4 mg*. Repeat as needed to a maximum of 10 mg if IV access is unavailable
  - *Some IN preparations of naloxone are supplied in 4 or 8 mg applicator packages. These may be used if available.
- If patient has obviously aspirated, consider bypassing Narcan and manage airway if required.
- If patient has obviously aspirated, consider bypassing Narcan and manage airway as required.

Pediatrics:
- IV/IO: 0.01 - 0.05 mg/kg to max single dose of 2 mg. Administer slowly. Repeat as needed every 1-2 minutes to a maximum of 10 mg.
- IM/IN: 2-4 mg. Repeat as needed to a maximum of 10 mg. If IV/IO access is unavailable.
- If patient has obviously aspirated, consider bypassing Narcan and manage airway as required.
- IV/IO *in cardiac arrest*: 2 mg

Naloxone Infusions: Naloxone Infusions: for recurrent somnolence or sedation
- Re-administer bolus of 0.1-2mg naloxone and initiate infusion
- IV/IO 0.1-10 mg/hour titrated for effect.
- To mix: 4 mg/250 cc.

Onset:
- IV/IO--1-2 minutes
- IN: 1-4 minutes
- IM, SubQ: 2-8 minutes

DRUG: NALOXONE

REFERENCE ONLY

RX

This document is for reference only. Please refer to SWO's for specific indications, dosages, and applications

DRUG: NALOXONE

Duration:

- IV, IM, IN, ET, SubQ--30-60 minutes

Side Effects:

- Tachycardia
- Hypotension
- HTN
- Dysrhythmias
- N/V
- Diaphoresis

Interactions:

- Incompatible with alkaline drugs

PEARLS

ALS evaluation is indicated if Naloxone administered either PTA or by EMS, and transport strongly encouraged.

The physician medical directors direct that suspected opioid overdose patients who are contacted by ACCESS system providers, **even if the overdose has resolved**, should be transported for monitoring and evaluation whenever possible.

A refusal requires medical control contact

- **Clinical Goal:** The goal of naloxone administration is to reverse respiratory depression and hypoxia while avoiding while avoiding combativeness and agitation. Use the *lowest dose* possible to restore spontaneous respirations but avoid precipitating withdrawal
- **Route: Low dose naloxone titrated carefully via the IV route is preferable over large boluses IM or IN. Consider focusing on airway and respiratory support while IV access is established.**
- **Many Opiates have a longer bio-availability than Narcan, therefore assess for re-sedation. Re-administer Narcan as needed.**
- Naloxone in cardiac arrest is adjunctive to, not a replacement for other basic interventions. Focus should remain on high quality CPR and resuscitation.
- Failure to obtain reversal after 10 mg usually indicates another disease process or overdose on non-opioid drugs.
- Use with caution in poly-pharmaceutical overdoses, reversal of opiate may result in an extremely hyperdynamic patient (i.e. “speedball”)
- **If patient has obviously aspirated, consider bypassing Narcan administration and transport the patient. Intubate as required**
- If pushed too rapidly, this medication will induce vomiting
- **Naloxone infusions:** Not every patient will need a naloxone infusion. Naloxone infusions are an option for patients who are re-sedating after initial naloxone administration. Naloxone infusions should be preceded by a supplementary bolus of IV/IO Naloxone, and then initiated at a rate equivalent to the initial dose required to maintain respiratory effort. I.E. if 1 mg was initially required for restoration of respirations, the dose may be initially set at 1 mg/hour to maintain that state.

This document is for reference only. Please refer to SWO's for specific indications, dosages, and applications

RX

Drug Name: **Nitroglycerin**
Trade Name: **NitroStat, Nitrol, Nitrolingual, Nitro-Bid Ointment, Tridil, Nitro, NTG**
REVISED: **November 1, 2017**

DRUG: NITROGLYCERIN

Class:

Antianginal Agent
Nitrate
Vasodilator

Mechanism of Action:

Nitrates relax peripheral venous vessels, causing a pooling of venous blood and decreased venous return to the heart, which decreases preload.

Nitrates reduce both arterial impedance and venous filling pressures, resulting in a reduction of the left ventricular systolic wall tension, which decreases afterload. Decreases preload.

Results in the reduction of myocardial workload and myocardial oxygen demand.

Aids in the reversal of pulmonary edema.

It also causes some vasodilatation of coronary arteries (limited by atherosclerosis) increasing perfusion of ischemic myocardium.

Note: Nitroglycerin relaxes all other types of smooth muscle.

Indications:

Chest pain associated with angina
Chest pain associated with AMI
Acute pulmonary edema
Symptomatic Hypertension (Hypertensive Crisis)

Contraindications:

Head Injury, Increased ICP
Cerebral hemorrhage
Hypotension
Hypovolemia
Recent Viagra (sildenafil) use **(OR similar drugs)**
Hypersensitivity to nitrate
Constrictive Pericarditis, Pericardial Effusion
Severe anemia *(causes oxidation of hemoglobin to methemoglobin and could exacerbate anemia)*

Precautions:

Nitro deteriorates rapidly after bottle is opened, bottle should be opened and dated, and also protected from light.
Use with caution in closed-angle glaucoma, may increase intraocular pressure.
Elderly may be more susceptible to the effect of nitrates.
Hepatic disease *(metabolism may be impaired and lead to increased risk of methemoglobinemia)*
Postural hypotension.
Pregnancy (C)

Dosage:

Adults:

- **NTG Spray**: For discomfort suspicious of cardiac origin
  - SL: 0.4 mg SL spray/tab every 3-5 minutes PRN
  - Hold for B/P <100, or Viagra use (or similar drug) within previous 24 hours.
  - Use with caution in suspected right-sided MI

RX

This document is for reference only. Please refer to SWO's for specific indications, dosages, and applications

DRUG: NITROGLYCERIN

- **HIGH DOSE NTG SPRAY:** For patients in extreme respiratory distress, signs of severe pulmonary edema, with associated HTN (SYSTOLIC B/P > 200 mm HG).
  - SL: 0.8 mg SL (0.4 mg spray/tab x2) every 5 minutes PRN
  - Hold for Viagra use (or similar drug) within previous 24 hours.
  - Return to normal dosing when B/P drops below 200 mm Hg.

- **NTG Paste**: Initiate if NTG is successful in reducing discomfort
  - TD: 0.5-1.5 inches applied topically (TD) to non-hairy area of trunk.
  - Hold for B/P <100, or Viagra use (or similar drug) within previous 24 hours. Use with caution in suspected right-sided MI
  - Wipe off if hypotension develops

Pediatrics:

- Not normally recommended for prehospital use

Onset:

- Tablet, Spray—1-3 minutes
- Ointment—20-60 minutes
- IV—Immediate

Duration:

- Tablet, Spray—up to 30 minutes
- Ointment—4-8 hours
- IV—several minutes, dose dependent.

Side Effects:

- Headache due to vasodilation
- Hypotension, Dizziness
- N/V
- Xerostomia (Dry Mouth)
- Reflex tachycardia
- Skin rash, Flushing
- Anxiety
- Agitation
- Methemoglobinemia *(rare, usually with high doses of the IV formulation, but can be seen with normal therapeutic doses)*

Interactions:

Alcohol *(can theoretically produce additive hypotension)*
Aspirin results in increased serum nitrate concentrations *(may cause increased hypotension**, limited data**)*
Calcium channel blockers & beta-blockers—additive interaction can result in symptomatic orthostatic hypotension.
Sympathomimetics may antagonize the effects of nitroglycerin.
May compromise the efficacy of alteplase, TPA when administered concomitantly.

This document is for reference only. Please refer to SWO's for specific indications, dosages, and applications

RX

DRUG: NITROGLYCERIN

PEARLS:

- Nitroglycerine is of uncertain mortality benefit and has risks of hypotension. Therefore it should not be used in undifferentiated chest pain (chest pain that is not suspected of cardiac origin).

  Nitroglycerin should be limited to patients who:
  - Suspected ACS based on history and exam suspicious of cardiac origin.
  - Patients with a history of coronary artery disease (CAD), angina, or previous heart attack as indicated by medications or reported history
  - Suspected ACS with EKG changes (ST Depression, T wave inversion)
  - Patient has history of angina and current presentation is similar.

  The primary concern with nitroglycerine use is iatrogenic hypotension relative to the myocardial demand, which may increase mortality and morbidity.
- Do not shake canister prior to use; shaking may produce bubbles within the canister, which alters delivery of nitroglycerin
- Administer nitroglycerin by holding the canister upright with the valve head uppermost and the spray orifice as close to the opened mouth as possible
- Spray onto or under the tongue and immediately close the mouth. Do not swallow immediately after the dose is administered. Avoid inhalation of the spray
- Sublingual tablets: Place tablet under the tongue or in the buccal pouch and allow to dissolve. Do not swallow sublingual (intrabuccal) tablets
- Apply the nitroglycerin ointment with gloves and to a hair-free region of the torso. Cover with the dose-measuring application paper (may tape in place). Do not rub or massage the ointment as this will cause rapid absorption and interfere with the sustained action.
- Significant adsorption (80% of the nitroglycerin in solution) occurs with standard infusion sets made of PVC plastic. Use glass bottles only and special tubing provided by the manufacturer. Some pump tubing is OK for this use
- Wear gloves when applying paste, and avoid getting sprayed in the mouth by the spray or other NTG containing solutions. If you get ointment or IV Tridil on your skin, sit down quickly! If you get spray in your mouth, caffeinated beverages have been rumored to minimize the effects if consumed quickly (anecdotal reports)
- Orthostatic hypotension, xerostomia (dry mouth), & headache are probably the most common side effects associated with nitroglycerin administration, warn your patient
- NOTE: Patients receiving IV NTG generally are admitted to an ICU level of care. Therefore please take this into consideration when making a transportation decision
- Nitro drip—NTG drip is started at 5-10 μg/min, titrated for effect 5-10 μg/min every 5 minutes up to a max of 200 μg/min **(Hold for systolic <100, titrate up and down in 5 mcg increments)**
  - **NTG DRIP NOT COVERED IN SWO'S and requires a verbal or written physician order for each occurrence.**

RX

DRUG: NITROGLYCERIN

REFERENCE ONLY

This document is for reference only. Please refer to SWO's for specific indications, dosages, and applications

RX

Drug Name: **Norepinephrine**

Trade Name: **Noradrenalin, Nor-Epi, Levophed**

REVISED: **December 01, 2022**

Class:

- Adrenergic Catecholamine
- Sympathomimetic
- Vasopressor

Mechanism of Action:

- α--peripheral vasoconstriction,
- Increases systemic vascular resistance and blood pressure

Indications:

- Refractory hypotension

Contraindications:

- Untreated hypovolemia
- Hypertension
- Suspected mesenteric Ischemia (relative)

Precautions:

- Ischemic heart disease
- Cerebrovascular insufficiency
- Pulmonary edema
- Deactivated/precipitates with alkaline solutions (NaHCO3)
- Increases myocardial oxygen demand
- Peripheral vascular Disease
- Pregnancy (C)
- Geriatrics
- Protect from light

Dosage:

Adults:

IV Infusion

IV/IO: 0.01- 2 mcg/kg/min

- Start at 0.1 mcg/kg/min.
- Titrated to maintain MAP>65 or SBP >100

Pediatrics:

IV/IO: 0.01- 2 mcg/kg/min

- **Start at 0.1 mcg/kg/min.**
- **Titrated to maintain MAP>65 or SBP >100**

Onset:

- IV/IO: 1-2 min

Duration:

- Based on infusion duration

Side Effects:

- Anxiety
- Tachycardia
- HTN
- Angina
- Arrhythmias
- V-Fib
- N/V
- Fear
- Headache
- Pallor
- Dizziness
- Tremors

DRUG: NOREPINEPHRINE

RX

This document is for reference only. Please refer to SWO's for specific indications, dosages, and applications

DRUG: NOREPINEPHRINE

Interactions:

- Potentiated by MAOIs and TCAs
- Antagonized by beta blockers
- Precipitates in alkaline solutions such as Sodium Bicarbonate

PEARLS:

Caution should be observed to avoid extravasation of norepinephrine during intravenous administration. Check the infusion site frequently for free-flow.

- **Preferred Concentration/mixture**: 4 mg/250 cc normal saline.
  - May also be available in 8 mg/250 ml.
  - **Confirm concentration prior to administration**.
- **Ensure that aggressive fluid resuscitation is accomplished (unless contraindicated) prior to norepinephrine use.**
- **Nor epinephrine infusions should be administered by infusion pump only.**
- **Nor epinephrine infusions should be established in the largest vein possible for the clinical situation.**
  - **Norepinephrine is preferentially given through a central line but in the field and in emergent situations it can be given peripherally through good IV access.**
  - **Avoid administering nor epinephrine through an IV in the hand, wrist, or leg.** These veins are more likely to be affected by vaso-occlusive diseases and more prone to ischemic complications.
  - Administration through IO in the leg is permitted
- **Nor epinephrine is necrotic to tissue.**
  - Observe and monitor for infiltration. Caution should be observed to avoid extravasation of norepinephrine during intravenous administration.
  - Check the infusion site frequently for free-flow.
  - Blanching along the course of the infused vein, sometimes without obvious extravasation, has been attributed to vasa vasorum constriction with increased permeability of the vein wall, permitting some leakage**. If blanching occurs,** consider changing the infusion site at intervals to allow the effects of local vasoconstriction to subside.
  - An ischemic area may be identified by a cool, hard, and pallid appearance.
- Sodium bicarbonate will inactivate nor-epinephrine; flush line well between administration.
- Concurrent/simultaneous administration of beta agonists may produce increases in heart rate and mild bronchodilation.

This document is for reference only. Please refer to SWO's for specific indications, dosages, and applications

RX

DRUG NAME: **Ondansetron HCL**

TRADE NAME: **Zofran, Zofran ODT**
REVISED: **December 01, 2022**

Class:

Anti-emetic, Selective Serotonin (5HT3) Receptor Antagonist

Mechanism of Action:

Ondansetron reduces the activity of the vagus nerve, which activates the vomiting center in the medulla oblongata, and also blocks serotonin receptors in the chemoreceptor trigger zone. It has little effect on vomiting caused by motion sickness,

Indications:

Moderate to severe Nausea, Vomiting

Contraindications:

- Hypersensitivity to the drug.
- Prolonged QT syndrome
- Concurrent use of Apomorphine (Apokyn), an anti-Parkinson drug.

Precautions:

- Not well studied in children less than 2 years of age
- Use with caution with patients concurrently using drugs which effect QT interval (i.e., Procainamide, Amiodarone, TCA's, Haldol)
- Use with caution with hepatic impairment (consider prolonging dosage intervals or decreasing dose)

Dosage:

Adults:

- **IV/IO/IM/ODT**:
  - 4 mg, repeated once in 10 minutes PRN

Pediatrics: (>2 years of age)

- **ODT:** 4 mg
  - Hold for children < 2 years of age or < 20 kg
  - Repeat one time in 10 minutes, if needed, or consider IM/IV/IO Zofran (ALS only)
- IV/IO/IM- 0.15 mg/kg IV/IO, MAX of 4 mg/Dose.
  - Repeat one time in 10 minutes, if needed

Duration:

- 2-4 hours

Side Effects:

- Sedation
- Hypotension
- Tachycardia
- Angina
- EPS (Rare)
- Torsades de Pointes (rare)
- Constipation

DRUG: ONDANSETRON HCL

RX

This document is for reference only. Please refer to SWO's for specific indications, dosages, and applications

DRUG: ONDANSETRON HCL

Interactions:

Additive effects with medications that prolong Q-T interval.
Additive CNS depressant effects

PEARLS:

Do not use Zofran concurrently with Procainamide, Haldol, or Amiodarone due to QT prolongation.

- **Pregnancy Class B** - Usually safe but benefits must outweigh the risks. Ondansetron showed no benefit over the antiemetic Promethazine (Phenergan) (Pregnancy Class C) for Hyperemesis Gravida (HEG) in a double blinded randomized study. It may be used for cases refractory to other treatments/drugs.
- The rate of IV administration should not be less than 30 seconds and preferably over 2-5 minutes.
- Avoid use with Apomorphine (Apokyn, Uprima). Apokyn is used to treat Parkinson's disorders, and Uprima is used to treat erectile dysfunction. This is important to note because both of these compositions may promote nausea in some patients.

This document is for reference only. Please refer to SWO's for specific indications, dosages, and applications

RX

Drug Name: **Oral Glucose**
Trade Name: **Glutose, Insta-Glucose**
REVISED: **November 1, 2017**

Class:

Monosaccharide
Carbohydrate

Mechanism of Action:

After absorption from GI tract, glucose is distributed in the tissues and provides a prompt increase in circulating blood sugar

Indications:

Hypoglycemia

Contraindications:

None

Precautions:

Altered L.O.C
Ascertain the patient's ability to swallow an oral preparation of glucose without airway compromise
Must be swallowed, not absorbed sublingually, or buccally

Dosage:

Adults:

- 15-45 G PO for patients with an intact gag reflex and who are able to handle their own secretions.

Pediatrics:

- 5-45 G PO for patients with an intact gag reflex and who are able to handle their own secretions

Onset:

10 minutes

Side Effects:

Nausea

Interactions:

None

DRUG: ORAL GLUCOSE

REFERENCE ONLY

RX

This document is for reference only. Please refer to SWO's for specific indications, dosages, and applications

DRUG: ORAL GLUCOSE

PEARLS:

- Symptomatic hypoglycemia nearly always means an altered mental status. Altered mental status often means a scene safety issue. **Make sure you are aware of your environment**, have the assistance you need, and leave if you become uncomfortable
- Check a glucometer reading before administering glucose if at all possible. Repeat at least 10 minutes after
- Also, it is acceptable to revive a hypoglycemic patient without using the entire Tube. This is done based on the promptness of the patient response.
- If the patient refuses transport it is important to get them something substantive to eat and that someone will be with them for awhile
- Commonly, there is an explanation for hypoglycemia if you look for it. Poor compliance, increased stress, decreased sleep, illness, change in insulin regiment, etc.
- If a patient becomes symptomatically hypoglycemic from oral hypoglycemics, they should generally be transported
- The effects of long acting insulin are difficult to predict. Therefore, the effects of an intentional overdose on long acting insulin are prolonged and beyond the normal capability of the paramedic to treat and release
- Also, if a patient's family, friends, or relatives are present, they can be a good source of information about the patient's habits and their normal recovery from hypoglycemia
- Follow the Diabetic Treat and Release protocol for diabetics who do not desire transport

This document is for reference only. Please refer to SWO's for specific indications, dosages, and applications

RX

Drug Name: **Oxytocin**
Trade Name: **Pitocin, Syntocinon**
REVISED: **November 1, 2017**

Class:

Hormone
Uterine Stimulant

Mechanism of Action:

Hormone secreted by the posterior pituitary gland. Causes rhythmic contraction of uterine smooth muscle, decreasing postpartum hemorrhage. Additionally it stimulates the mammary glands to increase lactation but does not increase milk production

Indications:

Prehospital--excessive postpartum hemorrhage

Contraindications:

Before administration it is essential to verify that the baby and placenta have been delivered and there is not an additional fetus in the uterus.

Precautions:

- Over stimulation of the uterus and possible rupture, monitor vital signs and uterine tone.
- HTN
- Cardiac Arrhythmias

Dosage:

Adults: (Medical Control Order)

- IV—10 U in 250 ml of NS administered at a rate to control uterine contractions.
- Infused 10u/250 ml over 5 to 10 minutes; repeat if needed and continue fundal massage.
- IM--3-10 units

Onset:

- IV—Immediate
- IM—3-5 minutes

Duration:

- IV—1 hour after infusion is stopped
- IM—2-3 hours

Side Effects:

- Hypertension or Hypotension
- Dysrhythmias
- Angina
- Anaphylaxis
- Fluid retention
- Pelvic hematoma
- Uterine spasm/rupture
- N/V

Interactions:

Other vasopressors may potentiate hypertension.

DRUG: OXYTOCIN

RX

This document is for reference only. Please refer to SWO's for specific indications, dosages, and applications

DRUG: OXYTOCIN

PEARLS:

- **In SWO's this is a medical control call in medication**
- Because of the severe pain that can be induced with oxytocin, consider analgesia
- As with all medications, use the minimum dose required to achieve desired effects
- Do not give unless you are sure all fetuses have been delivered (i.e. fetus count has been confirmed by ultrasound prior to delivery)

This document is for reference only. Please refer to SWO's for specific indications, dosages, and applications

RX

Drug Name: **Phenylephrine**
Nickname: **Neo-Synephrine**
Revised: **November 1, 2018**
Class:

Nasal decongestant
Sympathomimetic amine

Mechanism of Action:

After intranasal administration, phenylephrine stimulates alpha-adrenergic receptors on the nasal mucosa (direct effect) causing vasoconstriction of local vessels. The vasoconstrictive action decreases mucosal edema, thereby leading to a decongestant effect.

Indications:

Facilitation of Nasal Intubation. Minimizes bleeding.
Refractory or severe non-traumatic epistaxis

Contraindications:

Hypersensitivity to sympathomimetic amines

Precautions:

Recent facial, sinus, or brain surgery (<14 days)
Presence of Acute Coronary Syndrome symptoms
Ulcers, burns, and cancer to the face/sinuses/upper airway

Child < 5
Geriatrics
Diabetes
CVD
HTN

Increased ICP
Hyperthyroidism
Pregnancy (C)
Glaucoma

Dosage:

To facilitate nasal airway placement:
Adults:
2-4 sprays to nasal mucosa (0.25%-1.0%)
Pediatrics: (Age > 5 -seldom used because of the difficulty and complication rate of nasal intubation in pediatrics)
1-2 sprays to nasal mucosa (0.25%)
Treatment of epistaxis
Adults:
1 spray each nare to nasal mucosa (0.25%-1.0%), followed by saturated gauze packing of the anterior nares
Pediatrics: (Age > 5)
1 spray each nare to nasal mucosa (0.25%-1.0%), followed by saturated gauze packing of the anterior nares

Onset:

Immediate

Duration:

30 minutes-4 hours

DRUG: PHENYLEPHRINE

REFERENCE ONLY

RX

This document is for reference only. Please refer to SWO's for specific indications, dosages, and applications

DRUG: PHENYLEPHRINE

Side Effects:

Irritation	Dryness
Sneezing	Anxiety
Side effects below are secondary to IM/IV use:	
Restlessness	Dizziness
Tremors	Headache

Interactions:

Few when used in the patient nasally (not well absorbed into systemic circulation)

PEARLS:

- More easily absorbed into systemic circulation by pediatrics
- To avoid the spread of infection, do not use the container for more than one person.
- Take the time to use this in the setting of nasal intubation; you'll reduce the incidence of uncontrollable hemorrhage significantly.
- Administration of Neo-Synephrine *for epistaxis* does not require EKG monitoring, although other symptoms and presentations may.

This document is for reference only. Please refer to SWO's for specific indications, dosages, and applications

RX

Drug Name: **Ranitidine**
Trade Name: **Zantac**
REVISED: **November 1, 2017**

Class:

Antihistamine
H2 Antagonist

Mechanism of Action:

- Blocks H2 receptors
  - ❖ H1—causes bronchoconstriction, contraction of gut
  - ❖ H2—causes peripheral vasodilation, secretion of gastric acid
    - o ERs use cimetidine (Tagamet) for H2 blockade

Indications:

- Anaphylaxis
- Allergic reactions
- Urticaria

Contraindications:

- Hypersensitivity
- Acute asthma attack
- Lower respiratory tract disease/Pneumonia
- Newborns & nursing mothers

Precautions:

- Concurrent use of other H2 inhibitors
- HTN
- Cardiac disease
- Renal disease (prolonged clearance)
- Bronchial asthma
- Seizures
- Pregnancy category - C
- Closed angle glaucoma (avoid if at all possible)

Dosage:

Adults:

50 mg IV/IO/IM (Diluted in Normal Saline)
PO: (If available) 150-300 mg (for mild cases)

Pediatrics:

1 mg/kg IV/IM/IO max dose 50 mg
PO: (If available) 150 mg (for mild cases)

Onset:

IM—20 min
IV—5-10 minutes to reach peak effect.

Duration:

IM—2-6 hours
IV—2-6 hours

DRUG: RANITIDINE

REFERENCE ONLY

RX

This document is for reference only. Please refer to SWO's for specific indications, dosages, and applications

DRUG: RANITIDINE

Side Effects:

- Drowsiness
- Dizziness
- Incoordination
- Confusion
- Dry mouth
- Drying of bronchial secretions
- Blurred vision
- Urinary retention
- Hypotension
- Tachycardia
- Bradycardia
- AV Block (rare)

Interactions:

Additive effects—other CNS depressants
MAOIs—prolong the anticholinergic effects

PEARLS:

- ***Ranitidine is an adjunctive therapy to Benadryl (with or without epinephrine) in anaphylaxis & severe allergic reactions. It is not a stand-alone intervention.***

- **While the pathology of anaphylaxis is still being understood, some patients will experience prolonged or even multi-phasic reactions. The combination of an H1 and an H2 blocker has been shown in clinical trials to reduce the severity as well as the reoccurrence of anaphylactic symptoms over a significant period.**

- **A common misconception is that the majority of symptoms in anaphylaxis are the result of H1 receptors. In reality, both H1 and H2 receptors are equally important. *H2 blockers combined with H1 blockers have additive benefit over H1 blockers alone in treating anaphylaxis in general. H2 receptors are useful in treating vasodilation, possibly some cardiac effects, and glandular hypersecretion.***

This document is for reference only. Please refer to SWO's for specific indications, dosages, and applications

RX

Drug Name: **Rocuronium Bromide**
Trade Name: **Zemuron**
REVISED: **November 1, 2017**

Class:

- Non-depolarizing blocker

Mechanism of Action:

- Competitively binds to cholinergic receptors at the motor end plates. This blocks neuromuscular transmission. The drug is antagonized by acetylcholinesterase inhibitors such as Neostigmine and Edrophonium.

Indications:

- Skeletal muscle relaxation during mechanical ventilation
- Maintenance of paralysis after intubation

Contraindications:

- Sensitivity to drug class

Precautions:

- Pregnancy Class C, hepatic impairment, neuromuscular disease, cerebral palsy, myasthenia gravis, Eaton-Lambert syndrome, pulmonary disease or pulmonary HTN, dehydration, major trauma or burns, electrolyte acid-base disorder, carcinomatosis, severe anaphylaxis history.

Dosage:

Adults:

- **(Medical Control Order) 1 mg/kg IV/IO**

Pediatrics:

- **(Medical Control Order) 1 mg/kg IV/IO**

Onset:

- 1-2 minutes

Duration:

- 30-60 minutes

Side Effects:

- Transient hypotension
- Tachycardia
- Residual muscle weakness
- Allergic or hypersensitive reactions
- Hypertension
- Wheezing
- Abnormal EKG

Interactions:

- Fentanyl and anti-arrhythmic medications can potentiate Rocuronium.

DRUG: ROCURONIUM BROMIDE

REFERENCE ONLY

RX

This document is for reference only. Please refer to SWO's for specific indications, dosages, and applications

DRUG: ROCURONIUM BROMIDE

PEARLS:

- Rocuronium is used to maintain paralysis **after** intubation and not for RSI induction within our system, due to long paralytic effects in comparison to the rapid onset and short duration of succinylcholine.
- ***Rocuronium does not provide sedation or pain control. It is inhumane to fail to provide pain control and sedation once a paralytic is administered.***
- Rocuronium should be considered with increased intubation times with transport (15 minutes or more), and is on order by medical control.
- IV line must be flushed well between administration of Rocuronium and other medications.
- Prolonged effects may occur in certain patient populations including the elderly, pediatrics, myasthenia gravis patients and those with hepatic and renal failure.
- Refrigerate, do not freeze, Non-refrigerated vials should be used within 60 days.

This document is for reference only. Please refer to SWO's for specific indications, dosages, and applications

RX

Drug Name: **Sodium Bicarbonate**
Trade Name: **Bicarb, NaHCO3**
REVISED: **November 1, 2017**

DRUG: SODIUM BICARBONATE

Class: Alkalinizing Agent

Mechanism of Action:

In the presence of hydrogen ions, sodium bicarbonate dissociates to sodium and carbonic acid, the carbonic acid picks up a hydrogen ion changing to bicarbonate and then dissociates into water and CO2, functioning as an effective buffer and alkalinizing the blood. In summary, increases plasma bicarbonate, which can buffer metabolic acids and move TCAs and phenobarbital off receptor sites and back into circulation.

Indications:

- Preexisting Metabolic Acidosis (severe hypoxia, late cardiac arrest)
- Hyperkalemia
- Tricyclic or Phenobarbital Overdose

Contraindications:

None when used in severe hypoxia and late cardiac arrest
Metabolic & Respiratory alkalosis
Severe pulmonary edema *(administration of sodium may be detrimental)*
Hypokalemia
Hypocalcemia
Hypernatremia *(administration of sodium may be detrimental)*

Precautions:

Bicarbonate administration produces CO2, which crosses cell membranes more rapidly than bicarbonate, potentially worsening intracellular acidosis.
CHF *(may worsen)*
Pregnancy (C)
Infiltration can cause tissue necrosis
Renal disease

Dosage:

Adults:

1.0 mEq/kg IV bolus, may repeat ½ dose 10 minutes thereafter.

- OPTIONAL TCA Overdose/CRUSH Injury INFUSION: 50-100 mEq/1000 ml, run at 150 ml/hr, titrated for effect

Pediatrics:

1.0 mEq/kg IV bolus, may repeat ½ dose 10 minutes thereafter

- OPTIONAL TCA Overdose INFUSION: 50-100 mEq/1000 ml, run at 150ml/hr, titrated for effect

Onset:

- IV—2-10 minutes

Duration:

- IV—30-60 minutes

RX

This document is for reference only. Please refer to SWO's for specific indications, dosages, and applications

DRUG: SODIUM BICARBONATE

Side Effects:

- Alkalosis
- Hyperirritability, Seizures
- Tetany (electrolyte imbalance)
- Hypernatremia
- Hyperosmolality
- Cardiac & respiratory arrest
- Lowering of serum K
- Increased binding of calcium to serum proteins
- Decreased fibrillation threshold
- Sodium and water overload
- Inhibition of oxygen release to tissue

Interactions:

- Calcium salts will form a precipitate and clog the IV line
- Most sympathomimetics will be deactivated by alkaline solutions
- Use relatively early in the setting of confirmed TCA overdoses, tachycardia (even before QRS widening) & CNS depression are symptomatic enough to initiate alkalinization. By the time you get to hypotension, you often are close to seizures and may be too late
- Ensure IV is patent to avoid tissue sloughing at the injection site
- Also be sure to flush IV line before & after administration to avoid inactivating sympathomimetics & precipitating with CaCl

This document is for reference only. Please refer to SWO's for specific indications, dosages, and applications

RX

Drug Name: **Succinylcholine Chloride**

Trade Name: **Anectine**

Revised: **January 01, 2018**

DRUG: SUCCINYLCHOLINE

Class:

- Depolarizing neuromuscular blocker.

Mechanism of Action:

Inhibits transmission of nerve impulses by binding with cholinergic receptor sites, antagonizing action of acetylcholine. Initial binding causes muscle fasciculation's and progresses to total paralysis, including the diaphragm. Muscle relaxation begins in the eyelids & jaw, progresses to the limbs, the abdomen, & finally the diaphragm & intercostals. Succinylcholine has absolutely no effect on consciousness

Indications:

- Facilitation of ETT Intubation

Contraindications:

- Hypersensitivity
- History of malignant hyperthermia
- History of skeletal muscle myopathy (rhabdomyolysis)
- Penetrating eye injuries

Precautions:

- Pregnancy (C)
- Cardiac disease
- Dehydration
- Neuromuscular disease *(prolonged effects, i.e. myasthenia gravis)*
- Severe burns *(potential for cardiac arrest & ventricular arrhythmias, usually not an acute concern)*
- Crush Injuries *(potential for cardiac arrest & ventricular arrhythmias, usually not an acute concern)*
- Must be ready to intubate as soon given, use cricoid pressure to secure airway from gastric regurgitation
- Respiratory disease
- Narrow-angle glaucoma
- Elderly

Available Forms:

- 20 mg/ml in 10 ml vials (200 mg)

Dosage:

Adults:

- IV, IM, IO: 1-2 mg/kg rapid push, repeat once if needed

Pediatrics:

- IV, IM, IO: 1-2 mg/kg rapid push, repeat once if needed
- INFANTS: IV, IM, IO 2 mg/kg

Onset:

- IV—30-60 seconds
- IM—2-3 minutes

Duration:

- IV—3-5 minutes
- IM—10-30 minutes

RX

This document is for reference only. Please refer to SWO's for specific indications, dosages, and applications

DRUG: SUCCINYLCHOLINE

Side Effects:

- Sinus arrest
- Dysrhythmias
- Hypotension
- Increased intraocular pressure
- Prolonged apnea
- Bronchospasm
- Vomiting/Aspiration
- Malignant Hyperthermia
- Hyperkalemia *(36 hours post crush trauma/ burns).* Bradycardias *(May eventually get tachycardia & hypertension as an asphyxia response)*

Interactions:

- Theophylline users may end up with dysrhythmias
- Incompatible with barbiturates, chlorpromazine, nafcillin, alkaline solutions
- Effects enhanced by Lidocaine, Procainamide, beta blockers, magnesium sulfate, other neuromuscular blockers

PEARLS:

- **Our first priority remains airway and this is a wonderful tool to manage airways if used appropriately.** It is by no means benign. In its use, you must weigh the risk versus the benefits. Use anatomical assessment to estimate the chance of success and weigh that against the need of an airway
- **Succinylcholine has no effect on consciousness or pain…sedate your patients**
- The use of Succinylcholine should be part of a systematic approach to a difficult airway, and as such, not performed until all equipment, personnel, medications and safeguards are in place
- Succinylcholine should not be used unless the medic is prepared to perform a number of rescue airway techniques, **up to and including a surgical airway**.
- Children are not as sensitive as adults and may require higher dosages (2 mg/kg)
- NOTE: In both adults and children the incidence of bradycardia is higher following a second dose of Succinylcholine. Pretreatment with anticholinergic agents (atropine) may reduce the occurrence of brady arrhythmias.
- WARNING: There have been several reports of cardiac arrest following administration of Succinylcholine to apparently healthy children and adolescent patients who were subsequently found to have undiagnosed myopathies. In most cases, patients experienced acute rhabdomyolysis with hyperkalemia and cardiac arrest. Because children and adolescent patients are more likely than adults to have undiagnosed myopathies, a nondepolarizing neuromuscular blocking agent should be used for routine elective surgery in these patients. Except when used for emergency tracheal intubation or in instances where immediate securing of the airway is necessary, Succinylcholine is contraindicated in children and adolescent patients
- If repeated intubation attempts fail, you can usually ventilate the patient until spontaneous ventilations return (while maintaining cricoid pressure)

This document is for reference only. Please refer to SWO's for specific indications, dosages, and applications

RX

Drug Name: **Tetracaine Hydrochloride**
Trade Name: **Pontocaine Eye, Pontocaine HCl, Tetracaine**
REVISED: **November 1, 2017**

Class:

- Ophthalmic anesthetic

Mechanism of Action:

Causes a reversible blockade of nerve conduction by decreasing nerve membrane permeability to sodium. This decreases the rate of membrane depolarization thereby increasing the threshold for electrical excitability. Clinically, loss of nerve function is as follows: pain, temperature, touch, proprioception, and skeletal muscle tone.

Indications:

- Removal of foreign objects

Contraindications:

- Hypersensitivity to PABA, sulfites
- Open or penetrating globe injury

Precautions: *(Minor considerations for optic use)*

- Allergies
- Hyperthyroidism
- Hypertension
- Cardiac disease
- Pregnancy (C)

Dosage:

Adults:

- 1-3 gtts

Pediatrics:

- 1-3 gtts

Onset:

- 15 seconds

Duration:

- 15 minutes

Side Effects:

- Blurred vision
- Stinging
- Photophobia
- CNS stimulation *(This and below are rare in optic use)*
- CNS and CV depression
- Burning
- Lacrimation

Interactions:

- Decreases bacterial actions of sulfonamides
- Can antagonize the effects of cholinesterase inhibitors locally

DRUG: TETRACAINE

REFERENCE ONLY

RX

This document is for reference only. Please refer to SWO's for specific indications, dosages, and applications

DRUG: TETRACAINE

PEARLS

- ***Don’t forget good BLS care as well.***

REFERENCE ONLY

This document is for reference only. Please refer to SWO's for specific indications, dosages, and applications

RX

Drug Name: **Tranexamic Acid**
Trade Name: **TXA, Cyklokapron, Lysteda (oral only)**
REVISED: **December 01, 2022**

DRUG: Tranexamic acid (TXA)

Class:

- Antifibrinolytic agent
- Antihemophilic agent,
- Hemostatic agent,
- Lysine analog

Mechanism of Action: Tranexamic acid is a hemostatic agent and is a synthetic derivative of the amino acid lysine. Tranexamic acid is a competitive inhibitor of plasminogen activation and forms a reversible complex that displaces plasminogen from fibrin resulting in inhibition of fibrinolysis; it also inhibits the proteolytic activity of plasmin.

Indications:

- Acute (< 3 hours) Major Traumatic Bleeding
- Acute (< 3 hours) Post-Partum Bleeding

Contraindications:

- Administration after 3 hours post injury/bleeding.
- Hypersensitivity
- Non-hemorrhagic shock (i.e., neurogenic or septic shock)
- Known active intravascular clotting disorders
- Suspected *non-traumatic* Sub-arachnoid Hemorrhage

Precautions:

- Allergy to TXA
- Oral Chemotherapy
- Cardiac disease
- Patients with SZ disorders
- Renal Failure
- Pregnancy (B)

Dosage:

For Severe Blood Loss w/in 3 hours of injury:

Adults:

- IV/IO: 2 gram cc /250 cc over 10 minutes. Does not need pump.

Pediatrics

- IV/IO: 15 mg/kg in 250 cc over 10 minutes. Does not need a pump. 1 GM max.

Epistaxis

Adults:

- IN: 250-500 mg each Nare Atomized

Pediatrics

- IN:10 mg/kg each Nare Atomized

Post Tonsillectomy Hemorrhage

Adults:

- NEB: 500 mg Nebulized. Repeat once PRN

Pediatrics

- NEB: 10 mg/kg Nebulized

RX

This document is for reference only. Please refer to SWO's for specific indications, dosages, and applications

DRUG: Tranexamic acid (TXA)

Onset:

- 5-10 Minutes

Duration:

- 2 hours (IV)
- 12 hours (oral)

Side Effects:

- Cardiovascular: Hypotension with rapid administration, Thrombosis and P.E.
- Skin: allergic dermatitis,
- Neuro: Seizures (Rare)
- GI: Diarrhea, nausea, vomiting,
- Visual: blurred vision

Interactions:

- Antagonizes thrombolytic agents (TPA, r-PA)
- Oral Hormonal Contraception, Estrogens and Progestins (BCP) may increase risk of thrombosis.

PEARLS

MUST BE ADMINISTERED WITHIN 3 HOURS OF INJURY/ONSET OF BLEEDING

- Don't forget good BLS care, to include immediate bleeding control (pressure dressings, hemostatic agents, wound packing, or tourniquets as appropriate.
- Definitive hemorrhage control and rapid transport to a trauma center is the key to survival in the bleeding patient. TXA administration should never delay transport.
- Timing:
  - TXA should be given within 3 hours of injury/onset of bleeding.
  - TXA is most beneficial when administered within 1 hour of injury/onset of bleeding.
  - TXA **should not** be given after 3 hours of bleeding or in cases where chronic bleeding (i.e. GI Bleeding) is suspected.
- Many protocols call for a second dose, higher initial doses, or a maintenance infusion to be administered. These are not provided for in current ACCESS protocols but may be ordered by medical control.
- TXA has many other uses not currently covered under ACCESS protocol. Medical Control contact is required prior to administration for these other uses.
- Current (2017) WHO recommendations for TXA in post-partum hemorrhage are for TXA to be administered even if uterotonics appear to be effective.
- Pregnancy:
  - TXA is FDA pregnancy category B: "*Animal reproduction studies have failed to demonstrate a risk to the fetus and there are no adequate and well-controlled studies in pregnant women*."
  - TXA is only recommended for use during pregnancy when benefit outweighs risk, such as life-threatening hemorrhagic shock that threatens the mother and/or the fetus(s).

This document is for reference only. Please refer to SWO's for specific indications, dosages, and applications

RX

Drug Name: **Vecuronium**
Trade Name: **Norcuron**
REVISED: **November 1, 2017**

DRUG: VECURONIUM

Class:

- Non-depolarizing neuromuscular blocking agent.

Mechanism of Action:

- Nondepolarizing agents produce skeletal muscle paralysis by blockade at the myoneural junction, competing with acetylcholine for cholinergic receptor sites and binding with the nicotinic cholinergic receptor at the postjuctional membrane
- Unlike depolarizing agents, vecuronium has little agonist activity, with no depolarizing effect at the motor endplate
- Muscle relaxation begins in the eyelids & jaw, progresses to the limbs, the abdomen, & finally the diaphragm & intercostals. Vecuronium has absolutely no effect on consciousness
- Causes little histamine or cardiovascular response

Indications:

- Facilitation of intubation
- Maintenance of paralysis following RSI ***(Does not include sedation!)***

Contraindications:

- Hypersensitivity

Precautions:

- Pregnancy (C)
- History of malignant hyperthermia
- Cardiac or hepatic disease
- Respiratory disease
- Narrow-angle glaucoma
- Elderly or debilitated patients
- Must be ready to intubate as soon as given, use cricoid pressure to secure airway from gastric regurgitation. Dehydration, electrolyte or acid/base imbalance *(potentiates the actions)*
- Neuromuscular disease *(prolonged effects, i.e. myasthenia gravis)*

Dosage:

Adults: (Medical Control Order)

- IV: 0.1 mg/kg, repeat PRN

Pediatrics: (Medical Control Order)

- IV: 0.1 mg/kg, repeat PRN
- NOTE: The dose required for induction or maintenance may be higher, but it also may last 1 ½ times as long

Onset:

- IV—1 minute *(good intubation conditions within 2.5-3.0 minutes)*

Duration:

- IV—30-60 minutes

RX

This document is for reference only. Please refer to SWO's for specific indications, dosages, and applications

DRUG: VECURONIUM

Side Effects:

- Side effects are rare, but with neuromuscular blockers, histamine release can cause
- Bronchospasm
- Dysrhythmias
- Hyper- or Hypotension

Interactions:

Opiates or anti-arrhythmics can potentiate the effects of vecuronium.

PEARLS:

- **Generally speaking, vecuronium is used to maintain paralysis, not to initiate paralysis (some rare exceptions apply). Vecuronium should only be given after the tube is secured and confirmed**
- **As with Succinylcholine: Vecuronium has no effect on consciousness or pain. Sedate your patients**
- **To maintain sedation on these patients, titrate your administration to the patient's vital signs (heart rate, blood pressure)**
- **Vecuronium is used locally in the prehospital setting for maintenance of paralysis following intubation because of its long paralytic effects in comparison to the rapid onset and short duration of succinylcholine**
- **Vecuronium should be considered in increased tube times (15 minutes or more), on order from medical control**

Drug Name: **Antibiotics**
Trade Name: **N/A**
Revised: **November 1, 2018**

Class:

- This monograph covers a wide range of antibiotic infusions too broad to list individually.

Mechanism of Action:

- Class specific

Indications:

- Used to treat suspected or confirmed infections
- Suspected or confirmed sepsis
- Prophylactic measure for patients at high risk for developing infection or sepsis

Contraindications:

- Allergy

Precautions:

- Rapid infusion may cause adverse effect and paradoxical reactions

Dosage:

Doses are highly variable and based on institutional guidelines and patient laboratory values. Double check orders with transferring physician.

.

Onset:

- Class and drug dependent

Duration:

- N/A

Side Effects:

- Pain, warmth, burning upon administration.
- Phlebitis, sclerosis, and thrombosis of vein can occur

Interactions:

- Class specific

IFT

REFERENCE ONLY

This document is for reference only. Please refer to physicians' Orders for specific indications, dosages, and applications

IFT DRUG: Antibiotics

PEARLS:

- Deliver all empty vials/medication infusion sets/bottles to receiving facility. Do not throw away.
- Antibiotic therapy should initiated by transferring hospital prior to transport
- An infusion pump is preferred but not always required
- Verify and confirm drug, route, dose, and rate from the written order
- Monitor for signs of allergic/anaphylactic response or adverse reactions. If observed, stop infusion, treat under the appropriate protocol, and contact medical control as soon as possible.
- Once complete, disconnect antibiotic and maintain line with a crystalloid solution at TKO or saline lock, or other ongoing infusion.
- Antibiotics can be classified as bactericidal or bacteriostatic.
  - Bactericidals directly kill bacterial cells.
  - Bacteriostatics prevent cell division of bacterial cells.

ANTIBIOTIC CLASSES

- Aminoglycosides
  - Examples: Amikacin, Garamycin, Kantrex, Netromycin, Nebcin, Humantin
  - Uses: infections caused by E. coli, Pseudomonas, Klebsiella
  - Side effects: hearing loss, vertigo, kidney damage
- Ansamycins
  - Examples: Geldanamycin, Herbimycin
  - Uses: experimental anti-tumor medications
- Carbacephem
  - Examples: Lorabid
- Carbapenems
  - Examples: Invanz, Finibax, Primaxin, Merrem
  - Uses: broad-spectrum antibacterial
  - Side Effects: GI upset, seizure, headache
- Cephalosporins
  - Examples: Duricef, Ancef, Keflex, Ceclor, Ceftin, Omnicef, Fortaz, Rocephin
  - Side Effects: GI upset
- Glycopeptides
  - Example: Vancomycin
- Macrolides
  - Examples: Zithromax, Erythromycin
  - Uses: streptococcal infections, syphilis, Lyme disease, pneumonia
  - Side Effects: GI upset, jaundice
- Monobactams
  - Example: Aztreonam

- Penicillin's
  - Examples: Amoxicillin, Ampicillin, Penicillin
  - Uses: wide range of infections
  - Side Effects: GI upset, anaphylaxis, rarely neuro or kidney damage
- Polypeptides
  - Example: Bacitracin
  - Uses: eye, ear or bladder infections
  - Side Effects: when given by injection, kidney or nerve damage
- Quinolones
  - Examples: Cipro, Levaquin
  - Uses: UTI, pneumonia, gonorrhea, bacterial diarrhea
  - Side Effects: rarely tendinosis or nausea
- Sulfonamides
  - Examples: Mafenide, Sulfamethoxizole, Bactrim
  - Uses: UTI, topically for burns (Mafenide)
  - Side Effects: GI upset, allergic rxn, kidney failure, sunlight sensitivity
- Tetracyclines
  - Examples: Tetracycline, Doxycycline
  - Uses: syphilis, chlamydia, Lyme disease, acne
  - Side Effects: GI upset, sunlight sensitivity, staining of teeth (children)
- Others
  - Examples: Clindamycin (for acne, surgery prophylaxis), Flagyl (for Giardia)

Drug Name: **Common Beta Blockers**

Trade Name: **N/A**

REVISED: **November 1, 2018**

Class:

- Beta Blockers

Mechanism of Action:

- Inhibit and antagonize Beta-agonist receptors

Indications:

- Myocardial infarction
- Hypertension
- Mitral Valve prolapse
- Arrythmia
- Congestive Heart Failure
- Glaucoma
- Migraines

Contraindications:

- Obstructive Pulmonary Disorders
- Bradycardia
- Hypotension
- AV Block
- Co-administration of Ca-Channel Blockers

Precautions:

- Pregnancy category C

Dosage:

Doses are highly variable and based on institutional guidelines and patient laboratory values. Double check orders with transferring physician.

- **Acebutolol (Sectral)**
  - ***PO DoseL 200-1200 mg/day***
  - **IV/IO: 12.5-25 mg initial dose, titrated to 100 mg as needed.**
- **Esmolol (Brevibloc)**
  - ***IV/IO: 0.5 mg/kg over 1 minute, repeated q5 minutes PRN or followed by infusion.***
  - **IV/IO infusion: 50 - 300 mcg/kg/min.**
- **Propranolol (Inderal)**
  - **PO: 30-320 mg/day**
  - **IV/IO: 0.1 mg/kg slow IV push divided into three equal doses administered at 2-3 minute intervals**
- **Atenolol (Tenormin)**
  - **PO: 20-500 mg/day**
  - **IV/IO: 5 mg Q 10 minutes slow IV push PRN.**
- **Labetalol (Normodyne):**
  - **PO: 200 mg/day**
  - **IV/IO: 10 mg over 1-2 minutes, repeated and doubled as needed to a max of 150 mg. As an alternative an infusion may be started.**

- **IV/IO Infusion: 2-8 mg/minute**

- **Metoprolol (Lopressor):**
  - **IV: 5 mg slow IV over 2-5 minutes repeated every 5 minutes to a total of 15 mg.**

Onset:

- IV/IO: Immediate

Duration:

- Based on drug

Side Effects:

- Diarrhea
- Bronchospasm
- Bradycardia
- Hypotension
- Hypertension
- Heart failure
- Heart blocks
- Fatigue
- Dizziness
- syncope
- Nausea

Interactions:

- May worsen illicit stimulant (i.e. Meth, MDMA) Alpha effects

PEARLS:

- There are three beta receptors (Beta 1, Betta 2, and Beta 3).
  - **Beta 1:** ***Increases*** Heart rate, contractile force, atomicity, and stimulates excretion of Renin in the Kidneys.
  - **Beta 2:** Causes peripheral vasodilatation, bronchodilatation, and smooth muscle relaxation. Stimulates secretion of insulin.
  - **Beta 3:** Causes lipolysis.
- Some Beta Blockers have both agonist (stimulation) and antagonist (inhibition) affects.

Drug Name: **Blood Products**

Trade Name: **PACKED RED CELLS, FRESH PLASMA, PLATELETS, WHOLE BLOOD**

REVISED: **November 1, 2018**

Class:

- Naturally occurring colloid

Mechanism of Action:

- Increases vascular volume
- Increases oxygen carrying capacity (Whole Blood, RBCs)

Indications:

- Initiated by sending facility
- To maintain vascular or blood volume
- To replenish blood loss
- To support homeostasis

Contraindications:

- Incompatibility

Precautions:

- Risk of reactions

Dosage:

IV Infusion is variable and based on institutional policy/physician order. The following are *guidelines* only. Some infusion rates may be significantly faster :

- Packed Red Blood Cells:
  - **10-20 ml/kg infused at 5 ml/kg/hr**
- Platelets:
  - **20 ml/kg, no faster than 3 ml / min**
- Fresh Frozen Plasma:
  - **10-30 ml/kg**
- Whole Blood:
  - **Based on patient's condition.**
- CRYO:
  - **Based on patient's condition.**

Onset:

- N/A

Duration:

- Based on infusion duration

Side Effects:

- Hemorrhage
- Thrombocytopenia
- Transfusion reactions including fever and allergic reactions.

Interactions:

- Incompatible in same line with Lactated Ringers.

IFT

REFERENCE ONLY

This document is for reference only. Please refer to Physician Order's for specific indications, dosages, and applications

IFT DRUG: Blood Products

PEARLS:

If spontaneous hemorrhage develops, evidenced by hematuria, hematemesis, epistaxis, ecchymosis, etc., immediately contact medical control with regards to discontinuing administration

NOTE: To discontinue the infusion, disconnect all tubing *to the IV Hub* and replace. Save tubing and blood for laboratory analysis.

- Blood administration initiated by a sending facility may be continued by ACP Paramedics. If additional units are indicated they may be initiated as directed by the written order of the sending facility. Any left-over blood is turned over to the sending facility.
- Pumps are not required for blood product infusions
- Double check blood ID # and patient ID.
- Close monitoring of body temperature and vital signs are mandatory during infusion.

Monitoring Requirements (every 15 minutes, at least two readings):

- Blood Pressure
- Heart Rate
- SAO2
- Temp
- Lung Sounds
- ECG

<u>IMMEDIATELY</u> discontinue infusion if:

- S/S of **febrile non-hemolytic reaction: May occur within hours of administration**
  - Patient becomes febrile, i.e., one or two degrees Fahrenheit above baseline
  - Symptoms include fever, hives, itching and dyspnea.
- S/S of **acute hemolytic reactions**
  - Typically occurs **within minutes** of receiving blood.
  - The donor red blood blood cells are destroyed by patient's antibodies.
  - S/S includes Chest pain, SOB, Back Pain, dark urine, fever, chills, hypotension.
  - Treat with fluid resuscitation.
  - Treat profound shock under protocol M-03: Adult hypotension and shock
- S/S **of anaphylaxis**: Symptoms usually occur **rapidly** with **less than 10 mL** of blood transfused
  - See protocol M-10 or PM-03
- S/S of Hyperkalemia/Hypocalcemia
  - Contact Medical Control
- S/S of Fluid Overload/CHF with acute pulmonary edema
  - See protocol C-8: Congestive Heart Failure
- S/S Acute Joint or Back Pain
  - Monitor fluid output and color (dark may suggest hemoglobinuria).
- S/S of tremors, weakness, and paresthesia (tingling) in skeletal muscles: Suspect hypocalcemia.
  - Calcium may be ordered by medical control.

Description of types of blood products:

Whole Blood

- Whole blood is one unit of donated and unaltered (except for the addition of anticoagulant and preservative) blood. It contains the plasma and cells normally found in human blood.

Red Blood Cell Components (RBC's)

- This category includes red blood cells, washed red blood cells, and leukoreduced red blood cells. The cells are separated from whole blood through centrifugation. In the United States, one unit of red blood cells contains, on average, 180 mL of actual red blood cells, a nutritive solution called Optisol, and plasma. Washed red blood cells, are simply red blood cells that have been rinsed with normal saline in an attempt to remove proteins that may cause a hypersensitivity reaction in susceptible individuals.
- Leukoreduced red blood cells contain leukocytes in a specifically reduced amount, in an attempt to minimize the occurrence of a febrile transfusion reaction in susceptible individuals. Red blood cell administration is indicated in patients with symptomatic anemia. In a normal adult, one unit of red blood cells can be expected to increase hematocrit by about 3 %.

Platelets

- Platelet products contain plasma, coagulation factors, as well as some red and white blood cells. Platelets are separated from whole blood through centrifugation. IV platelet administration is indicated in patients with active bleeding due to thrombocytopenia, platelet dysfunction, or a combination of the two.

Granulocytes (Neutrophils)

- Granulocyte administration is indicated in patients with severe neutropenia and an established life threatening infection that is unresponsive to appropriate anti-microbial therapy.

Fresh Frozen Plasma (FFP)

- Fresh frozen plasma is the plasma removed from a unit of whole blood and frozen within eight hours of collection. FFP contains all of the coagulation factors in the normal concentrations, and is free of blood cells. FFP administration is indicated in those patients with established coagulation factor deficiencies who are actively bleeding or who are about to undergo a procedure in which bleeding may result.

Cryoprecipitate (CRYO)

- Cryoprecipitate is a concentrate of hemostatic proteins, prepared from whole blood. It contains factor VIII, von Willebrand factor, fibrinogen, factor XIII, and fibronectin. CRYO is administered to patients with hypofibrinogenemia, who are actively bleeding, or who are undergoing a procedure where bleeding may result.

IFT DRUG: Blood Products

Drug Name: **clevidipine**

Trade Name: **CLEVIPREX®**

REVISED: **May 01, 2022**

Class:

- Dihydropyridine Calcium Channel Blocker

Mechanism of Action:

- Clevidipine is a dihydropyridine L-type calcium channel blocker. L-type calcium channel blockers mediate the influx of calcium during repolarization in arterial smooth muscle, causing arterial vasodilatation and reducing blood pressure.

Indications:

- Cleviprex is a dihydropyridine calcium channel blocker indicated for the reduction of blood pressure

Contraindications:

- Hypersensitivity to soybeans, soy products, eggs, or egg products
- Severe aortic stenosis
- Defective lipid metabolism seen in conditions such as pathologic hyperlipemia, lipoid nephrosis, or acute pancreatitis if it is accompanied by hyperlipidemia

Precautions:

- Dihydropyridine calcium channel blockers can produce negative inotropic effects and exacerbate heart failure. Monitor heart failure patients carefully
- Pregnancy category C

Dosage:

IV Infusion: Double check orders with transferring physician.

- **IV infusion: 1-16 mg/hour Titrated for B/P < 180 mm Hg systolic or as ordered (see Pearls)**

Onset:

- IV/IO: Onset: (IV) 1-5 minutes

Duration:

- 5-15 minutes.

Side Effects:

- Most common adverse reactions (>2%) are headache, nausea, and vomiting.
- Hypotension
- Reflex Tachycardia

Interactions:

- Cleviprex should not be administered in the same line as other medications.

IFT

REFERENCE ONLY

This document is for reference only. Please refer to Physician Order's for specific indications, dosages, and applications

IFT DRUG: CLEVIDIPINE

PEARLS:

Cleviprex should not be administered in the same line as other medications.

- Cleviprex is supplied in sterile, pre-mixed, ready-to-use 50 mL or 100 mL vials. It appears as a milky white injectable emulsion similar to propofol.
- Cleviprex should not be diluted.
  - Invert vial gently several times before use to ensure uniformity of the emulsion prior to administration.
- Cleviprex can be administered “piggy backed” onto the following solutions.
  - Water for Injection, USP
  - Sodium Chloride (0.9%) Injection, USP
  - Dextrose (5%) Injection, USP
  - Dextrose (5%) in Sodium Chloride (0.9%) Injection, USP
  - Dextrose (5%) in Ringers Lactate Injection, USP
  - Lactated Ringers Injection, USP
- ***Dose titration:*** Double the dose at short (90 second) intervals initially. As the blood pressure approaches goal, increase the dose by less than doubling and lengthen the time between dose adjustments to every 5-10 minutes. An approximately 1-2 mg/hour increase will generally produce an additional 2-4 mmHg decrease in systolic pressure.
  - **Maintenance dose:** Most patients will achieve the desired therapeutic response at approximately 4-6 mg/hour. Severe hypertension is likely to require higher doses.
  - **Decrease or discontinuation:** The initial phase half-life is approximately 1 minute, and accounts for 85-90% of clevidipine elimination. The terminal half-life is approximately 15 minutes.

- Patients who receive prolonged CLEVIPREX® infusions and are not transitioned to other antihypertensive therapies should be monitored for the possibility of rebound hypertension for at least 8 hours after the infusion is stopped.
- Due to the risk of medical errors, double check dose w/ another ALS provider (Paramedic, RN, etc.). Specifically observe for:
  - Dosing errors: Dosing errors have occurred, particularly in peds
  - Concentration Errors: Medical errors have occurred because of differences in concentration.

This document is for reference only. Please refer to Physician Order's for specific indications, dosages, and applications

IFT
REFERENCE ONLY

Drug Name: **Diltiazem INFUSION**
Trade Name: **Cardizem, Dilacor XR, Tiazac, Cartia XT,**
REVISED: **November 1, 2018**

IFT DRUG: DILTIAZEM INFUSIONS

Class:

- Calcium Channel Blocker
- Class IV antidysrhythmic

Mechanism of Action:

- Diltiazem inhibits the influx of extracellular calcium across both the myocardial and vascular smooth muscle cell membranes. Resulting in dilation of the coronary and systemic arteries; improved oxygen delivery to the myocardial tissue; and decreased total peripheral resistance, systemic blood pressure, and afterload.
- It is a negative dromotrope & creates refractoriness in the AV node. Its effects on calcium channels in SA and AV nodes, and peripheral vasculature are equipotent.

Indications:

- Atrial fibrillation & atrial flutter with a rapid ventricular response
- Multifocal atrial tachycardia
- PSVT

Contraindications:

- 2nd or 3rd degree AV block *(in the absence of a functioning pacemaker)*
- Sick Sinus Syndrome *(in the absence of a functioning pacemaker)*
- Cardiogenic shock
- Hypersensitivity
- Atrial fibrillation or atrial flutter associated with WPW or short PR syndrome (Lown-Ganong-Levine Syndrome)
- Ventricular tachycardia
- Wide-complex tachycardia of unknown origin
- AMI *(associated with CHF or left ventricular dysfunction)*
- Advanced aortic stenosis
- Hypotension (less than 90 mmHg)

Precautions:

- CHF
- Elderly
- Renal / Hepatic Impairment
- Pregnancy (C)

Dosage:

Doses are highly variable and based on institutional guidelines and patient laboratory values. Double check orders with transferring physician.

Infusions:

- **IV/IO Infusion: 5-15 mg/hr on pump**

IFT

REFERENCE ONLY

This document is for reference only. Please refer to Physician Order's for specific indications, dosages, and applications

IFT DRUG: DILTIAZEM INFUSION

Physicians may order additional bolus doses to supplement infusion.

- **IV/IO: 10 mg slow over 2 minutes. Repeat every 10-15 minutes PRN rate control.**

OR

- **IV/IO: 0.25 mg/kg IV over 2 minutes. May repeat in 15 minutes @ 0.35 mg/kg IV over 2 minutes**

Onset:

- 2-5 minutes

Duration:

- 1-3 hours

Side Effects:

- First or second degree AV block
- Bradycardia
- Ventricular dysrhythmias
- CHF, Edema
- Hypotension, Syncope
- Flushing
- Chest pain
- Dyspnea
- Sweating
- N/V
- Dizziness
- Nervousness
- Xerostomia
- HA

Interactions:

- May prolong the sedative effects of midazolam.
- May enhance the effects of ASA and prolong bleeding time.
- Additive effects with antihypertensives, alpha-blockers, & diuretics.
- Should not be used in combination with IV beta-blockers. The negative inotropic, chronotropic, & hypotensive effects can induce heart failure.
- Calcium salts can antagonize the hypotensive effects, but do not seem to have an effect on AV conduction.
- Incompatible with simultaneous furosemide injection.

PEARLS:

- Monitor closely for hypotension
- If patient develops refractory hypotension after diltiazem administration, stop diltiazem infusion and **consider calcium chloride or calcium gluconate 0.5- 1 gm slow IV push as reversal agent (on med control order).**

Drug Name: **Dobutamine HCL**

Trade Name: **Dobutrex**

REVISED: **November 1, 2018**

Class:

- Sympathomimetic

Mechanism of Action:

- Beta (primarily beta 1) adrenergic agonist causing increased cardiac contractile force, automaticity and conduction;
- Also stimulates renin release by the kidneys

Indications:

- Congestive Heart Failure,
- Pulmonary congestion/Edema
- May be used in conjunction with other vasopressors for hypotension and shock

Contraindications:

- Untreated hypotension/shock
- Idiopathic hypertrophic subaortic stenosis
- Hypersensitivity
- Suspected drug-induced shock

Precautions:

- Ischemic heart disease
- Hypotension
- Angina and/or arrhythmias
- Pregnancy Class C
- Administer via infusion pump

Dosage:

Doses are highly variable and based on institutional guidelines and patient laboratory values. Double check orders with transferring physician.

IV/IO: 2 – 20 mcg/kg/min titrated to 20 mcg//kg/min

- **Titrated** to maintain MAP>65 or SBP >100
- Mix 4 mg/250 cc normal saline.
- Rarely, infusion rates as low as 0.5 mcg/kg/min or as high as 40 mcg/kg/min may be ordered.

Onset:

- IV/IO: 1-2 min
- Peak in 10 minutes

Duration:

- Based on infusion duration

Side Effects:

- Anxiety
- Tachycardia
- Ischemic heart disease
- Increased heart rate
- Hypotension
- Phlebitis
- Headache
- Angina and/or arrhythmias

Interactions:

- Incompatible with Sodium Bicarbonate and Lasix in the same line.

IFT

REFERENCE ONLY

This document is for reference only. Please refer to SWO's for specific indications, dosages, and applications

IFT DRUG: Dobutamine HCL

PEARLS:

- **Dobutamine should be administered by infusion pump only.**
- Dobutamine may be administered through a Y -site with concurrent dopamine, lidocaine, nitroprusside, and potassium chloride infusions; do not mix with sodium bicarbonate. Increases in heart rate of more than 10% may induce or exacerbate myocardial ischemia.
- Antiarrhythmic medications (i.e. Amiodarone or Lidocaine) should be readily available
- Correct hypovolemia before using Dobutamine in hypotensive patients. Elderly patients may have significantly decreased responses.

Drug Name: **Fentanyl Citrate**
Trade Name: **Sublimaze,**
Class:
Revised: **November 18, 2018**

- Synthetic Opiate, Narcotic Analgesic
- Opiate
- Schedule II Controlled Substance

Mechanism of Action:

Fentanyl is a powerful synthetic opiate with mechanism of action similar to Morphine. It is considered both faster acting and of shorter duration than Morphine.
Interacts with opiate receptors decreasing pain impulse transmission at the spinal cord level and higher in the CNS. Fentanyl is a potent μ-opiate receptor agonist.
Also causes peripheral vasodilatation increasing venous capacitance and decreases venous return (chemical phlebotomy) by depressing the responsiveness of alpha-adrenergic receptors.

Indications:

- Moderate to Severe Pain
- Adjunct for Intubation

Contraindications:

- Hypovolemia
- Hypotension (except as an adjunct in RSI)
- Hypersensitivity
- Head injury
- Myasthenia Gravis (causes severe muscle rigidity/)
- Patients who have taken MAOI (Anti-depressants such as Nardil and Parnate) within 14 days. MAOIs may cause paradoxical excitation, and in some cases seizures, hyperthermia, hypertension, and death.

Precautions:

- Respiratory depression
- Severe heart disease
- Geriatrics
- Pregnancy (C) *(increases to D if used for prolonged periods or high doses close to term)*
- May worsen bradycardia or heart block in inferior MI *(vagotonic effect)*
- Liver Failure/Kidney failure (may prolonged duration)

Dosage:

Doses are highly variable and based on institutional guidelines and patient laboratory values. Double check orders with transferring physician.

Loading Dose:

- **IV/IO: 1 - 4 mcg/kg over 5-10 minutes PRN,**

Infusion:

- **IV/IO: 1 - 5 mcg/kg/hour,**
- **Titrate in 0.5 mcg/kg/hour increments**

Onset:

- IV, IN, IO: 1-3 minutes
- IM:10-20 minutes

IFT

REFERENCE ONLY

This document is for reference only. Please refer to SWO's for specific indications, dosages, and applications

IFT DRUG: FENTANYL INFUSIONS

Duration:

- 1-2 hours (typical, see precautions)
- Peak effects in 30 minutes

Side Effects:

- Dizziness
- Altered L. O. C.
- Hallucinations
- Euphoria
- Mental impairment
- Hypotension
- Seizures (rare)
- Lightheadedness
- Bradycardia, Tachycardia
- N/V
- CNS Depression
- Respiratory Depression
- Muscle Rigidity

Interactions:

- CNS depressants may enhance effects (antihistamines, antiemetics, sedatives, hypnotics, barbiturates, and alcohol.
- No not mix in line with heparin

PEARLS

Close monitoring of SPO2, ETCO2 and respiratory status is required.

Fentanyl infusions are provided multiple different concentrations and volumes. Double check all infusions to prevent a medication error.

- **Fentanyl MUST be given slowly on a pump, as chest wall muscle rigidity, seizures, and hypotension have been associated with rapid administration.**
- Typically supplied in 100 mcg/2 ml concentration, although multiple different concentrations and volumes are available. Double check to prevent medication errors.
  - Infusions are often (but not always) provided in a 4 – 16 mcg/ml mcg/ml. Double check and confirm prior to administration/continuation of infusion.
- Since it decreases both preload and afterload it may decrease myocardial oxygen demand.
- Fentanyl is metabolized in the liver, excreted by the kidneys, and stored in body fat.

Drug Name: **Unfractionated Heparin (UF), Low Molecular Weight Heparin (LMWH)**

Trade Name: **Heparin, Lovenox**

REVISED: **November 1, 2018**

Class:

- Anticoagulant

Mechanism of Action:

- Heparin inhibits the clotting cascade by activating specific plasma proteins.

Indications:

- Acute coronary syndrome
- Atrial fibrillation with emboli
- Deep-vein thrombosis
- Pulmonary embolism
- Disseminated Intra-vascular Coagulation (DIC)
- To maintain IV Patency

Contraindications:

- Hypersensitivity
- Thrombocytopenia
- Uncontrolled active hemorrhage (exception for DIC)

Precautions:

- Pregnancy category C

Dosage:

IV Infusion: Infusion and SQ doses are highly variable and based on institutional guidelines and patient laboratory values. Double check orders with transferring physician.

Onset:

- IV/IO: Onset: (IV) Immediate
- SQ: 20-60 min
- Duration: 4-8 hr 1-2 min

Duration:

- Based on infusion duration

Side Effects:

- Hemorrhage
- Thrombocytopenia

Interactions:

- Increased risk of bleeding when used with aspirin, non-steroidal anti-inflammatory agents, dipyridamole, dextran, quinidine, cefamandole, cefmetazole, cefoperazone, cefotetan, thrombolytics, and warfarin.

IFT

REFERENCE ONLY

This document is for reference only. Please refer to Physician Order's for specific indications, dosages, and applications

IFT DRUG: Heparin

PEARLS:

If spontaneous hemorrhage develops, evidenced by hematuria, hematemesis, epistaxis, ecchymosis, etc., immediately contact medical control with regards to discontinuing administration.

Heparin comes in many concentrations from 1000 to 40 000 units/mL, and drug errors and even fatalities have resulted from concentration mix-ups. **double check dosage for concentration.**

- Dosing considerations: Infusions are based on weight and vary by indication (ACS, PE, etc.). Rate is typically constant but may be titrated/adjusted every few hours based on lab results (Pt/PTT, etc.).
- Due to the risk of medical errors, double check dose w/ another ALS provider (Paramedic, RN, etc.). Specifically observe for:
    - Dosing errors: Dosing errors have occurred, particularly in peds
    - Concentration Errors: Medical errors have occurred because of differences in concentration.
- The drug is used in the prevention and treatment of all types of thromboses and emboli, disseminated intravascular coagulation, arterial occlusion, and thrombophlebitis and is used prophylactically to prevent clotting before surgery and to keep certain IV lines patent.
- Heparin is considered part of the antithrombotic package (along with aspirin and fibrinolytic agents) administered to patient with STEMI, UA/NSTEMI, and acute coronary syndromes
- Unfractionated Heparin dosing is adjusted according to an individual patient's clotting time determined by blood lab analysis.
- Patients over 60 years old may require lower doses.
- Monitor all puncture sites (catheter, incision, etc.) for bleeding.
- Avoid new puncture sites, incisions or injections.

Drug Name: **Insulin**
Trade Name: **Regular Insulin**

REVISED: **November 1, 2018**

Class:

- Hormone

Mechanism of Action:

- Lowers serum glucose levels.
- Causes an intracellular potassium shift

Indications:

- Hyperglycemia
- Diabetic Keato Acidosis (DKA)
- Hyperosmolar, Hyperglycemic Non-Keatonic Coma (HHNC)
- Hyperkalemia

Contraindications:

- Hypoglycemia

Precautions:

- Pregnancy Class B (presumed safe based on animal studies)
- Beta-blockers

Dosage:

Doses are highly variable and based on institutional guidelines and patient laboratory values. Double check orders with transferring physician.

- **Infusions:**
  - ***IV/IO: 0.05-0.1 U/kg/hr***
  - Doses are highly patient, age, condition, and physician specific.

Onset:

- IV/IO: Onset: (IV) Immediate

Duration:

- Based on infusion duration

Side Effects:

- Anxiety, agitation,
- Hypoglycemia
- Hypokalemia

Interactions:

IFT

REFERENCE ONLY

This document is for reference only. Please refer to Physician Order's for specific indications, dosages, and applications

IFT DRUG: Insulin Infusions

PEARLS:

Observe/monitor for hypoglycemia. Rapid reductions in serum blood glucose levels (More than 100mg/dl per hour) may cause profound cerebral edema and should be avoided.

- Infusion pump is required.
- Common mixtures are:
  - (Adult) 100 units in 100 cc (1 u/ml)
  - (Peds) 50 u in 500 cc NS (0.1 u/ml)
  - (Peds) 25 u in 250 cc NS (0.1 u/ml)
- Targets blood glucose may be patient specific. Clarify prior to transport.
  - **Typically targeted Blood glucose is 80-130 mg/dl**
  - ***Consider* slowing or stopping (by 50%) infusion if BG drops by more than 50-100 mg/dl in 30 minutes. Contact medical control for guidance.**
- Rapid reductions in serum blood glucose levels (More than 100mg/dl per hour) may cause profound cerebral edema and should be avoided. High risk patients for cerebral edema include patients <5 years of age, those with an initial pH <7.0, newly diagnosed DM patients, and significantly dehydrated patients with marked elevations in BUN.
- May be co-administered with dextrose infusion or potassium depending on circumstances (i.e. treating hyperkalemia, DKA, or HHNC).
- Monitor closely for hypoglycemia. If a BG has not been obtained within 30 minutes, obtain a new one and monitor every 30 minutes thereafter.
- If symptoms of hypoglycemia or other deterioration occur, assess blood glucose, stop infusion, contact medical control, and treat accordingly.

Drug Name: **Levetiracetam**

Trade Name: **Keppra**

REVISED: **November 1, 2018**

Class:

- Anti-epileptic

Mechanism of Action:

- The exact mechanism by which levetiracetam acts to treat epilepsy is unknown.
- Levetiracetam may selectively prevent hypersynchronization of epileptiform burst firing and propagation of seizure activity. The drug binds to SV2A, a synaptic vesicle glycoprotein, and inhibits presynaptic calcium channels, reducing neurotransmitter release and acting as a neuromodulator. This is believed to impede impulse conduction across synapses.

Indications:

- Seizure control
- Seizure prophylaxis in setting of increased intracranial pressure and subarachnoid hemorrhage (traumatic and spontaneous)

Contraindications:

- Hypersensitivity

Precautions:

- Pregnancy category C

Dosage:

Doses are highly variable and based on institutional guidelines and patient laboratory values. Double check orders with transferring physician.

- ***IV/IO Infusion: 500-2000*** **mg IV infusion over 15 minutes.**

OR

- ***IV/IO Infusion: 20 mg/kg over 15 minutes, max of 2000 mg.***

Onset:

- IV/IO: Onset: (IV) Immediate

Duration:

- Based on infusion duration

Side Effects:

- Behavior abnormalities (aggression, agitation, anxiety)
- Hyperkinesia, irritability
- Somnolence, Fatigue
- Hypertension
- Rash, Stephen-Johnson Syndrome, Toxic Epidermal necrolysis (rare)
- Depressed repiratory rate

Interactions:

- May increase the risk of toxic side effects with various amphetamines, including methamphetamine and MDMA.

PEARLS:

Discontinue at first sign of rash or dermatological response. This may be early signs of Stevens-Johnson Syndrome (SJS) or Toxic Epidermal Necrolysis (TEN).

- KEPPRA injection contains 100 mg of levetiracetam per mL. It is supplied in single-use 5 mL vials containing 500 mg levetiracetam. It must be diluted prior to infusion.
  - It is typically diluted to **at least** 100 cc.
  - Keppra may be mixed in a wide variety of crystalloid solutions, including Sodium chloride (0.9%) injection, Lactated Ringer's, and Dextrose 5% injection.
- Levetiracetam is eliminated from the body primarily by the kidneys with about 66 percent of the original drug passed unchanged into urine. The plasma half-life of levetiracetam in adults is about 6 to 8 hours.
  - **Keppra infusions may be adjusted for hepatic and renal impairment.**
- Keppra may often be co-administered with benzodiazepines and Depakote.
- The side effect of hypertension most commonly occurred in children under 4 years of age. Hypertension in older patients should be concerning for other etiologies.

Drug Name: **Mannitol**

Trade Name: **Osmitrol**

REVISED: **November 1, 2018**

Class:

- Sugar Alcohol
- Osmotic Diuretic

Mechanism of Action:

- Induces the movement of intracellular water to the extracellular and vascular spaces.

Indications:

- The promotion of diuresis in the treatment of acute renal failure (Oliguria)
- Increased intracranial pressure
- Elevated intraocular pressure
- Promoting the urinary excretion of toxic substances.
- Blood transfusion reactions

Contraindications:

- Hypersensitivity
- Frank pulmonary edema

Precautions:

- Pregnancy category C
- Hyponatremia
- Congestive heart failure
- Hypotension, dehydration

Dosage:

Doses are highly variable. Double check orders with transferring physician.

IV Infusion. Observe closely for particulates and color of solution. DO NOT administer if discolored or there are particulates.

- ***Adult: 1.5-2 GM/KG slow IV Infusion over 15-60 minutes***
- **Pediatric: 0.25-0.5 gm/kg over 60 minutes**

Onset:

- IV/IO: Onset: (IV) Immediate

Duration:

- Based on infusion duration

Side Effects:

- Electrolyte imbalances (hyponatremia, hypokalemia)
- Fluid shift and intravascular overload
- Congestive heart failure and pulmonary edema

- Angina
- Seizures
- Hypovolemia via excessive diuresis

Interactions:

- ***Not line compatible with blood.***

PEARLS:

Do not administer unless solution is clear and without any particulates. This is especially important in cold weather.

- Mannitol is available in concentrations of 5%, 10%, 15%, 20% and 25%.
  - **Dilute to at least a 15% solution prior to administration.**
- Mannitol is usually supplied in glass bottles or non-pvc plastic containers as it will form a precipitate with PVC surfaces from traditional IV bags. Make sure to use vented tubing.
- Do not administer unless solution is clear and without any particulates.
- **Monitor closely for shock, hypotension, dehydration, decreased or compromise urine output, or neurological changes. If these occur, contact medical control promptly.**

Drug Name: **Midazolam**
Trade Name: **Versed**
Class:
Revised: **NOVEMBER 01, 2019**

- Benzodiazepine (non barbiturate sedative-hypnotic agent)
- Schedule IV Controlled Substance

Mechanism of Action:

- Acts at the level of the limbic, thalamic, and hypothalamic regions of the CNS through potentiation of GABA (inhibitory neurotransmitter).
- Decreases neural cell activity in all regions of CNS
- Anxiety is decreased by inhibiting cortical and limbic arousal
- Promotes relaxation through inhibition of spinal motor reflex pathway, also depresses muscle & motor nerve function directly
- As an anticonvulsant, augments presynaptic inhibitions of neurons, limiting the spread of electrical activity. However, it does not alter the electrical activity of the seizure's focus.

Indications:

- Continuous infusions for control of status epilepticus
- Sedation during mechanical ventilation

Contraindications:

Shock
Coma
Hypersensitivity
Pregnancy (D)
Closed Angle Glaucoma

Precautions:

- Patients with respiratory insufficiency (asthma, COPD, etc.) are more susceptible to respiratory depression.
- Effects are enhanced by other CNS depressants.
- Elderly

Use caution when administering to patients with:

- Hepatic dysfunction
- Renal insufficiency
- History of drug addiction
- Parkinson's Disease
- Myasthenia gravis

Dosage:

Doses are highly variable and based on institutional guidelines and patient laboratory values. Double check orders with transferring physician.

Loading Dose:

- **IV/IO: 2-10 mg over 5-10 minutes PRN,**

Infusion:

- **IV/IO: 1-20 mg/hr**
- **Titrate in 0.5-1 mg/hr increments or as ordered**

Onset:

- IV: 1-3 minutes (dose dependent)

Duration:

- IV: 2-6 hours after infusion complete(dose dependent)

IFT

REFERENCE ONLY

This document is for reference only. Please refer to SWO's for specific indications, dosages, and applications

IFT DRUG: MIDAZOLAM INFUSIONS

Side Effects:

Minor:

- N/V
- Headache
- Drowsiness
- Lethargy
- Cough
- Hiccups

Major:

- Respiratory Depression
- Apnea
- Paradoxical CNS stimulation (i.e. Valium Rage)
- Hypotension
- Cardiac Arrest

Interactions:

- Additive with other CNS depressants
- *Macrolides* (e.g. erythromycin, clarithromycin): Inhibit metabolism of Midazolam. Can cause excess sedation to occur
- *Antifungals* (e.g. Itraconazole, ketoconazole): Inhibit metabolism of Midazolam. Can cause excess sedation to occur
- *Phenytoin*: midazolam may make levels unpredictable (decrease or increase phenytoin levels)
- *Baclofen*: midazolam is also a muscle relaxant and can cause excessive muscle relaxation with Baclofen

PEARLS:

Close monitoring of SPO2, ETCO2 and respiratory status is required.

Midazolam provides no pain relief. Agitation may be due to pain and the intubated patient should be assessed for need of pain medication/analgesia.

Midazolam infusions are provided multiple different concentrations and volumes. Double check all infusions to prevent a medication error.

- *Typically supplied in a 100 mg/250 ML D5W or NS concentration.*
- *Has more potential than other benzodiazepines to cause respiratory depression and arrest. Use with extreme caution in peds. Slower administration may reduce this.*
- Midazolam has twice the affinity for benzodiazepine receptors than does diazepam and has more potent amnesic effects
- It is short acting and roughly 3-4 times more powerful than diazepam
- *Elderly, debilitated, or patients under the influence of other CNS depressants require reduced dosages*

This document is for reference only. Please refer to Physician Order's for specific indications, dosages, and applications

IFT

REFERENCE ONLY

Drug Name: **Naloxone**
Trade Name: **Narcan**
Class: Narcotic Antagonist
Revised: **November 1, 2018**

Mechanism of Action:

Binds competitively to opiate receptor sites, displacing opioids. Antagonizes many (but not all) actions of opioids

Indications:

- Complete or partial reversal of depression caused by narcotics or synthetic narcotics
- Coma of unknown etiology
- Maintenance of opioid reversal by narcotic antagonist

Contraindications:

- Known Hypersensitivity

Precautions:

- Pre-existing cardiac disease
- Patients who have received cardiotoxic drugs
- Abrupt and complete reversal can cause withdrawal-type effects
- Pregnancy (B)
- Use with caution in poly-pharmaceutical overdoses

Dosage:

Doses are highly variable. Double check orders with transferring physician Infusion for IFT or prolonged transports:

- To Mix: 4 mg/250 cc NS (16 mcg/cc)
- **50-100% of total initial bolus /hour, titrated PRN**
- **May Rebolus at ½ initial total bolus in 15 minutes after infusion PRN**

Onset:

- IV/IO--1-2 minutes
- IN: 1-4 minutes
- IM, SubQ: 2-8 minutes

Duration:

- Based on infusion, typically 30-60 minutes after discontinuation

Side Effects:

- Tachycardia
- Hypotension
- HTN
- Dysrhythmias
- N/V
- Diaphoresis

Interactions:

- Incompatible with alkaline drugs

IFT DRUG: NALOXONE INFUSION

IFT

REFERENCE ONLY

This document is for reference only. Please refer to Physician Order's for specific indications, dosages, and applications

DRUG: NALOXONE INFUSION

PEARLS

- Infusion is based on recommended guidelines, but there are many different nanograms. The common infusion method is to take between 50% and 100% of the total bolus dose ("The Awakening Dose") and use that as a guide for the amount of naloxone needed **per hour.**
  - *For example*, if the patient required 2 mg of naloxone total to restore respirations, then the starting point for the naloxone infusion would be 1 - 2 mg/hour, titrated as needed.
  - *Increase* as needed for hypoxia, respiratory or CNS depression.
  - *Decrease* as needed for signs of withdrawal.
  - A bolus dose equal to half the initial bolus should be administered at 15 minutes after infusion has been to achieve predicted steady-state concentrations effectively.
- Use with caution in poly-pharmaceutical overdoses, reversal of opiate may result in an extremely hyperdynamic patient (i.e. "speedball").
- The goal of naloxone administration is to reverse respiratory depression and hypoxia while avoiding while avoiding combativeness and agitation.
- These adverse events can be minimized with airway management, slow administration and small titrated doses of naloxone.
- If administered too rapidly, this medication will induce vomiting.

Drug Name: **Nicardipine**
Trade Name: **Cardene**

REVISED: **November 1, 2018**

Class:

- Calcium Channel Blocker

Mechanism of Action:

- Nicardipine is a dihydropyridine calcium-channel blocker that inhibits the contractile processes of smooth muscle cells resulting in coronary and systemic vasodilatation.

Indications:

- Hypertension, including hypertensive urgency and hypertensive crisis
- Prevention/prophylaxis and treatment of hypertension in certain conditions, such as acute stroke

Contraindications:

- Hypersensitivity
- Hypotension
- Advanced aortic stenosis

Precautions:

- Hypotension, headache, and tachycardia may occur.
- In patients who are taking beta-blocking agents, Nicardipine may precipitate or exacerbate heart failure.
- Use with caution in patients with impaired renal or hepatic function
- Use in caution in patients who are on other calcium channel blockers.

Dosage:

Doses are highly variable and based on institutional guidelines and patient laboratory values. Double check orders with transferring physician.

- IV/IO Infusion: **Initial infusion rate of 5mg/hr IV , titrated by 2.5 mg/hr every 5 minutes to a maximum of 15 mg/hr**,
  - **ISCHEMIC CVA:** Titrated to maintain a SBP less than 185 mm Hg and DBP <110 mm Hg.
  - **HEMORRHAGIC CVA:** Titrated to maintain a SBP less than 160 mm Hg and DBP <110 mm Hg.
  - **HTN Crisis:** Titrated to maintain a SBP less than 220 mm Hg and DBP <110 mm Hg.

Onset:

- IV/IO: Onset: (IV) Immediate

Duration:

- Based on infusion duration

Side Effects:

- Hemorrhage
- Thrombocytopenia

Interactions:

- Additive effect on bleeding with other anticoagulants, ASA, NSAID

IFT

REFERENCE ONLY

This document is for reference only. Please refer to Physician Order's for specific indications, dosages, and applications

IFT DRUG: Nicardipine

PEARLS:

Hypotension is the most common side effect. Monitor closely and have a line of IV fluids to treat hypotension. If patient becomes hypotensive, discontinue infusion and treat accordingly.

Blood pressure parameters are condition, patient, and physician specific. Confirm blood pressure parameters prior to transport.

- In general, Nicardipine is used after other interventions, such as beta blockers, have been unsuccessful.
- ***Acute Stroke patients*** should not have their blood pressure lowered to "normal" (i.e. 120/60). A goal of 150-170 is permissible, with most guidelines recommending SBP <185 mmHg and DBP < 110 mmHg.
- ***HTN urgency/crisis patients*** should not have their blood pressure lowered to "normal" (i.e. 120/60). In general, aim for a 10-15% reduction in SBP is desired.
- Monitor BP before initial dose and every 15 minutes for 1 hour after the infusion is initiated and after a dose change. Thereafter, blood pressure is followed at a minimum of every 30 minutes and if clinical deterioration occurs.
- Be prepared for hypotension.
- Ampuls must be diluted prior to administration.
- If a peripheral vein is used, the infusion site should be changed every 12 hours.

Drug Name: **Nitroglycerin Infusion**
Trade Name: **NitroStat, Nitrol, Nitrolingual, Nitro-Bid Ointment, Tridil, Nitro, NTG**
REVISED: **November 1, 2018**

Class:

- Antianginal Agent
- Nitrate
- Vasodilator

Mechanism of Action:

- Nitrates relax peripheral venous vessels, causing a pooling of venous blood and decreased venous return to the heart, which decreases preload.
- Nitrates reduce both arterial impedance and venous filling pressures, resulting in a reduction of the left ventricular systolic wall tension, which decreases afterload. Decreases preload.
- Results in the reduction of myocardial workload and myocardial oxygen demand.
- Aids in the reversal of pulmonary edema.
- It also causes some vasodilatation of coronary arteries (limited by atherosclerosis) increasing perfusion of ischemic myocardium.

Indications:

- Chest pain associated with angina
- Chest pain associated with AMI
- Acute pulmonary edema
- Symptomatic Hypertension (Hypertensive Crisis)

Contraindications:

- Head Injury, Increased ICP
- Cerebral hemorrhage
- Hypotension
- Hypovolemia
- Recent Viagra (sildenafil) use **(OR similar drugs)**
- Hypersensitivity to nitrate
- Constrictive Pericarditis, Pericardial Effusion

Precautions:

- Nitro deteriorates rapidly after bottle is opened, bottle should be opened and dated, and also protected from light.
- Use with caution in closed-angle glaucoma, may increase intraocular pressure.
- Elderly may be more susceptible to the effect of nitrates.
- Hepatic disease *(metabolism may be impaired and lead to increased risk of methemoglobinemia)*
- Postural hypotension
- Pregnancy (C)

IFT

REFERENCE ONLY

This document is for reference only. Please refer to the physician's orders for specific indications, dosages, and applications

IFT Drug: NITROGLYCERIN

Dosage:

Doses are highly variable and based on institutional guidelines and patient laboratory values. Double check orders with transferring physician Infusion for IFT or prolonged transports:

Nitro drip:

- **IV/IO**: **5-10 μg/min,**
  - Titrated for effect 5-10 μg/min every 5 minutes up to a max of 200 μg/min **(Hold for systolic <100, titrate up and down in 5 mcg increments)**

Onset:

- IV—Immediate

Duration:

- IV—several minutes, dose dependent.

Side Effects:

- Headache due to vasodilation
- Hypotension, Dizziness
- N/V
- Xerostomia (Dry Mouth)
- Reflex tachycardia
- Skin rash, Flushing
- Anxiety
- Agitation
- Methemoglobinemia *(rare, usually with high doses of the IV formulation, but can be seen with normal therapeutic doses)*

Interactions:

Alcohol *(can theoretically produce additive hypotension)*
Aspirin results in increased serum nitrate concentrations *(may cause increased hypotension**, limited data**)*
Calcium channel blockers & beta-blockers—additive interaction can result in symptomatic orthostatic hypotension.
Sympathomimetics may antagonize the effects of nitroglycerin.
May compromise the efficacy of alteplase, TPA when administered concomitantly.

PEARLS:

- **Nitroglycerine infusions should be run on a pump.**
- **Confirm compatibility with other infusions/interventions.**
- Physicians may order or have administered NYG IV Boluses prior to arrival of EMS.
- Establish desired vital sign parameters from transferring hospital prior to departure.
- Monitor vitals frequently. Set up NIBP for automatic assessment every 5 minutes.
- Discontinue other NTG containing interventions , such as NTG paste, while infusion is active.
- The primary concern with nitroglycerine use is iatrogenic hypotension relative to the myocardial demand, which may increase mortality and morbidity.
- Significant adsorption (80% of the nitroglycerin in solution) may occur with standard infusion sets made of PVC plastic. Use glass bottles only and special tubing provided by the manufacturer. Some pump tubing is OK for this use
    - Standard tubing and infusion bags are acceptable for short transports.
- Wear gloves when handling nitroglycerine, and avoid getting sprayed in the mouth by the NTG containing solutions. If you get IV Tridil on your skin, sit down quickly! If you get IV Tridill in your mouth, caffeinated beverages have been rumored to minimize the effects if consumed quickly (anecdotal reports)
- Orthostatic hypotension, xerostomia (dry mouth), & headache are probably the most common side effects associated with nitroglycerin administration, warn your patient.

IFT

REFERENCE ONLY

This document is for reference only. Please refer to the physician's orders for specific indications, dosages, and applications

IFT Drug: NITROGLYCERIN

REFERENCE ONLY

This document is for reference only. Please refer to SWO's for specific indications, dosages, and applications

IFT
REFERENCE ONLY

Drug Name: **Midazolam**
Trade Name: **Versed**
Class:
Revised: **NOVEMBER 01, 2019**

IFT DRUG: MIDAZOLAM INFUSIONS

- Benzodiazepine (non barbiturate sedative-hypnotic agent)
- Schedule IV Controlled Substance

Mechanism of Action:

- Acts at the level of the limbic, thalamic, and hypothalamic regions of the CNS through potentiation of GABA (inhibitory neurotransmitter).
- Decreases neural cell activity in all regions of CNS
- Anxiety is decreased by inhibiting cortical and limbic arousal
- Promotes relaxation through inhibition of spinal motor reflex pathway, also depresses muscle & motor nerve function directly
- As an anticonvulsant, augments presynaptic inhibitions of neurons, limiting the spread of electrical activity. However, it does not alter the electrical activity of the seizure's focus.

Indications:

- Continuous infusions for control of status epilepticus
- Sedation during mechanical ventilation

Contraindications:

Shock
Coma
Hypersensitivity
Pregnancy (D)
Closed Angle Glaucoma

Precautions:

- Patients with respiratory insufficiency (asthma, COPD, etc.) are more susceptible to respiratory depression.
- Effects are enhanced by other CNS depressants.
- Elderly

Use caution when administering to patients with:

- Hepatic dysfunction
- Renal insufficiency
- History of drug addiction
- Parkinson's Disease
- Myasthenia gravis

Dosage:

Doses are highly variable and based on institutional guidelines and patient laboratory values. Double check orders with transferring physician.

Loading Dose:

- o **IV/IO: 2-10 mg over 5-10 minutes PRN,**

Infusion:

- o **IV/IO: 1-20 mg/hr**
- o **Titrate in 0.5-1 mg/hr increments or as ordered**

Onset:

- IV: 1-3 minutes (dose dependent)

Duration:

- IV: 2-6 hours after infusion complete(dose dependent)

IFT

REFERENCE ONLY

This document is for reference only. Please refer to SWO's for specific indications, dosages, and applications

IFT DRUG: MIDAZOLAM INFUSIONS

Side Effects:

Minor:

- N/V
- Headache
- Drowsiness
- Lethargy
- Cough
- Hiccups

Major:

- Respiratory Depression
- Apnea
- Paradoxical CNS stimulation (i.e. Valium Rage)
- Hypotension
- Cardiac Arrest

Interactions:

- Additive with other CNS depressants
- *Macrolides* (e.g. erythromycin, clarithromycin): Inhibit metabolism of Midazolam. Can cause excess sedation to occur
- *Antifungals* (e.g. Itraconazole, ketoconazole): Inhibit metabolism of Midazolam. Can cause excess sedation to occur
- *Phenytoin*: midazolam may make levels unpredictable (decrease or increase phenytoin levels)
- *Baclofen*: midazolam is also a muscle relaxant and can cause excessive muscle relaxation with Baclofen

PEARLS:

Close monitoring of SPO2, ETCO2 and respiratory status is required.

Midazolam provides no pain relief. Agitation may be due to pain and the intubated patient should be assessed for need of pain medication/analgesia.

Midazolam infusions are provided multiple different concentrations and volumes. Double check all infusions to prevent a medication error.

- *Typically supplied in a 100 mg/250 ML D5W or NS concentration.*
- *Has more potential than other benzodiazepines to cause respiratory depression and arrest. Use with extreme caution in peds. Slower administration may reduce this.*
- Midazolam has twice the affinity for benzodiazepine receptors than does diazepam and has more potent amnesic effects
- It is short acting and roughly 3-4 times more powerful than diazepam
- *Elderly, debilitated, or patients under the influence of other CNS depressants require reduced dosages*

Drug Name: **Phenylephrine**
Trade Name: **Neosynephrine, Vazculep**

REVISED: **November 1, 2018**

Class:

- Nasal decongestant
- Sympathomimetic amine
- Vasopressor (Alpha 1 agonist)

Mechanism of Action:

- When used intravenously, phenylephrine stimulates systemic alpha-adrenergic receptors causing potent vasoconstriction with minimal chronotropic or inotropic effects.

Indications:

- Hypotension
- Shock

Contraindications:

- Hypersensitivity

Precautions:

- Pregnancy category C

Dosage:

Doses are highly variable and based on institutional guidelines and patient laboratory values. Double check orders with transferring physician.

- **Push Dose pressor**
  - ***Adult 50 -200 mcg every 2-10 minutes PRN for hypotension***

- ***Infusion***
  - **100-180 mcg/min loading dose, then 40-60 mcg min maintenance infusion.**

Onset:

- IV/IO: 1 minute

Duration:

- 10-20 minutes (IV)

Side Effects:

- HTN
- Tachy arrythmias at high doses (mechanism unknown)
- Restlessness
- Tremors
- Dizziness
- Headache

Interactions:

- ***Incompatible in same line as insulin***

PEARLS:

Observe closely and frequently for extravasation. Stop infusion if there is any concern of this occurring.

- Typically phenylephrine are *highly concentrated* and require dilution prior to administration.
- When given as an infusion, phenylephrine should be administered on a pump.
  - Commonly prepared in a 10 mg/250 ml (NS or D5W) solution for a 40 mcg/ml concentration, though local practices may vary.
  - Some institutions report significantly higher concentrations (up to 400 mcg/ml).
  - **Always double check concentrations with transferring staff.**

- Phenylephrine may be also ordered as a bolus (push dose pressor). Confirm line patency prior to admin. Administer strictly as ordered.

  - **Push dose concentrations are often different from infusion concentrations.**
  - Common example: 10 mg/100 ml (100 mcg/ml), administer in 0.5-2 ml boluses.
  - These 'push-dose pressors' are often used in rersponse to short-lived hypotension, e.g., post intubation or during procedural sedation. They also can act as a bridge to infusion vasopressors

- These infusions often are co-administered with other vasopressors
- **Commonly but not required to be administered via central line.**

Drug Name: **Phenytoin Sodium/Fosphenytoin**
Trade Name: **Dilantin/Cerebyx**

REVISED: **November 1, 2018**

Class:

- Prevention and treatment of seizures
- Antiarrhythmic due to digitalis toxicity

Mechanism of Action:

- Sodium Channel Blockade
- Inhibits spread of seizure activity through motor cortex
- Fosphenytoin is converted to the anticonvulsant phenytoin after administration.

Indications:

- Seizure control
- Seizure prophylaxis

Contraindications:

- Hypersensitivity
- Any arrhythmia except those due to digitalis toxicity
- AV-Block
- Bradycardia
- Adams-Stokes syndrome
- Rapid IV administration

Precautions:

- Pregnancy category D (Evidence of Fetal Risk, may be used if benefit outweighs the risk)
- Dilute prior to administration.
- May precipitate hyperglycemia

Dosage:

Doses are highly variable and based on institutional guidelines and patient laboratory values. Double check orders with transferring physician.

Phenytoin

Adults

- **Seizure Control/prophylaxis (ADULTS)**
  - **IV/IO loading dose: 10-15 mg/kg**
  - ***50 mg/min max administration rate***
  - **IV/IO Maintenance Infusion: 300 mg/30 minutes**

- **Arrhythmias due to digitalis toxicity (ADULTS)**
  - **IV/IO: 100 mg over 5 minutes**

PEDS

- **Seizure Control/prophylaxis (PEDS)**
  - **IV/IO loading dose: 10-15 mg/kg**
  - ***50 mg/min max administration rate***

- **Arrhythmias due to digitalis toxicity (PEDS)**
  - **IV/IO: 3-5 mg/kg over 10 minutes.**

IFT DRUG: Phenytoin/Fosphenytoin

***Fosphenytoin*:** dose expressed in phenytoin equivalents (PE)

- **Seizure Control/prophylaxis (adults)**
  - ***IV/IO loading dose: 15-20 PE/kg; rate up to 100-150 PE/min***
    - ***Do not administer faster than 150 PE/min.***

Onset:

- IV/IO: Onset: (IV) Immediate

Duration:

- Based on infusion duration

Side Effects:

- CNS depression
- Hypotension
- Localized tissue irritation (observe for infiltration)
- Nystagmus/Visual Disturbance
- Purple Glove Syndrome

Interactions:

- Do not administer in dextrose/glucose solutions.
- Amiodarone, Ranitidine, Nifedipine may increase serum Phenytoin levels.

PEARLS:

Observe and monitor for hypotension and dysrhythmias.

Administer SLOWLY.

- **Must be administered via infusion pump.**
- **Observe and monitor closely for hypotension.**
- If intravenous phenytoin and fosophenytoin is given too rapidly, may result in:
    - Cardiac dysrhythmias including ventricular fibrillation or asystole
    - Severe Hypotension
    - Subcutaneous extravasations of intravenous phenytoin may cause tissue necrosis or pain at the IV site
- **Physician may order Sodium Bicarbonate for suspected toxicity or adverse effects.**

FOSPHENYTOIN

- Prior to IV infusion, dilute CEREBYX in 5% dextrose or 0.9% saline to a concentration of 1.5 to 25 mg PE/mL.
- The maximum concentration of CEREBYX in any solution should be 25 mg PE/mL.
- The safety and efficacy of CEREBYX in pediatric patients have not been established.

PHENYTOIN:

- Phenytoin is only administered with sterile 0.9% sodium chloride diluent in a separate burette and administration set.
- The mixing of phenytoin sodium with other drugs or with intravenous infusion solutions is not recommended because the solubility of phenytoin sodium is such that crystallization or precipitation may result.

IFT DRUG: Phenytoin/Fosphenytoin

Drug Name: **Potassium**

Trade Name: **Potassium, K+**

REVISED: **November 1, 2018**

Class:

- Electrolyte

Mechanism of Action:

- Potassium is a major electrolyte (Cation) in the intracellular space, and plays critical roles in membrane potential, repolarization, and other metabolic functions.

Indications:

- Suspected hypokalemia
- Prophylaxis against hypokalemia

Contraindications:

- Suspected Hyperkalemia

Precautions:

- Known renal failure
- Burns post 36 hours
- Crush injuries
- Addison's Disease

Dosage:

IV Infusion: Infusion doses are highly variable and based on institutional guidelines and patient laboratory values. Double check orders with transferring physician. Below are typical infusion rates for reference only.

Adults

- **IV/IO: 20-60 mEq/ concentration infused at 10-20 mEq/hour**

Pediatrics

- **IV/IO: 0.5-1 mEq/kg/hour, max of 20 mEq/hour**

Onset:

- IV/IO: Immediate

Duration:

- Based on infusion duration

Side Effects:

- Dysthymia
- Muscle Weakness
- Numbness/Tingling in extremities
- Hyperkalemia
- Cardiac Arrest

Interactions:

- Increased risk hyperkalemia, dysrhythmia, and death with use of depolarizing agents (i.e. Succinylcholine). Avoid concomitant use if possible.

IFT

REFERENCE ONLY

This document is for reference only. Please refer to Physician Order's for specific indications, dosages, and applications

IFT DRUG: Potassium

PEARLS:

Monitor closely for s/s of hyperkalemia.

- EKG monitoring is mandatory.
- Solutions containing greater than 20 mEq/1000 cc (or equivalent concentrations) must be administered on an infusion pump.
- Due to the risk of medical errors, double check dose w/ another ALS provider (Paramedic, RN, etc). Specifically observe for:
    - Dosing errors: Dosing errors have occurred, particularly in peds
    - Concentration Errors: Medical errors have occurred because of differences in concentration.
    - Route Errors: Concentrations in excess of 40 mEq/500 cc should be administered via central venous access only.
- Monitor q30-60 min for pain at injection site; phlebitis, infiltration.
- If sign of hyperkalemia are suspected, discontinue infusion and contact medical control immediately.
- If peripheral line, run concurrently with maintenance IV fluids via separate large volume infusion pump to decrease concentration.
- Potassium infusions can be uncomfortable. Occasionally Lidocaine may be added to infusions. Keep this in mind when administering any additional anti-arrhythmic.

Drug Name: **Propofol**
Trade Name: **Diprovan**

REVISED: **November 1, 2018**

Class:

- Sedative
- General Anesthetic

Mechanism of Action:

- Propofol causes sedation by potentiating GABA receptors in the CNS, possibly by slowing channel closing time.

Indications:

- Sedation for intubated/mechanically ventilated patients
- Sedation for special painful procedures

Contraindications:

- Situations where anesthesia/sedation is not indicated
- Children less than 2 months of age
- Hypersensitivity
- Hypotension

Precautions:

- Hypotension/hypertension
- Anaphylaxis

Dosage:

IV Infusion

- **IV/IO: 5-50 mcg/kg/min**
  - **Titrated in 5 mcg/kg/min increments** to sedation and blood pressure

Onset:

- Propofol's onset is typically around 40 seconds from administration time, and has a short duration (3-5 minutes after administration is discontinued).

Duration:

- Based on infusion duration

Side Effects:

- Hypotension/hypertension
- Transient apnea
- Dystonias
- Pain at injection site
- hyperlipidemia
- bradycardia

Interactions:

- Increased effects with narcotics (e.g., morphine, meperidine, fentanyl), sedatives (e.g., benzodiazepines, barbiturates, chloral hydrate, droperidol) and potent inhalational agents (e.g., isoflurane, enflurane, halothane).
- Concomitant fentanyl may cause bradycardia in pediatrics.
- Increased risk of propofol infusion syndrome with vasoconstrictors, steroids, and inotropes.

PEARLS:

- Monitor for anaphylactic/anaphylactoid reactions, life-threatening anaphylactic reactions reported.
- Monitor closely for hypotension.
    - Correct fluid deficits/hypotension prior to use.
- Lower induction doses and slower rate of administration needed in elderly, debilitated or ASA-PS III/IV patients;
- Monitor for early signs of hypotension, bradycardia, apnea, airway obstruction, and/or oxygen de-saturation.
- **Propofol Infusion Syndrome**: Propofol infusion syndrome is characterized by severe metabolic acidosis, hyperkalemia, lipidemia, rhabdomyolysis, hepatomegaly, and cardiac/renal failure.
    - Consider alternative means of sedation if increased dose is required.
- Avoid abrupt d/c prior to weaning or for daily evaluation of sedation level; may result in rapid awakening with associated anxiety, agitation, and resistance to mechanical ventilation.
- Local pain, swelling, blisters, tissue necrosis reported following accidental extravasation.
- Older literature contains cautions against propofol use in those patients with an egg or soy allergy. More recent evidence shows that there is little to no connection between propofol and egg allergies. Most reports of anaphylaxis to propofol have occurred in patients without egg allergy and the vast majority of patients with egg allergy receive propofol without reaction.

Class: # Proton Pump Inhibitors

Drug /Trade Names: **Esomeprazole (Nexium®) Lansoprazole (Prevacid®) Omeprazole (Prilosec®) Pantoprazole (Protonix®)**

REVISED: **November 1, 2018**

Class:

- Proton pump inhibitor

Mechanism of Action:

- Diminishes daily production of acid.
- Causes an intracellular potassium shift

Indications:

- Acid Reflux
- GERD
- GI ulcers and bleeding
- Prevention of stress related mucosal injury

Contraindications:

- Hypersensitivity

Precautions:

- Pregnancy Class B (presumed safe based on animal studies)
- Liver disease

Dosage:

Doses are highly variable and based on institutional guidelines and patient laboratory values. Double check orders with transferring physician.

- **Omeprazole (Prilosec®)**
  - ***IV/IO: 80 mg Bolus prior to infusion, administered slowly (over 2 minutes).***
  - ***IV/IO Infusion: 8 mg/hour***
- **Pantoprazole (Protonix®)**
  - ***IV/IO: 80 mg Bolus prior to infusion, administered slowly (over 2 minutes).***
  - ***IV/IO Infusion: 8 mg/hour***
- **Esomeprazole (Nexium®)**
  - ***IV/IO Infusion: 20-40 mg over 30 minutes***
- **Lansoprazole (Prevacid®)**
  - ***IV/IO: 60 mg Bolus prior to infusion, administered slowly (over 2 minutes).***
  - ***IV/IO Infusion: 6 mg/hour***

Onset:

- IV/IO: Immediate

Duration:

- Based on infusion duration

IFT

REFERENCE ONLY

This document is for reference only. Please refer to Physician Order's for specific indications, dosages, and applications

IFT DRUG: Proton Pump Inhibitors

Side Effects:

- Rash
- Jaundice
- GI upset
- CNS Symptoms in elderly

Interactions:

- Reduced clearance of Benzodiazepines
- Reduced bio availability of drugs dependent on gastric PH for absorption
- Interacts with warfarin and cyclosporine
- Incompatible with many IV medications in the IV line.

PEARLS:

PPI Infusions have many incompatibilities in the same IV line with other medications. When in doubt, confirm with transferring hospital or use another line.

- PPIs may be administered orally, as an IV/IO bolus or as an infusion. In EMS, PPIs are often given for prevention of the physiologic stress-related gastric mucosal injury often seen in the critically ill.

  .
- IV PPIs should be administered through a dedicated IV line, and flushed with compatible solutions pre- and post-administration.
  - Lansoprazole (Prevacid®) requires a filter set for administration.

- Incompatible with many IV medications in the IV line. Flush well or use different line.
  - Compatible with:
    - Aminophylline
    - Ampicillin
    - Cefazolin
    - Dopamine
    - Furosimide
    - Ketoralac
    - Penicillin
    - Potassium
    - Procainamide
    - vasopressin
  - Specifically **not compatible** with:
    - Amiodarone
    - Atropine
    - Dexamethasone
    - Diazipam
    - Digoxin
    - Esmolol
    - Lidocaine
    - Mannitol
    - Naloxone
    - Nor-epinepherine
    - Propofol
    - Vecuronium
    - Verapomil
  - **When in doubt, check with transferring hospital.**

Class: **Sodium Nitroprusside**
Trade Names: **Nipride, Nitropress**
REVISED: **November 1, 2018**

Class:

- Vasodilitator

Mechanism of Action:

- Relaxation of vascular smooth muscle and consequent dilatation of peripheral arteries and veins. Other smooth muscle (e.g., uterus, duodenum) is not affected. Sodium nitroprusside is more active on veins than on arteries.

Indications:

- Acute hypertension
- Blood Pressure control in the critically ill (i.e. Aortic Aneurism)

Contraindications:

- Hypersensitivity
- Heart Failure
- Hypotension
- Aortic Deformity/stenosis

Precautions:

- Pregnancy Class C

Dosage:

Doses are highly variable and based on institutional guidelines and patient laboratory values. Double check orders with transferring physician.

- Infusion:
  - ***IV/IO: 0.3 – 5 mcg/kg/min***

Onset:

- IV/IO: Immediate

Duration:

- 1-10 minutes from time infusion is discontinued

Side Effects:

- Hypotension
- Cyanide toxicity
- Methemoglobinemia
- Thiocyanate Toxicity
- Metabolic Acidosis
- Tachycardias and Bradycardias
- Increased ICP

Interactions:

- ***Is potentiated by other drugs with hypotensive properties.***

PEARLS:

Monitor closely for Hypotension and Toxicity

- Typically mixed as 50 mg/2 ml vials Sodium Nitroprusside in 250 or 500 cc of D5W or NS. It is light sensitive and is often “shrouded”. If properly protected from light, it is shelf stable for 24 hours after mixing.
- Nitroprusside should be administered in its own dedicated line.
- Nitroprusside is highly vasoactive. The patient should be closely monitored with frequent blood pressure checks.
- Half-life of Nitroprusside is approximately 2 minutes, allowing for 6-12 minutes to clear the patient completely providing normal metabolism.
- Overdosage of nitroprusside can be manifested as excessive hypotension or cyanide toxicity or as thiocyanate toxicity.
    - Standard Cyanide treatment is often effective.
- Sodium nitroprusside infusions at rates above 2 mcg/kg/min generate cyanide ion (CN–) faster than the body can normally dispose of it. Doses above 10 mcg/kg/min for more than 30 minutes can rapidly become lethal. It is imperative that this medication only be given via infusion pump and monitored closely.
- Methemoglobinemia (MetHb) is a blood disorder in which an abnormal amount of methemoglobin is produced. Hemoglobin is the protein in red blood cells (RBCs) that carries and distributes oxygen to the body. Methemoglobin is a form of hemoglobin. With methemoglobinemia, the hemoglobin can carry oxygen, but is not able to release it effectively to body tissues.

Drug Name: **Thrombolytics/Fibrinolytics**

Trade Name: **tPA, Retavase, Streptase, Alteplase**

REVISED: **November 1, 2018**

Class:

- Thrombolytics/Fibrinolytics

Mechanism of Action:

- Thrombolytics activate the enzyme plasminogen, which in turn becomes plasmin, the body's major enzyme for clot breakdown. This makes a clot soluble, and susceptible to further degradation by other enzymes.
- Alteplase is naturally occurring in the body, on the endothelial wall of blood vessels.
- Other thrombolytics (ex. Reteplase, Streptokinase) are modified Alteplase molecules.

Indications:

- CVA – non-hemorrhagic
- Myocardial infarction
- Pulmonary embolus
- Femoral occlusion

Contraindications:

- Hypersensitivity
- Recent Surgery – any type (<10 days)
- Brain or spinal surgery within 2 months
- GI/GU bleeding
- Uncontrolled Hypertension
  - CVA: (BP > 185 SBP or 110 DBP)
  - STEMI: (BP > 180 SBP or 110 DBP)
- Active internal hemorrhage, intercranial hemorrhage, or uncontrolled external hemorrhage
- Previous CVA (any type) within 2 months
- Uncontrolled active hemorrhage (exception for DIC)

Precautions:

- Pregnancy category C

Dosage:

Doses are highly variable and based on institutional guidelines and patient laboratory values. Double check orders with transferring physician.

- **Alteplase (tissue plasminogen activator, tPA)**
  - ***Adult dosing MI:*** **15 mg IV bolus, then 0.75 mg/kg over the next 30 minutes, then 0.5 mg/kg over 60 minutes.**
  - ***Adult Dosing CVA:*** **0.9 mg/kg infused over 60 minutes; initially, give 10% of the dose over one minute, and then the remaining 90% of the dose over the next sixty minutes.**
- **Reteplase (Retavase)**
  - ***Adult dose MI*****: 10 units IV bolus over 2 minutes; then, 30 minutes later, give second 10 unit IV bolus over 2 minutes; administer with Heparin and Aspirin.**

IFT

REFERENCE ONLY

This document is for reference only. Please refer to Physician Order's for specific indications, dosages, and applications

IFT DRUG: Thrombolytics/Fibrinolytics

- **Streptokinase (Streptase)**
  - ***Adult dose MI:*** **1.5 million units administered via IV infusion over one hour**

Onset:

- IV/IO: Immediate

Duration:

- Based on infusion duration

Side Effects:

- Hemorrhage
- Thrombocytopenia

Interactions:

- Additive effect on bleeding with other anticoagulants, ASA, NSAID

PEARLS:

If spontaneous hemorrhage develops, evidenced by hematuria, hematemesis, epistaxis, ecchymosis, etc., immediately contact medical control with regards to discontinuing administration.

Observe and monitor for intracranial bleeding. If signs of intracranial hemorrhage or decreased mental status develop, immediately discontinue infusion *first*, contact medical control and expedite transport.

- Confirm hemodynamic parameters prior to transfer, particularly upper blood pressure limits.
- These infusions often are co-administered with Heparin or similar infusions.
- When administering to the patient with AMI, (the most likely to receive this medication), watch the ECG closely for re-perfusion dysrhythmias. Reperfusion arrhythmias are usually short lived and asymptomatic**.**
- Streptokinase is rarely used.
- Avoid new puncture sites and monitor for bleeding.
  Monitor closely for anaphylaxis. Most common with streptokinase.

Drug: **Vasopressin**
Trade Names: **Pitressin**

REVISED: **November 1, 2018**

Class:

- Anti-diuretic Hormone

Mechanism of Action:

- Increases cyclic adenosine monophosphate (cAMP) which increases water permeability at the renal tubule resulting in decreased urine volume and increased osmolality
- Direct vasoconstrictor *without* inotropic or chronotropic effects.
- It may cause contraction of smooth muscle of the GIT and all parts of the vascular bed, especially capillaries, small arterioles and venules.

Indications:

- Severe and non-responsive hypotension
- Septic shock
- Diabetes insipidus
- Cardiac Arrest

Contraindications:

- Hypersensitivity

Precautions:

- Pregnancy Class B (presumed safe based on animal studies)
- Chronic Nephritis
- Ischemic Heart Disease
- May cause “water intoxication) with hyponatremia.

Dosage:

Doses are highly variable and based on institutional guidelines and patient laboratory values. Double check orders with transferring physician.

- **Cardiac Arrest (Bolus):**
  - ***IV/IO 40 Units once***
- **Shock conditions (Infusion)**
  - ***IV/IO infusion: 0.01 - 0.1 U/min***
    - **May be preceded by a loading bolus of 1-10 units**

Onset:

- IV/IO: Immediate

Duration:

- Based on infusion duration

Side Effects:

- Head aches
- Chest pain, arrythmias
- Pulmonary edema
- Bronchoconstriction

- Abdominal Cramps, Flatulence
- Mesenteric Ischemia

Interactions:

PEARLS:

- When given as an infusion, it must be given on a pump.
  - It can cause adverse reaction of arrhythmias, cardiac arrest, angina, myocardial ischemia, and peripheral constriction. This is usually seen in doses > 0.04 units/minute.
- Often supplied in 20-40 units in 1-2 ML. May be mixed in a syringe for infusion (40 U /40 ML) or in a 100 cc solution.
- Incompatible in the IV line with phenytoin and frusemide
- Rapid rebound hypotension is a frequent reaction to the abrupt discontinuation of the drip. Therefore, stopping the infusion should only be done as a last resort.
  - Ideally, vasopressin should be titrated down slowly by 0.01 unit/minute increments before discontinuing the drip to avoid adverse reactions.
- Vasopressin is metabolized by the kidneys and the liver. Renal/hepatic impairment may prolong excretion.
- Monitor for hyponatremia. If suspected, contact medical control for instructions. Instructions might consider Sodium Bicarbonate 0.5-1 meq/kg.