Northeast Ohio Regional

Prehospital Care Protocol and Treatment Guidelines

2019 R5

NAVIGATION

If viewing this document as a printed hard copy

The Header color of each section defines the protocol type

A D U L T P R O T O C O L

Blue – Adult Protocols

P E D I A T R I C P R O T O C O L

Pink – Pediatric

O B E M E R G E N C I E S

Purple – OB Emergencies

M E D I C A L C O N T R O L

Gray – Reference or Policy

Side Tabs

The side tabs highlight where you are in each protocol sub-section

The BLUE highlighted text shows which sub-section you are currently viewing

The GREY text shows the sub-sections before and after your current selection

If viewing this document as portable document file

(.pdf / Adobe Acrobat)

This document is hyperlinked for easy navigation in Adobe Acrobat.

The colored boxes in each protocol tree are linked to the respective pages with further information on the specific procedure, medication, or protocol page. There is an active link when hovering over the text within the colored box and the cursor changes from a bar to a pointer finger. Left clicking will jump to the linked page containing further information. Right clicking and selecting “Previous View” will return you to the page you started at.

This document is also bookmarked with respect to the individual sections. Use the book mark feature of Adobe Acrobat to display pre-designated bookmarks and click on each to jump between sections.

KEY TO ALGORITHMS

All algorithms are color coded to denote procedures, which may be performed by each level of certification. To perform procedures color - coded red, Online Medical Control must be contacted for permission. Higher levels of certification will perform lower level evaluations and procedures when interpreting the algorithms.

The protocol format is for quick reference and does not detail patient assessment, interpretation or interventions. EMS personnel are accountable for all patient care and documentation to their level of training and lower.

COLOR CODES	
YELLOW	EMT – EMT Skill and Assessment Level Interventions
GREEN	AEMT – Advanced EMT and Assessment Level Interventions
BLUE	Paramedic Skill and Assessment Level Interventions
RED	Medical Direction Contact / Authorization - Consult Required

Stop – Do NOT perform intervention if listed criteria are present. Discuss with Online Medical Control if provider feels there is therapeutic value despite the stop.

Caution – Reminder about specific intervention. Do NOT perform action unless listed criteria are met and understood. If question(s), contact Online Medical Control

Time sensitive – Requires timely response by providers within timeframe indicated

INTRODUCTION

These protocols and procedures are to be used as guidelines for operation during EMS calls that require medical direction. They are also intended to be guidelines to ensure that personnel are trained in proper pre-hospital patient care.

Procedures are not considered rigid rules, but rather established standards against which EMS practice can be measured.

Treatment protocols are specific orders directing the actions pertaining to techniques and/or medications used by EMS personnel who are required to practice under supervision of a physician and under their respective EMS Medical Control authority. Treatment protocols may and should be initiated without prior direct Online Medical Control contact, especially when the patient's condition and / or situation is life threatening.

Although not identical, these protocols and procedures are derived from the State of Ohio EMS guidelines. Please note that items in this manual are subject to continuous review for the sake of providing members with the most current emergency medical information. Updates to this material may be frequent to maintain a current standard of care to benefit both the patient and the provider of emergency medical care. Please replace older versions with newly updated material as soon as it is issued. Once updated, older versions are to be considered obsolete and are to be discarded to help eliminate confusion.

ONGOING IMPROVEMENT

In an effort to assure these protocols remain relevant and up-to-date, an email specific to the ongoing management of this document has been created. Anyone with ideas for improvement should email EMSprotocol@cuyahogacounty.us with their suggestions. If there are specific questions about intent, meaning, or interpretation of the protocols, these should be directed to one's EMS coordinator or Medical Director.

The above listed email will serve as a singular collection point for all corrections, and suggestions. Please understand that protocol changes are an ongoing, progressive, process requiring involvement of many parties to bring to print. Not all suggestions can or will be used, but all will be reviewed by the protocol committee and the Medical Directors. We look forward to your suggestions and corrections to assure that we field the finest pre-hospital care protocol.

INTRODUCTION

MEDICAL CONTROL GENERAL GUIDELINES

1. The patient history should not be obtained at the expense of the patient. Life-threatening problems detected during the primary assessment *must* be treated first.

2. Cardiac arrest due to trauma is not treated by medical cardiac arrest protocols. Trauma patients should be transported promptly with CPR, control of hemorrhage, cervical spine immobilization, and other indicated procedures attempted enroute.

3. In patients with non-life-threatening emergencies who require IV's, only two attempts at IV insertion should be attempted in the field; additional attempts must be made enroute.

4. In patients requiring IV's, as a courtesy to the patient and emergency department, attempts should be made to obtain a full set of bloods. A patient IV should not be compromised to obtain a set of bloods.

5. Patient transport, or other needed treatments, must not be delayed for multiple attempts at endotracheal intubation. Limit to two attempts pre-hospital.

6. Verbally repeat all orders received before their initiation.

7. Any adult medical patient or patients of any age with a cardiac history, irregular pulse, unstable blood pressure, dyspnea, chest pain, medication administration, or venous access *must* be placed on a cardiac monitor, a 12-lead obtained, and transmitted to the emergency department. The transmission must include the patient's name.

8. When transferring lower level prehospital care to a higher level of prehospital care, a thorough consult should be performed between caregivers describing initial patient presentation and care rendered to the point of transfer.

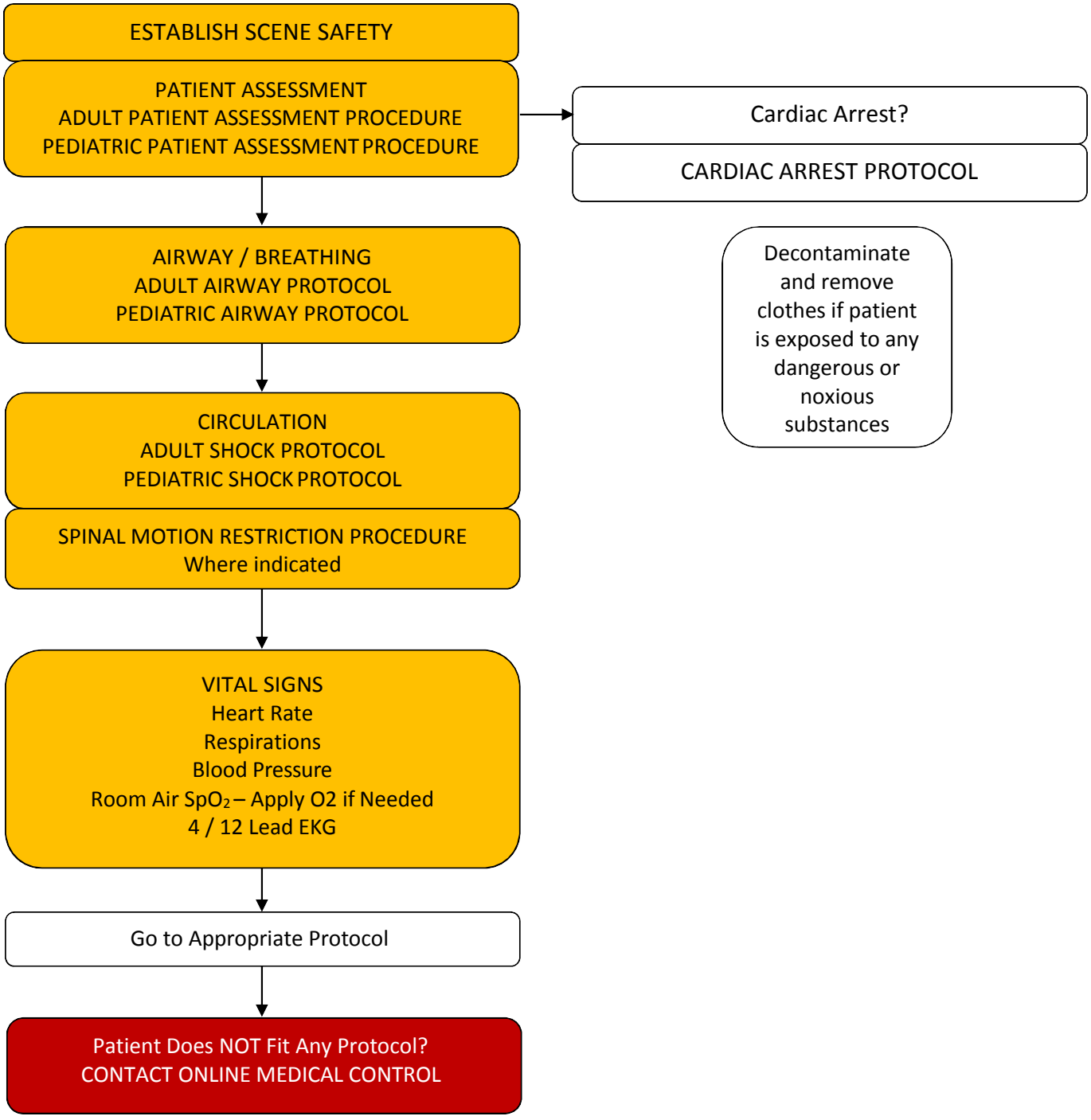
9. If the patient's condition does not seem to fit a protocol or protocols, contact Online Medical Control for guidance.

10. All trauma patients with a mechanism or history for multiple system trauma should be transported as soon as possible. The scene time should be 10 minutes or less.

11. Medical patients will be transported in the most efficient manner possible considering the medical condition. Advanced life support therapy should be provided at the scene if it would positively impact patient care. Justification for scene times greater than 20 minutes should be documented.

INTRODUCTION

UNIVERSAL PATIENT CARE PROTOCOL



EMT Intervention | AEMT Intervention | PARAMEDIC Intervention | Online Medical Control

Universal Patient Care Key Points

- Any patient contact, whether it results in an EMS transport or not, must have a completed PCR.
- Exam: Minimal exam if not noted on the specific protocol is vital signs, mental status, and location of injury or complaint.
- Required vital signs on every patient include BP, pulse, respirations, and pain scale.
- A pediatric patient is defined by the weight-based system
- . If the patient does not fit on the system, they are considered adult.
- Timing of transport should be based on patient's clinical condition and the transport policy.

General

- All patient care and documentation MUST be appropriate for your level of training and within the standard of care of the State of Ohio.
- Use the standard AHA guidelines for CPR and rescue breathing.
- Refer to the Post Resuscitation Cardiac Arrest Protocol for all resuscitated cardiac arrest patients.
- One provider can begin resuscitation and treatment while the other performs the assessment.
- It may be necessary to reference several protocols while treating a patient.
- Refer to the appropriate protocol and provide the required interventions as indicated.
- Additional focus may be needed in specific areas as indicated by the patient's chief complaint.
- Airway management and oxygen administration should be initiated based upon the results of the patient assessment and the protocols.
- IV's should be initiated in all patients based upon the results of the patient assessment and the Intravenous Access Procedure. Attempt to draw blood samples whenever an IV is initiated. However, do not jeopardize the IV for the blood samples.
- Administer cardiac monitoring and perform a 12-Lead EKG based upon the results of patient assessment or protocols.
- EMTs may apply the cardiac monitor, print a strip, and transfer the strip to the emergency department but may not interpret the rhythm.
- If indicated and possible, perform a 12-Lead EKG before moving to the squad and prior to any medication administration.
- Check the patient's Blood Glucose Level based upon the patient's assessment and the protocols.
- When assessing for pain, use a 0-10 pain scale; 0 = no pain; 10 = worst pain ever experienced.
- It is mandatory to document the reason why an intervention was not performed if it was indicated.
- If Online Medical Control requests that a functioning paramedic perform an intervention outside of the protocol, the functioning paramedic may follow the orders if ALL of the following apply:
    - The patient's condition could be severely affected if the intervention is not performed.
    - The paramedic has documented training in the intervention within the last 3 years.
    - The intervention is in the recognized scope of practice for paramedics in the state of Ohio.
    - The paramedic has received permission to perform the intervention from Online Medical Control.
    - Online Medical Control was notified that the intervention is not in the protocol.

Adult

- Patients who are taking beta-blockers may not have an elevated heart rate, but may still be in shock.
- General weakness can be a symptom of a life threatening illness.
- Hip fractures and dislocations in the elderly have a high mortality rate.
- What would be considered a minor or moderate injury in the adult patient can be life threatening in the elderly.
- Diabetic patients may have abnormal presentations of AMI and other conditions due to neuropathy.
- A medical cardiac arrest is not a "load and go" situation. It is in the best interest of the patient to perform all initial interventions (Defib, CPR, ETT, IV) and 1-2 rounds of medications prior to transport.
- An adult patient is considered hypotensive if their systolic BP is 90 mmHg or less.
- Assess the patient after every 250 ml of normal saline, and continue with fluid resuscitation until it is no longer indicated.

Pediatric

- Assess the pediatric patient after every 20 ml/kg fluid bolus of normal saline, and continue with fluid resuscitation until it is no longer indicated.
- Refer to the Pediatric Intraosseous Procedure, if indicated.
- It may be necessary to alter the order of the assessment (except for the Initial Assessment) based upon the developmental stage of the patient.
- A pediatric trauma patient is any trauma patient who is less than 16 years old.
- Refer to the Pediatric Vital Signs Chart, as needed.

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ADULT PROTOCOL

AIRWAY / BREATHING GUIDELINES

GUIDELINES OF AIRWAY / BREATHING ASSESSMENT

PARTIAL OBSTRUCTION

- May include coughing with some air movement. Give 100% Oxygen and encourage the patient to cough. Monitor for changes. Transport immediately and be prepared for a total obstruction to develop.

FOREIGN BODY AIRWAY OBSTRUCTIONS (FBAO)

- Should be removed immediately if able. Visualize airway and either suction or sweep out liquids and other materials. Solids must be hooked with an instrument. A laryngoscope may be used for direct visualization of the airway. If unable to clear airway by these methods, use Heimlich maneuver and abdominal or chest thrusts as appropriate.

STRIDOR

- High pitched crowing sound caused by obstruction of the upper airway.

WHEEZING

- A whistling or sighing sound, usually lower airway and found upon expiration.

RALES

- Fine to coarse crackles representing fluid in the lower airway.

RHONCHI

- Coarse upper airway sound representing various levels of upper airway obstruction.

COPD

- Pulmonary disease (as emphysema or chronic bronchitis) that is characterized by chronic typically irreversible airway obstruction resulting in prolonged exhalation.

CROUP

- Inflammation, edema, and subsequent obstruction of the larynx, trachea, and bronchi especially of infants and young children that is typically caused by a virus and is marked by episodes of difficulty breathing and hoarse metallic cough.

EPIGLOTTITIS

- Inflammation of the epiglottis usually caused by HIB microbes, now uncommon in children.

KEY POINTS

Airway Assessment:

- If you don't have an airway – you don't have anything!
- C-spine precautions must be considered prior to the insertion of airway adjuncts. Provide manual stabilization prior to insertion.
- See PEDIATRIC Section for pediatric airway management.

Breathing Assessment:

- Be sure that the airway is open before assessing breathing.
- When assessing breathing, observe rate, quality, depth, and equality of chest movement.
- COPD patients maintain on low flow oxygen (usually <2 L which keeps their O2 Sat in the 90's%), and some may stop breathing on high flow. However - if the COPD patient needs high flow oxygen - it should be given. Be prepared to support breathing with BVM if needed.
- Always record vital signs when treating breathing problems.

ADJUNCT	INDICATIONS	CONTRAINDICATIONS	COMMENTS
Suction	Indispensable for all patients with fluid or particulate debris in airway	NONE	No more than 15 seconds per attempt
Modified jaw thrust	Initial airway maneuver for all trauma patients	NONE	None of these adjuncts protects against aspiration in patient with depressed consciousness
Hyperextension of neck	Opening airway of non-trauma patient	Potential cervical spine injury	None of these adjuncts protects against aspiration in patient with depressed consciousness
Nasal airway	Obstruction by tongue with gag reflex present	Potential mid-face injury	None of these adjuncts protects against aspiration in patient with depressed consciousness
Oral airway	Obstruction to tongue, etc.	Positive gag reflex	None of these adjuncts protects against aspiration in patient with depressed consciousness
Orotracheal intubation	Failure of above; provides airway protection	NONE	Difficult in patients with severe maxillofacial injuries
King Airway (Extraglottic Device) Blind Insertion Airway Device (BIAD)	Difficult airway Airway device for BLS providers	NONE	Primary salvage airway Size appropriately
LMA / iGel (Extraglottic Device) Blind Insertion Airway Device (BIAD)	Difficult airway Airway device for BLS providers	NONE	Requires training prior to use Size appropriately
Needle cricothyrotomy If Trained	High obstructed airway – unable to clear. Unable to establish any other airway.	Must be able to identify cricoid ring. Not best for anterior neck trauma.	Provides route for temporary oxygenation only Requires special training prior to use
Quicktrach or other cricothyrotomy device If Trained	High obstructed airway – unable to clear. Unable to establish any other airway.	Must be able to identify cricoid ring. Not best for anterior neck trauma.	Cricothyrotomy kits requires special training prior to use

ADULT PROTOCOL

AIRWAY

UNIVERSAL PATIENT CARE PROTOCOL

Assess ABC's Respiratory Rate, Effort, and Adequacy

Adequate

- Consider Supplemental OXYGEN
- ⚠ COPD Patients
- Treat per specific protocol

Inadequate

BASIC MANUVERS FIRST
Open airway
Nasal / Oral Airway
Bag-Valve-Mask

Patent Airway

CAPNOGRAPHY PROCEDURE

Consider Sedation *Prior* To Advanced Airway Placement
IF RESPONDS TO PAIN
MIDAZOLAM (VERSED)
2.5 mg IV / IO or 5 mg IM / IN
OR
LORazepam (ATIVAN)
1 – 2 mg IV / IO / IM / IN

OR
KETAMINE (KETALAR) 1 - 2 mg / kg IV / IO

⚠ If Midazolam (Versed) or LORazepam (Ativan) Unavailable, See Medication Section for DiazePAM (Valium)

Consider RSI Protocol *APPROVED DEPARTMENTS ONLY*

INTUBATION PROCEDURE

Apply nasal cannula 15 LPM during intubation attempts

- STOP Max 2 Intubation Attempts
- STOP AEMT Pulseless Apneic Patient Only
- ⚠ Document Failed Attempt(s)

Extraglottic (BIAD) AIRWAY Device

- STOP No Medications Down Extraglottic (BIAD) Airway
- STOP EMT Use in Pulseless Apneic Patient Only
- ⚠ Esophageal Disease

Additional Sedation Required
After Advanced Airway Placement - Consider
MIDAZOLAM (VERSED)
2.5 mg IV / IO or 5 mg IM / IN
OR
LORazepam (ATIVAN)
1 – 2 mg IV / IO / IM / IN

- STOP Head Trauma
- ⚠ If Midazolam (Versed) or LORazepam (Ativan) Unavailable, See Medication Section for DiazePAM (Valium)

Obstructed Airway

SEE FOREIGN BODY AIRWAY OBSTRUCTION PROTCOL

Foreign body airway obstruction (FBAO) Maneuvers

Direct Laryngoscopy
Attempt Removal with Magill Forceps

NEEDLE CRICOTHYROTOMY
OR
CRICOTHYROTOMY KIT

- STOP Must Have Prior Medical Control Training / Approval

CAPNOGRAPHY PROCEDURE

TRANSPORT to appropriate facility CONTACT receiving facility CONSULT Medical Direction where indicated APPROPRIATE transfer of care

EMT Intervention | AEMT Intervention | PARAMEDIC Intervention | Online Medical Control

ADULT PROTOCOL

AIRWAY

INDICATIONS	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
• Apnea • Coughing • Choking • Inability to speak • Unresponsive • Burns • Trauma	• Witnessed aspiration • Sudden episode of choking • Gagging • Audible stridor • Change in skin color • Decreased LOC • Increased or decreased Respiratory rate • Labored breathing • Unproductive cough	• Cardiac arrest • Respiratory arrest • Anaphylaxis • Esophageal obstruction

Extraglottic airway device / BIAD (Blind Insertion Airway Device)
Examples (not limited to); King Airway, LMA, Combitube, iGel

Differentiate airway obstruction from esophageal obstruction.
If esophageal obstruction, place patient in position of comfort, suction as needed and treat pain.

KEY POINTS

- Advanced EMT's may only intubate pulseless or apneic patients.
- EMT may only place extraglottic (BIAD) airways in pulseless and apneic patients.
- Capnography is mandatory with all methods of intubation. Document results.
- Maintain C-spine immobilization for patients with suspected spinal injury.
- Do not assume hyperventilation is psychogenic - use oxygen, not a paper bag.
- Sellick's maneuver should be used to assist with difficult intubations.
- Paramedics should consider using an extraglottic (BIAD) airway (King or LMA) if they are unable to Intubate. Consider c-collar to maintain ETT placement for all intubated patients to maintain tube.
- Consider the use of intubation aids such as a bougie or video laryngoscope to facilitate intubation.

Airway / Breathing

Circulation / Shock

Cardiac

Medical

Trauma

ADULT PROTOCOL

CONGESTIVE HEART FAILURE (CHF) / PULMONARY EDEMA

UNIVERSAL PATIENT CARE PROTOCOL

12 LEAD EKG PROCEDURE

1st Patient Contact to EKG <10 Min

IV / IO PROCEDURE

Mild
Adequate BP

Apply OXYGEN 100%

NITROGLYCERIN (NITRO-STAT / GoNitro) 0.4 mg (400 mcg) SL

STOP SBP <110

STOP Erectile Dysfunction / Pulmonary Hypertension Drug Within 48 Hrs

Consider CPAP PROCEDURE

⚠ Hypotension

⚠ Untreated Vomiting

Monitor and Reassess

Moderate / Severe
Adequate BP

Apply OXYGEN 100%

CAPNOGRAPHY PROCEDURE

NITROGLYCERIN (NITRO-STAT / GoNitro) 0.4 mg (400 mcg) SL Repeat up to 3

STOP SBP <110

STOP Erectile Dysfunction / Pulmonary Hypertension Drug Within 48 Hrs

CPAP PROCEDURE

⚠ Hypotension

⚠ Untreated Vomiting

If Wheezing DUONEB (ALBUTEROL / IPRATROPIUM)

STOP EMT use only with ONLINE Medical Control

Cardiogenic Shock
Hypotensive

SBP < 90 and NO RADIAL PULSES
Pale, cool, clammy, hypotensive, acute MI in progress, severe pulmonary edema

STOP Do NOT Give Vasodilators

STOP Do NOT Apply ITD

⚠ May consider application of CPAP with concurrent fluid bolus

OXYGEN 100%
Bag – Valve Mask
Gentle Ventilation

Refer to Cardiogenic Shock Protocol

DOPamine (INTROPIN) Drip 5 - 20 mcg / kg / min IV / IO
OR
EPINEPHrine (Adrenaline) Drip 0.1 – 0.5 mcg / kg / min IV / IO
Titrate to effect

Consider Intubation Once BP Corrected

TRANSPORT to appropriate facility CONTACT receiving facility CONSULT Medical Direction where indicated APPROPRIATE transfer of care

EMT Intervention | AEMT Intervention | PARAMEDIC Intervention | Online Medical Control

CONGESTIVE HEART FAILURE (CHF) / PULMONARY EDEMA

I – MILD	II – MODERATE	III – SEVERE
Heart Rate Normal range Blood Pressure Normal or slightly elevated Breath Sounds Bilateral rales Rhonchi Wheezing possible Some difficulty breathing	Heart Rate Tachycardia Blood Pressure Elevated Breath Sounds Bilateral diffuse rales Wheezing possible Diminished Working hard to breath Frothy sputum may occur	Heart Rate Tachycardia then drops to bradycardia Blood Pressure Elevated HIGH then drops to Hypotension Breath Sounds May be ominously quiet Fatigued from work of breathing

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
· Congestive heart failure · Past medical history · Medications Ex. Digoxin (Lanoxin), Furosemide (Lasix) · Erectile dysfunction medication use · Cardiac history - past myocardial infarction · Patient >50 years old	· Respiratory distress, bilateral rales · Apprehension, orthopnea · Jugular vein distention · Pink, frothy sputum · Diaphoresis · Hypotension, shock · Chest pain · Positive hepato-jugular reflux (HJR) · Orthopnea	· Myocardial infarction · Congestive heart failure · Asthma · Anaphylaxis · Aspiration · COPD · Pleural effusion · Pneumonia · Pulmonary embolus · Pericardial tamponade

Differentiate CHF vs. Pneumonia

Congestive Heart Failure Signs and Symptoms	Pneumonia Signs and Symptoms
· Afebrile · Jugular venous distension (JVD) · Positive hepato-jugular reflux (HJR) · Bilateral rales · Distal edema · Orthopnea · History of CHF	· Febrile · Cough · History of infectious illness · Unilateral rales · No distal edema · No jugular venous distension (JVD) · No hepato-jugular reflux (HJR)

Simple DOPamine calculation for approx 5 mcg/kg/min (must be 1600 mcg/ml concentration)

- Take the Patients weight in lbs and remove the last digit (175lbs = 17)
- Subtract 2 from that figure (17-2=15)
- This gives you the number of drops per min using a 60gtts set. (titrate to desired effect)

Example: 175lbs patient.

175 remove the 5, remainder is 17

17 – 2 =15 drops per min (approx 5 mcg/kg/min)

Refer to the DOPamine Dosing Chart in Medication Appendix

KEY POINTS
· Exam: Mental Status, Skin, Neck, Lung, Heart, Abdomen, Back, Extremities, Neuro · Obtain 12-lead EKG to evaluate for M.I. · Differentiate and document CHF vs. pneumonia. · Monitor for hypotension after administration of Nitroglycerin (Nitro-Stat / GoNitro). · Monitor for hypotension while using CPAP, specifically with Nitroglycerine (Nitro-Stat / GoNitro). · DO NOT administer Nitroglycerin (Nitro-Stat / GoNitro) to a patient who took an erectile dysfunction (ED) medication; Sildenafil (Viagra), Tadalafil (Cialas), Vardenafil (Levitra), etc. or pulmonary hypertension medication (PHTN) within the last 48 hours. Ask all patients.

ADULT PROTOCOL

FOREIGN BODY AIRWAY OBSTRUCTION (FBAO) - ADULT

UNIVERSAL PATIENT CARE PROTOCOL

Head Tilt / Chin Lift / Jaw Thrust Airway Maneuvers

Coughing Conscious	Complete Obstruction Conscious	Complete Obstruction Unconscious
Encourage Patient to Cough	Abdominal Thrusts	Visualize Remove Obvious Obstructions
OXYGEN 10 – 15 L NRB		Open Airway / Rescue Breathing
		Chest Thrusts
		If unable to ventilate, reposition head and attempt again
		If unable to ventilate, continue sequence
		Direct Laryngoscopy Attempt Removal with Magill Forceps
		If unable to remove obstruction NEEDLE CRICOTHYROTOMY *OR* CRICOTHYROTOMY KIT
		STOP Must Have Prior Med Control Training / Approval

TRANSPORT to appropriate facility CONTACT receiving facility CONSULT Medical Direction where indicated APPROPRIATE transfer of care

EMT Intervention | AEMT Intervention | PARAMEDIC Intervention | Online Medical Control

FOREIGN BODY AIRWAY OBSTRUCTION (FBAO) - ADULT

INDICATIONS	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
• Coughing • Choking • Inability to speak • Unresponsive	• Witnessed aspiration • Sudden episode of choking • Gagging • Audible stridor • Change in skin color • Decreased LOC • Increased or decreased • Respiratory rate • Labored breathing • Unproductive cough	• Cardiac arrest • Respiratory arrest • Anaphylaxis • Esophageal obstruction

KEY POINTS

- With complete obstruction, positive-pressure ventilation may be successful.
- Needle cricothyrotomy will provide short term oxygenation only (not ventilation) and is used to "buy time" until other interventions can assure appropriate ventilation.
- Cricothyrotomy kits have a larger internal diameter than needle cric and thus will provide some minimal ventilation.
- Needle cricothyrotomy and cricothyrotomy kits are bridge devices to surgical intervention.

Airway / Breathing

Circulation / Shock

Cardiac

Medical

Trauma

ADULT PROTOCOL

RAPID SEQUENCE INTUBATION (RSI)

FOR DEPARTMENTS / PARAMEDICS WHO HAVE RECEIVED TRAINING AND MEDICAL CONTROL APPROVAL ONLY

Indications

- SpO_2 < 90% on high flow O2
- Respiratory rate <10 or >32
- Partial airway obstruction due to blood, secretions, trauma, or GCS less than 8
- Respiratory exhaustion or inevitable loss of the airway

STOP Current Approval / Special Training Required

STOP Must Have at Least 3 Personnel
2 Being Paramedics

⚠ Video Laryngoscopy Must Be Available

⚠ Have Back-Up Airways Available

⚠ Paralytics Do Not Change Poor Anatomy

UNIVERSAL PATIENT CARE PROTOCOL

BASIC MANUVERS FIRST
Open airway
Nasal / Oral Airway
Bag-Valve-Mask

IV / IO PROCEDURE

Apply nasal cannula 15 LPM during intubation attempts

ATTEMPT INTUBATION

CAPNOGRAPHY PROCEDURE

Successful

Not Successful
Meets Above Criteria

ETOMIDATE (AMIDATE)
0.2 – 0.3 mg / kg IV / IO – Average Dose 20 mg

OR
KETAMINE 1 - 2 mg / kg IV / IO – Average Dose 100 mg

Then
SUCCINYLCHOLINE (ANECTINE)
1 - 2 mg / kg IV / IO – Average Dose 100 mg

STOP Burn or Crush Injury > 24hr old

STOP HX: Muscular Dystrophy, Multiple Sclerosis, Amyotrophic Lateral Sclerosis (ALS)

STOP HX: Malignant Hyperthermia (including family)

STOP Etomidate First

STOP Hyperkalemia or Renal Failure

INTUBATION PROCEDURE

STOP Max 2 Intubation Attempts

⚠ Document Failed Attempt(s)

Extraglottic (BIAD) Airway Device If Intubation Unsuccessful

Post Intubation Sedation
MIDAZOLAM (VERSED) 2.5 mg IV to tolerance - Max 10 mg
or
LORazepam (ATIVAN) 1 – 2 mg IV / IO to tolerance - Max 8 mg

STOP Head Trauma

If Evidence of Pain
fentaNYL (SUBLIMAZE) 25 mcg doses until pain tolerance
Max 200 mcg

Ventilate to maintain CAPNOGRAPHY and PULSE OXIMETRY

TRANSPORT to appropriate facility CONTACT receiving facility CONSULT Medical Direction where indicated APPROPRIATE transfer of care

EMT Intervention | AEMT Intervention | PARAMEDIC Intervention | Online Medical Control

RAPID SEQUENCE INTUBATION (RSI)

INDICATIONS	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
• SpO_2 < 90% on high flow O_2 • Respiratory rate <10 or >32 • Partial airway obstruction due to blood, secretions, trauma, or GCS 8 or less • Respiratory exhaustion or inevitable loss of the airway	• Gagging • Audible stridor • Change in skin color • Decreased LOC • Increased or decreased Respiratory rate • Labored breathing	• Cardiac arrest • Respiratory arrest • Respiratory failure • Anaphylaxis • Esophageal obstruction

Restrictions and Conditions for Procedure

- You must be approved and trained by Medical Direction in Rapid Sequence Intubation
- Video laryngoscopy must be available
- Salvage airways (extraglottic airways) must be available
- Capnography must be available
- A minimum of 3 EMS personnel are available to facilitate the procedure, 2 of which are Paramedics

The 7 "P's" of Rapid Sequence Intubation

- P = Preparation
- P = Preoxygenation
- P = Pretreatment
- P = Paralysis with Induction
- P = Protection
- P = Placement of the Tube
- P = Post-Induction Management

KEY POINTS

- Waveform Capnography is required before, during, and after intubation attempts. Ventilate to maintain Capnography and SpO_2.
- Succinylcholine (Anectine) is contraindicated in persons with personal or family history of malignant hyperthermia, skeletal muscle myopathies, known or suspected hyperkalemia, and hypersensitivity to the medication.
- If patient becomes hyperthermic post administration of Succinylcholine (Anectine) advise receiving facility immediately stressing it was post Succinylcholine (Anectine) administration. Begin cooling measures per the HYPERTHERMIA PROTOCOL / HEAT EXPOSURE and the INDUCED HYPOTHERMIA PROCEDURE.
- Succinylcholine (Anectine) is never given alone. It is always preceded by an induction agent (a hypnotic / sedative medication) such as Etomidate (Amidate) or Ketamine.
- Once Etomidate (Amidate) and Succinylcholine (Anectine) is administered the airway must be managed from that point forward.
- Larger doses of Succinylcholine (Anectine) may be required in myasthenia gravis.
- Attempt intubation prior to induction and paralysis. If unsuccessful, sedate then paralyze patient and attempt intubation. Limit attempts post paralysis to 2 attempts then utilize a extraglottic airway such as a King or a LMA.
- Apply a nasal cannula to supply 15 LPM during the intubation attempts to maintain oxygen saturation
- Consider Mallampati grade to determine difficulty PRIOR to intubation attempt
- Set up and test all equipment prior to intubation attempt, including suction and back-up airways
- Refer to ADULT AIRWAY protocol if post RSI sedation is required.

Airway / Breathing

Circulation / Shock

Cardiac

Medical

Trauma

ADULT PROTOCOL

RESPIRATORY DISTRESS / ASTHMA / COPD

UNIVERSAL PATIENT CARE PROTOCOL

OXYGEN

12 LEAD EKG PROCEDURE

1ST Contact to EKG and Transmission < 10 Min

IV / IO PROCEDURE

Mild – Symptoms

Treat with aerosol
DUONEB
(ALBUTEROL / IPRATROPIUM)
Oxygen as needed

STOP EMT use only with ONLINE Medical Control

Moderate / Severe Distress

CAPNOGRAPHY PROCEDURE

Tachypnea, wheezing accessory muscle use, difficulty speaking
Treat with aerosol
DUONEB
(ALBUTEROL / IPRATROPIUM)

STOP EMT use only with ONLINE Medical Control

Oxygen as needed
Continuous pulse-ox
Repeat aerosols as needed
DUONEB
(ALBUTEROL / IPRATROPIUM)

CPAP PROCEDURE
Only if HYPOXEMIC / not responding to basic oxygenation

⚠ Hypotension
⚠ Untreated Vomiting

Evidence of Poor Air Exchange
SEVERE ASTHMA / COPD
EPINEPHrine 1 mg / ml (1:1000)
0.3 – 0.5 mg IM

methylPREDNISolone
(SOLU – MEDROL)
125 mg IV / IO

If Failed EPINEPHrine
Consider
MAGNESIUM SULFATE
2 Grams IV / IO SLOW

Severe Distress with *STRIDOR*

CAPNOGRAPHY PROCEDURE

Tachypnea, bradypnea, stridor, accessory muscle use, difficulty speaking, CO_2 narcosis
Treat with aerosol
RACEMIC EPINEPHRINE
Unit Dose (2.25% 0.5ml)
mixed in 3ml of Normal Saline
Nebulized x1 Dose

STOP NOT for Foreign Body Airway Obstructions
⚠ If Racemic Epinephrine is unavailable, see medication section for aerosol EPINEPHrine 1mg / ml (1:1000)

BE PREPARED for Emergency Airway

NEEDLE CRICOTHYROTOMY
OR
CRICOTHYROTOMY KIT

If Patient Occludes Airway

STOP Must Have Med Command Training / Approval

methylPREDNISolone
(SOLU – MEDROL)
125 mg IV / IO

TRANSPORT to appropriate facility CONTACT receiving facility CONSULT Medical Direction where indicated APPROPRIATE transfer of care

EMT Intervention | AEMT Intervention | PARAMEDIC Intervention | Online Medical Control

RESPIRATORY DISTRESS / ASTHMA / COPD

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
• Asthma; COPD -- chronic bronchitis, emphysema, congestive heart failure • Home treatment (oxygen, nebulizer) • Medications (Theophylline, steroids, inhalers) • Toxic exposure, smoke inhalation	• Shortness of breath • Pursed lip breathing • Decreased ability to speak • Increased respiratory rate and effort • Wheezing, rhonchi • Use of accessory muscles • Fever, cough • Tachycardia • Tripod position	• Asthma • Anaphylaxis • Aspiration • COPD (emphysema, bronchitis) • Pleural effusion • Pneumonia • Pulmonary embolus • Pneumothorax • Cardiac (MI or CHF) • Pericardial tamponade • Hyperventilation • Inhaled toxin (Carbon monoxide, etc.)

CPAP should be used as a last resort in asthmatic / COPD patents whom are HYPOXEMIC. Prepare to intubate and ventilate.

SEVERE ASTHMA / STATUS ASTHMATICUS patients not moving air or is not moving the mist from an aerosol treatment give EPINEPHrine (Adrenaline) 1 mg / ml (1:1000) 0.3 - 0.5 mg IM.

KEY POINTS

- Exam: Mental Status, HEENT, Skin, Neck, Heart, Lungs, Abdomen, Extremities, Neuro
- Status asthmaticus - severe prolonged asthma attack unresponsive to therapy - life threatening!
- If the patient is over 50 years of age, has a history of cardiac disease, or if the patient's heart rate is >120 EPINEPHrine (Adrenaline) may precipitate cardiac ischemia.
- Monitor pulse oximetery continuously during treatment and transport.
- A silent chest in respiratory distress is a pre - respiratory arrest sign.
- Be alert for respiratory depression in COPD patients on prolonged high flow oxygen administration.
- DO NOT withhold oxygen from hypoxic patients.
- If Albuterol (Proventil) and / or Ipratropium (Atrovent) is given, monitor the patient's cardiac rhythm and initiate IV.
- Patient with known COPD, asthma and a history of steroid use should receive IV MethylPREDNISolone (Solu-Medrol). Use with caution in diabetics (hyperglycemia), GI bleeds, and febrile patients (sepsis / infections).
- Assure sufficient expiration time when ventilating COPD or asthma patients to prevent breath stacking and Co2 elimination.
- Albuterol (Proventil) and Ipratropium (Atrovent) can be given down an ETT or Tracheotomy during ventilation if there is evidence of bronchoconstriction.

ADULT PROTOCOL

TRAUMATIC BREATHING

UNIVERSAL PATIENT CARE PROTOCOL
Evidence of Trauma – Blunt or Penetrating
Abnormal or absent breath sounds, inadequate respiratory rate, unequal symmetry, diminished chest excursion, cyanosis

Identify Treatable Causes

- Assess for Patency – Consider Jaw Thrust Airway Maneuver
  Give High Flow Oxygen
- Sucking Chest Wound
  Apply 3-sided Occlusive Dressing or Commercial Chest Seal
- Flail Chest
  Splint with Bulky Dressing
  Assist with Ventilation – Gentle Positive Pressure
- Penetrating Object
  Immobilize Object
  Apply Sterile Saline Dressing
- Suspect Tension Pneumothorax
  NEEDLE DECOMPRESSION PROCEDURE
  - ⚠ Decompress when HYPOTENSIVE
  - ⚠ Be Prepared to Repeat *IF* S&S Return

TRANSPORT to appropriate facility CONTACT receiving facility CONSULT Medical Direction where indicated APPROPRIATE transfer of care

KEY POINTS
• These injuries involve the airway and are life-threatening. • Do not become distracted by non-life-threatening injuries that appear terrible. • A sucking chest wound is when the thorax is open to the outside. The occlusive dressing may be anything such as petroleum gauze, plastic, or a defibrillator pad. Tape only 3 sides down so that excess intrathoracic pressure can escape, preventing a tension pneumothorax. It may help respirations to place patient on the injured side, allowing unaffected lung to expand easier. • A flail chest is when there are extensive rib fractures present, causing a loose segment of the chest wall resulting in paradoxical and ineffective air movement. This movement must be stopped by applying a bulky pad to inhibit the outward excursion of the segment. Positive pressure breathing via BVM will help push the segment and the normal chest wall out with inhalation and to move inward together with exhalation, getting them working together again. Do not use too much pressure, as to prevent additional damage or pneumothorax. • A penetrating object must be immobilized by any means possible. If it is very large, cutting may be possible, with care taken to not move it while making the cut. Place an occlusive & bulky dressing over the entry wound. • A tension pneumothorax is life threatening, look for *HYPOTENSION*, unequal breath sounds, JVD, increasing respiratory distress, and decreasing mental status. The pleura must be decompressed with a needle to provide relief. Use the intercostal space between the 2nd and 3rd ribs on the midclavicular line, going in on the top side of the 3rd rib. Once the catheter is placed, watch closely for reocclusion. Be prepared to repeat decompression if signs of tension pneumothorax return. Use a long 3 - 3 ¼" 14 gauge needle based on the patient.

EMT Intervention | AEMT Intervention | PARAMEDIC Intervention | Online Medical Control

SECTION 3 - CIRCULATION / SHOCK PROTOCOLS

Shock Guidelines 2-3
Anaphylactic Shock / Reaction 4-3
Cardiogenic Shock 5-3
Hypovolemic Shock 5-3
Neurogenic Shock 5-3
Septic Shock 5-3

ADULT PROTOCOL

SHOCK GUIDELINES

TYPES OF SHOCK	SIGNS AND SYMPTOMS
CARDIOGENIC SHOCK	· Hypotension · Difficulty breathing · Cool, clammy skin · Weakness
HYPOVOLEMIC SHOCK	· Tachycardia · Weak, thready pulse · Hypotension with narrow pulse pressure · Hypotension or falling systolic BP · Pale skin · Clammy or dry skin · Dyspnea · Altered LOC / coma · Decreased urine output · Restlessness · Irritability · Decreased urine output
ANAPHYLACTIC SHOCK (Distributive Shock)	· Hypotension · Severe respiratory distress · Shock · Dyspnea · Wheezing · Hoarseness / stridor · Cyanosis · Facial / airway edema · Urticaria / hives · Warm burning feeling · Itching · Rhinorrhea · Altered LOC / coma · Pulmonary edema
NEUROGENIC SHOCK (Distributive Shock)	· Hypotension with a narrow pulse pressure · Evidence of trauma (lacerations, bruising, swelling, deformity) · Normal or bradycardic HR · Compromise in neurological function · Normal or flushed skin color
SEPTIC SHOCK (Distributive Shock)	· Hypotension with a narrow pulse pressure · Dyspnea · Febrile · Tachycardia · Signs of infection · Hx of UTI · Hypovolemia (Fever, Sweating) · Dehydration · Altered LOC / coma
OBSTRUCTIVE SHOCK	· Obstruction that interferes with preload / afterload · Commonly caused by tension pneumothorax / pulmonary embolism · Hypotension · Chest pain · Hypoxia · Absent lung sounds (tension pneumothorax) · Present lung sounds (pulmonary embolism)

SHOCK

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
• Blood loss - vaginal or gastrointestinal bleeding, AAA, ectopic • Fluid loss - vomiting, diarrhea, fever • Infection • Cardiac ischemia (MI, CHF) • Medications • Allergic reaction • Pregnancy	• Restlessness, confusion • Weakness, dizziness • Weak, rapid pulse • Pale, cool, clammy skin • Delayed capillary refill • Hypotension • Coffee-ground emesis • Tarry stools	• Shock • Hypovolemic • Cardiogenic • Septic • Neurogenic • Anaphylactic • Ectopic pregnancy • Dysrhythmias • Pulmonary embolus • Tension pneumothorax • Medication effect / overdose • Vasovagal hypotension • Physiologic (pregnancy)

KEY POINTS

- Exam: Mental Status, Skin, Heart, Lungs, Abdomen, Back, Extremities, Neuro
- Hypotension can be defined as a systolic blood pressure of less than 90 systolic.
- Consider performing orthostatic vital signs on patients in non-trauma situations if suspected blood or fluid loss.
- Consider all possible causes of shock and treat per appropriate protocol.

Anaphylactic Shock

- Anaphylactic shock is the involvement of 2 or more body systems. Consider IM EPINEPHrine (Adrenaline).
- Do not confuse EPINEPHrine (Adrenaline) 1 mg / ml (1:1000) IM and 0.1 mg / ml (1:10,000) IV.
- Treat patients with a history of anaphylaxis aggressively.
- Routine assessment and supportive care of the patient's respiratory and cardiovascular systems is required.
- When possible, remove any stingers.

Cardiogenic Shock

- Circulatory failure is due to inadequate cardiac function.
- Be aware of patients with congenital defects.
- Cardiogenic shock exists in the prehospital setting when an MI is suspected and there is no specific indication of volume related shock.
- Pulmonary edema or CHF may cause cardiogenic shock. (Pediatrics with congenital heart defects may rarely have pulmonary edema)
- Marked, symptomatic tachycardia and bradycardia will also cause cardiogenic shock. Fix rate first.

Hypovolemic Shock

- Patients suffering from hemorrhagic shock secondary to trauma, should be treated under the Trauma Criteria, and should be rapidly transported to the nearest appropriate facility.
- Initiate a second large bore IV for all patients in hypovolemic shock, resuscitate to a MAP of at least 70 or a SBP of 90 (100 SBP if >70 years old) or radial pulses where NIBP is unavailable.

Neurogenic Shock

- Cushing's triad is a sign of increased ICP.
- Cushing's triad presents as high blood pressure, low pulse rate, and irregular respirations.

Septic Shock

- Hypotensive septic shock patients require aggressive fluid resuscitation and should receive vasopressor support if not responding to fluid challenges.
- Be alert for septic shock in the elderly.

Airway / Breathing

Circulation / Shock

Cardiac

Medical

Trauma

ADULT PROTOCOL

ANAPHYLACTIC REACTION / SHOCK

UNIVERSAL PATIENT CARE PROTOCOL

OXYGEN

CAPNOGRAPHY PROCEDURE

IV / IO PROCEDURE

Apply Cardiac Monitor and Assess Vitals

Consider ITD PROCEDURE

DO NOT CONFUSE
EPINEPHrine
1 mg / ml – IM (1:1000)
vs.
0.1 mg / ml - IV / IO
(1:10,000)

Mild

Rash, itching,
No difficulty breathing or throat tightening,
B/P – normal limits

diphenhydrAMINE (BENADRYL)
25 - 50 mg IV / IO / IM

Consider EPINEPHrine AUTO-INJECTOR
If history of severe reaction

Consider EPINEPHrine (ADRENALINE)
1 mg / ml (1:1000) Concentration
0.3 - 0.5 mg IM
If history of severe reaction or 2 or more body systems involved

STOP Never Given IV

Moderate / Severe

Radial Pulses Present
Rash, itching,
Airway compromise,
Wheezing, Swelling,
GI Symptoms
Hypotension

EPINEPHrine AUTO-INJECTOR

EPINEPHrine (Adrenaline)
1 mg / ml (1:1000) Concentration
0.3 - 0.5 mg IM

STOP Never Given IV

diphenhydrAMINE (BENADRYL)
50 mg IV / IO / IM

IV NORMAL SALINE BOLUS
20 ml / kg
To Maintain MAP > 70
or SBP 90 / Radial Pulses if NIBP Unavailable

DUONEB
(ALBUTEROL / IPRATROPIUM)
Aerosol - Monitor Airway

STOP EMT use only with ONLINE Medical Control

Consider repeat EPINEPHrine (ADRENALINE) after 5 min. if no improvement

methylPREDISolone (SOLU – medrol)
125 mg IV / IO

Impending Arrest Anaphylactic Shock

NO Radial Pulses
Severe Hypotension
Any AGE
Decreased LOC
Airway compromise

Secure Airway and Ventilate

EPINEPHrine
0.1 mg / ml (1:10,000) Concentration
IV / IO
0.1 mg (1 ml) / minute
Until resolution of BP
0.5 mg (5 ml) Max

If only AEMT Available
EPINEPHrine (ADRENALINE)
1 mg / ml (1:1000) Concentration
0.3 - 0.5 mg IM

If only EMT Available
EPINEPHrine Auto-Injector

⚠ Slow IV
STOP 0.1 mg / ml (1:10,000) IV ONLY

IV NORMAL SALINE BOLUS
20 ml / kg
To Maintain MAP > 70
or SBP 90 / Radial Pulses if NIBP Unavailable

diphenhydrAMINE (BENADRYL)
50 mg IV / IO / IM

methylPREDISolone (SOLU – medrol)
125 mg IV / IO

Follow ACLS

TRANSPORT to appropriate facility CONTACT receiving facility CONSULT Medical Direction where indicated APPROPRIATE transfer of care

EMT Intervention | AEMT Intervention | PARAMEDIC Intervention | Online Medical Control

ADULT PROTOCOL

HYPOVOLEMIC, NEUROGENIC, CARDIOGENIC, AND SEPTIC SHOCK

Airway / Breathing | Circulation / Shock | Cardiac | Medical | Trauma

UNIVERSAL PATIENT CARE PROTOCOL

AIRWAY PROTOCOL
Monitor Lung Sounds for Fluid Overload

OXYGEN

IV / IO PROCEDURE

Apply Cardiac Monitor and Assess Vitals

CAPNOGRAPHY PROCEDURE

Hypovolemic Shock

Consider ITD Procedure

IV NORMAL SALINE BOLUS
Minimum Necessary
To Maintain MAP > 70
or SBP 90 / Radial Pulses if NIBP Unavailable

BLOOD GLUCOSE PROCEDURE

Treatment per Appropriate Trauma Protocol

Cardiogenic Shock

NO ITD Procedure

IV NORMAL SALINE TKO

12 Lead Procedure

BLOOD GLUCOSE PROCEDURE

DOPamine (INTROPIN)
Drip
5 - 20 mcg / kg / min
IV / IO
OR
EPINEPHrine (Adrenaline)
Drip 0.1 – 0.5 mcg / kg / min IV / IO
Titrate to effect
(If MAP remains < 70 or SBP < 90)

Neurogenic Shock

Consider SPINAL MOTION RESTRICTION PROCEDURE

Consider ITD Procedure

IV NORMAL SALINE BOLUS
20 ml / kg
To Maintain MAP > 70
or SBP 90 / Radial Pulses if NIBP Unavailable

BLOOD GLUCOSE PROCEDURE

DOPamine (INTROPIN)
Drip
5 - 20 mcg / kg / min
IV / IO
OR
EPINEPHrine (Adrenaline)
Drip 0.1 – 0.5 mcg / kg / min IV / IO
Titrate to effect
(If MAP remains < 70 or SBP < 90)

Septic Shock

Consider ITD Procedure

IV NORMAL SALINE BOLUS
30 ml / kg
To Maintain MAP > 70
or SBP 90 / Radial Pulses if NIBP Unavailable

12 Lead Procedure

BLOOD GLUCOSE PROCEDURE

DOPamine (INTROPIN)
Drip
5 - 20 mcg / kg / min
IV / IO
OR
EPINEPHrine (Adrenaline)
Drip 0.1 – 0.5 mcg / kg / min IV / IO
Titrate to effect
(If MAP remains < 70 or SBP < 90)

Identify Possible SIRS Patient or Severe Sepsis Patient
Use Checklist on Following Page
NOTIFY RECEIVING FACILITY – SEPSIS ALERT

TRANSPORT to appropriate facility CONTACT receiving facility CONSULT Medical Direction where indicated APPROPRIATE transfer of care

EMT Intervention | AEMT Intervention | PARAMEDIC Intervention | Online Medical Control

ADULT PROTOCOL

HYPOVOLEMIC, NEUROGENIC, CARDIOGENIC, AND SEPTIC SHOCK

SIRS Checklist

Clinical Findings	History
☐ Temp > 38C (100.4F) or < 36C (96.8F)	☐ Pneumonia
☐ Heart Rate > 90 BPM	☐ Urinary Tract Infection
☐ Respiratory Rate > 20 BPM *or*	☐ Cellulitis
☐ Capnography < 32 mmHg	☐ Septic Arthritis
☐ Altered Mental Status	☐ Diarrhea
	☐ ABD pain
	☐ Wound Infection
	☐ Decubitus Ulcer
	☐ Indwelling Device
	☐ Fever

Severe Sepsis Checklist

Clinical Findings (Present and *NEW* to Patient)

- ☐ SBP < 90
- ☐ SPo2 < 90
- ☐ No Urine Output last 8 Hours
- ☐ Prolonged bleeding from gums
- ☐ Lactate > 4

MAP Calculation

2 X Diastolic Blood Pressure + Systolic Blood Pressure / 3 = MAP

Simple DOPamine Calculation for 5 mcg/kg/min

- Patient Weight in lbs., remove last digit (ex. 175 lbs = 17)
- Subtract 2 from that number (ex. 17-2=15)
- Result is the drops per minute using 60 gtt set (ex. 15 gtt / min)
- Titrate to MAP / SBP / Capnography / mental status from this number

DOPamine DRIP CHART 1600 mcg/ml

	DOSE (mcg/kg/min)			
WEIGHT(KG)	5	10	15	20
40	8	15	23	30
50	10	19	28	38
60	12	23	34	45
70	14	26	39	56
80	15	30	45	60
90	17	34	51	68
100	19	38	56	75
110	21	42	62	82
120	23	46	68	90
130	25	48	74	98
140	27	52	78	112

SECTION 4 - CARDIAC PROTOCOLS

Acute Coronary Syndrome 2-4
Bradycardia 4-4
Narrow - Complex Tachycardia 6-4
Wide - Complex Tachycardia 8-4
Cardiac Arrest 10-4
Asystole / Pulseless Electrical Activity (PEA) 12-4
Ventricular Fibrillation (V-FIB) / Pulseless Ventricular Tachycardia 14-4
Post - Resuscitation Cardiac Care 16-4
Post - Resuscitation Induced Hypothermia 17-4

Airway / Breathing

Circulation / Shock

Cardiac

Medical

Trauma

ADULT PROTOCOL

ACUTE CORONARY SYNDROME

UNIVERSAL PATIENT CARE PROTOCOL

Do not give OXYGEN unless SpO_2 <94%

CAPNOGRAPHY PROCEDURE

IV / IO PROCEDURE

12 LEAD EKG PROCEDURE - LEFT
Look for ST Elevation - Transmit to ED

1ST Contact to EKG and Transmission < 10 Min

EKG INDICATES STEMI - CONSULT PHYSICIAN IF UNSURE

Strongly encourage transport to hospital with interventional cath lab (PCI) when STEMI is present on 12 lead

If ST Elevation Leads II, III, Avf
12 LEAD EKG PROCEDURE - RIGHT
Right Sided Precordial Lead V4R - Transmit to ED
DO NOT DELAY TRANSPORT TO ACQUIRE RIGHT SIDED 12 LEAD
USE CAUTION - NITROGLYCERINE (NITRO-STAT) if elevation in RV4

Use caution with acute septal wall MI
(V1, V2) – Watch for AV blocks – Consider placing pacing pads

ASPIRIN
324 mg chew and swallow
(81 mg / tab x4)

NITROGLYCERIN (NITRO-STAT / Go-Nitro)
0.4 mg (400 mcg) SL
(If SBP >110 with IV or SBP >120 without IV)
May give up to 3 total, every 5 minutes if working

Erectile Dysfunction / Pulmonary HTN drug use within 48 hrs
EMT use requires DIRECT Med Control
Inferior Wall MI / ST Elevation II, III, Avf

If cocaine or stimulant Induced STEMI include
MIDAZOLAM (VERSED) 2.5 mg IV / IO or 5 mg IM / IN
OR
LORazepam (ATIVAN) 1 – 2 mg IV / IO / IM / IN

If Midazolam (Versed) or LORazepam (Ativan) Unavailable, See Medication Section for DiazePAM (Valium)

IF Nausea / Vomiting
ONDANSETRON (ZOFRAN) 4 mg IV / IM
OR
PROMETHAZINE (PHENERGAN) 12.5 mg IV / 25 mg IM

ONDANSETRON (ZOFRAN) Oral Disintegrating Tablet (ODT)
if Nausea / Vomiting - 4 mg Oral – may repeat max 8 mg

Paramedic Treatment if Confirmed STEMI

TICAGRELOR (BRILINTA) – Where Provided
180 mg PO

HEPARIN – Where Provided
60 Units / kg IV / IO
Max Dose 4000 Units

CONSIDER fentaNYL (SUBLIMAZE)
25 – 100 mcg IV / IM / IN / IO – SLOW IV – Max 100 mcg

If fentaNYL (Sublimaze) is unavailable, See Medication Section for Morphine Sulfate

Routine use of opiate pain control discouraged if TICAGRELOR (BRILINTA) being utilized – interferes with absorption

NO STEMI ON EKG - ISCHEMIC CHEST PAIN

ASPIRIN
324 mg chew and swallow
(81 mg / tab x4)

NITROGLYCERIN (NITRO-STAT / Go-Nitro)
0.4 mg (400 mcg) SL
(If SBP >110 with IV or SBP >120 without IV)
May give up to 3 total, every 5 minutes

Erectile Dysfunction / Pulmonary HTN drug use within 48 hrs
EMT use requires ONLINE Med Control

fentaNYL (SUBLIMAZE)
25 – 100 mcg IV / IM / IN / IO – SLOW IV – Max 100 mcg

If fentaNYL (Sublimaze) is unavailable, See Medication Section for Morphine Sulfate

IF Nausea / Vomiting
ONDANSETRON (ZOFRAN) 4 mg IV / IM
OR
PROMETHAZINE (PHENERGAN) 12.5 mg IV / 25 mg IM

ONDANSETRON (ZOFRAN) Oral Disintegrating Tablet (ODT)
if Nausea / Vomiting - 4 mg Oral – may repeat max 8 mg

TRANSPORT to appropriate facility (PCI)
CONTACT receiving facility
CONSULT Medical Direction where indicated
APPROPRIATE transfer of care

EMT Intervention | AEMT Intervention | PARAMEDIC Intervention | Online Medical Control

ACUTE CORONARY SYNDROME

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
• Age • Medications • Past medical history (MI, angina, diabetes) • Allergies • Recent physical exertion • Onset • Palliation / Provocation • Quality (crampy, constant, sharp, dull, etc.) • Region / Radiation / Referred • Severity (1-10) • Time (duration / repetition)	• CP (pain, pressure, aching, tightness) • Location (substernal, epigastric, arm, jaw, neck, shoulder) • Radiation of pain • Pale, diaphoresis • Shortness of breath • Nausea, vomiting, dizziness	• Trauma vs. medical • Angina vs. myocardial infarction • Pericarditis • Pulmonary embolism • Asthma / COPD • Pneumothorax • Aortic dissection or aneurysm • GE reflux or hiatal hernia • Esophageal spasm • Chest wall injury or pain • Pleural pain

KEY POINTS

- Make the scene safe: All chest pain patients must have an IV and 12 Lead EKG.
- Exam: Mental Status, Skin, Neck, Lung, Heart, Abdomen, Back, Extremities, Neuro.
- If patient has taken Nitroglycerin (Nitro-stat) without relief, consider potency of the medication.
- If positive ECG changes, establish a second IV while enroute to the hospital.
- Monitor for hypotension after administration of Nitroglycerin (Nitro-stat) or FentaNYL (Sublimaze).
- Nitroglycerin (Nitro-stat) or FentaNYL (Sublimaze) may be repeated per dosing guidelines in the MEDICATIONS SECTION.
- Diabetics / geriatric patients often have atypical pain, vague, or only generalized complaints. Be suspicious of a "silent MI".
- Refer to the BRADYCARDIA PROTOCOL (HR < 60 bpm) or NARROW COMPLEX TACHYCARDIA PROTOCOL (HR > 150 bpm) if indicated.
- If the patient becomes hypotensive from Nitroglycerin (Nitro-stat), FentaNYL (Sublimaze) administration, place the patient in the Trendelenburg position and administer a Normal Saline bolus.
- Be prepared to administer Narcan (Naloxone) if the patient experiences respiratory depression due to FentaNYL (Sublimaze) administration.
- If pulmonary edema is present, refer to the CHF / ACUTE PULMONARY EDEMA PROTOCOL.
- Aspirin can be administered to a patient on Coumadin (Warfarin), unless the patient's physician has advised them otherwise.
- If the patient took a dose of Aspirin that was less than 324 mg in the last (24) hours, then additional Aspirin can be administered to achieve a therapeutic dose of 324 mg.
- DO NOT administer Nitroglycerin (Nitro-stat) to a patient who took an erectile dysfunction medication; Sildenafil (Viagra), Tadalafil (Cialas), Vardenafil (Levitra), etc. within the last 48 hours due to potential severe hypotension.
- Nitroglycerin (Nitro-stat) can be administered to a patient by EMS if the patient has already taken their own prior to your arrival. Document it if the patient had any changes in their symptoms or a headache after taking their own Nitroglycerin.
- Nitroglycerin (Nitro-stat) can be administered without an IV as long as patient has a BP greater than 120 mmHg, without signs of inferior wall MI.
- DO NOT treat PVC's with Amiodarone (Cordarone) unless patient develops runs of V-Tach, or has sustained V-tach.
- Pulse oximetry is not an indicator of myocardial perfusion.
- Only administer oxygen if the patient is hypoxic with a SpO_2 of less than 94. Do not withhold oxygen from patients that are short of breath regardless of SpO_2.
- Once applied to a known or suspected ACS patient do not remove a 12 lead EKG, even if the initial EKG is unremarkable. Some devices continue to look for ST segment changes and will alert if there are changes.

I – Lateral	aVR	V1 – Septal	V4 – Anterior
II – Inferior	aVL – Lateral	V2 – Septal	V5 – Lateral
III – Inferior	aVF – Inferior	V3 – Anterior	V6 – Lateral

Airway / Breathing

Circulation / Shock

Cardiac

Medical

Trauma

ADULT PROTOCOL

BRADYCARDIA

UNIVERSAL PATIENT CARE PROTOCOL

APPLY CARDIAC MONITOR

OXYGEN

CAPNOGRAPHY PROCEDURE

IV / IO PROCEDURE

Stable

Continual Monitoring and Reassessment

12 LEAD EKG PROCEDURE
Look for ST Elevation - Transmit to ED

Be Prepared for Decompensation
Consider placing pacing pads
Prepare medications

Unstable
Hypotensive / Symptomatic
SBP < 90 / No Radial Pulses / AMS

Consider Sedation
MIDAZOLAM (VERSED) 2.5 mg IV / IO or 5 mg IM / IN
OR
LORazepam (ATIVAN) 1 – 2 mg IV / IO / IM / IN

If Midazolam (Versed) or LORazepam (Ativan) Unavailable, See Medication Section for DiazePAM (Valium)

EXTERNAL TRANSCUTANEOUS PACING PROCEDURE

OR

ATROPINE 0.5 mg IV / IO
Can repeat every 3 - 5 minutes *if working*
Maximum of 3 mg

OR

DOPamine (INTROPIN)
Drip 5 - 20 mcg / kg / min IV / IO
OR
EPINEPHrine (Adrenaline)
Drip 0.1 – 0.5 mcg / kg / min IV / IO
Titrate to effect
To Maintain MAP > 70
or SBP 90 / Radial Pulses if NIBP Unavailable

IV NORMAL SALINE BOLUS
To Maintain MAP > 70
or SBP 90 / Radial Pulses if NIBP Unavailable

12 LEAD EKG PROCEDURE
Look for ST Elevation - Transmit to ED

TRANSPORT to appropriate facility CONTACT receiving facility CONSULT Medical Direction where indicated APPROPRIATE transfer of care

EMT Intervention | AEMT Intervention | PARAMEDIC Intervention | Online Medical Control

BRADYCARDIA

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
• Past medical history • Medications • Beta-blocker use • Calcium channel blocker use • Clonidine use • Digitalis use • Pacemaker	• HR < 60 / min • Chest pain • Respiratory distress • Hypotension or shock • Altered mental status • Syncope	• Acute myocardial infarction • Hypoxia • Hypothermia • Sinus bradycardia • Athletes • Head injury (elevated ICP) or stroke • Spinal cord lesion • Sick sinus syndrome • AV blocks (1°, 2°, or 3°)

KEY POINTS

- Exam: Mental Status, Neck, Heart, Lungs, Neuro
- The use of Amiodarone (Cordarone) in heart block can worsen bradycardia and lead to asystole.
- Treatment of bradycardia is based upon the presence or absence of hypotension.
- If hypotension exists, treat, If blood pressure is adequate, monitor only but have all treatment modalities immediately available if the patient decompensates.
- Transcutaneous pacing is the treatment of choice for Type II second-degree heart blocks and third degree heart blocks.
- Transcutaneous pacing in demand mode will shut off if patient's intrinsic heart rate rises above the set pacer rate.
- If the patient is critical and an IV is not established, initiate pacing use intranasal sedation if required.
- If the patient converts to another rhythm, refer to the appropriate protocol and treat accordingly.
- If bradycardia is a result of calcium channel blocker or beta blocker overdose, follow the Toxic Ingestion / Exposure / Overdose protocol.

ADULT PROTOCOL

NARROW – COMPLEX TACHYCARDIA

UNIVERSAL PATIENT CARE PROTOCOL

APPLY CARDIAC MONITOR

OXYGEN

CAPNOGRAPHY PROCEDURE

IV / IO PROCEDURE

Hypotension / Symptomatic?
SBP < 90 / No Radial Pulses / AMS

Stable / Regular / (SVT)

12 LEAD EKG PROCEDURE

Attempt Vagal Maneuvers
(NO carotid massage)

ADENOSINE (ADENOCARD)
6 mg IV push followed by 20 ml Normal Saline push
(Not for rapid Atrial Fibrillation or WPW)

IF No Response
1 – 2 minutes

ADENOSINE (ADENOCARD)
12 mg IV push followed by 20 ml Normal Saline

Stable / Irregular (A-Fib)

12 LEAD EKG PROCEDURE

Attempt Vagal Maneuvers
(NO carotid massage)

Supportive Care, Treatment of Symptoms and Close Observation are all that is generally required

NORMAL SALINE
Consider Fluid Bolus to Rule out Hypovolemia / Dehydration as Cause of Tachycardia

Unstable / Regular or Irregular

Use EXTREME Caution When Cardioverting *IRREGULAR* Tachycardias.
SIGNFICIANT Potential to Cause CVA, Specifically if Greater Than 48 Hours Duration

Consider Sedation
MIDAZOLAM (VERSED) 2.5 mg IV / IO or 5 mg IM / IN
OR
LORazepam (ATIVAN) 1 – 2 mg IV / IO / IM / IN

⚠ If Midazolam (Versed) or LORazepam (Ativan) Unavailable, See Medication Section for DiazePAM (Valium)

Synchronized CARDIOVERSION
50 – 100 J

⚠ Irregular Rhythms / Afib

No Response 1 –2 minutes

Repeat Synchronized CARDIOVERSION
200, 300, 360 J or biphasic equivalent

⚠ Irregular Rhythms / Afib

TRANSPORT to appropriate facility CONTACT receiving facility CONSULT Medical Direction where indicated APPROPRIATE transfer of care

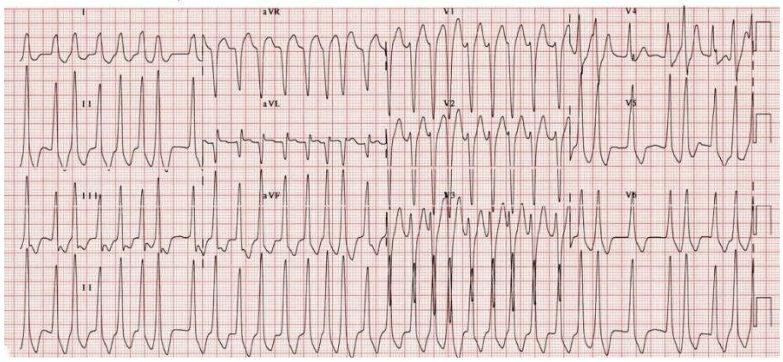
EMT Intervention | AEMT Intervention | PARAMEDIC Intervention | Online Medical Control

NARROW – COMPLEX TACHYCARDIA

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
• Medications (Aminophylline, diet pills, thyroid supplements, decongestants, digoxin) • Diet (caffeine, chocolate) • Drugs (nicotine, cocaine) • Past medical history • History of palpitations / heart racing • Syncope / near syncope	• HR > 150 bpm • QRS < .12 Sec • Dizziness, CP, SOB • Potential presenting rhythm • Sinus tachycardia • Atrial fibrillation / flutter • Multifocal atrial tachycardia	• Heart disease (WPW, valvular) • Sick sinus syndrome • Myocardial infarction • Electrolyte imbalance • Exertion, pain, emotional stress • Fever • Hypoxia • Hypovolemia or anemia • Drug effect / overdose (see HX) • Hyperthyroidism • Pulmonary embolus

Known Atrial Fibrillation
NO ADENOSINE

Wolf Parkinson White (WPW)
NO ADENOSINE



Atrial Fibrillation / Wolf Parkinson White (WPW) / RVR
NO ADENOSINE

KEY POINTS

- Exam: Mental Status, Skin, Neck, Lung, Heart, Abdomen, Back, Extremities, Neuro

- Continuous pulse oximetry is required for all tachycardic patients.
- Document all rhythm changes with monitor strips and obtain monitor strips with each intervention.
- If the patient converts to another rhythm, refer to the appropriate protocol and treat accordingly.
- Examples of vagal maneuvers include bearing down, coughing, or blowing into a syringe. DO NOT perform a carotid massage.
- If possible, the IV should be initiated in either AC.
- Consider applying the cardioversion / pacing pads prior to Adenosine (Adenocard) administration.
- When administering Adenosine (Adenocard), raise the patient's arm and immediately follow the bolus with 20 ml rapid bolus of normal saline.
- Record 3-Lead EKG strips during Adenosine (Adenoacard) administration.
- Perform a 12-Lead EKG prior to and after Adenosine (Adenocard) conversion or after cardioversion.
- If the patient converts into ventricular fibrillation or pulseless ventricular tachycardia immediately DEFIBRILLATE, the patient and refer to the appropriate protocol and treat accordingly. Be sure to switch the defibrillator out of "Sync" before defibrillating.
- Give a copy of the EKGs and / or code summaries with the receiving facility upon arrival.
- Transient periods of sinus bradycardia and ventricular ectopy are common after termination of SVT.
- It is unlikely that symptoms of instability are caused primarily by the tachycardia when the HR is <150 unless there is impaired ventricular function.

ADULT PROTOCOL

WIDE – COMPLEX TACHYCARDIA – With Pulse

Rule out Paced Rhythm

Pacer spikes may not be present with current pacemaker technology, confirm by History / Physical Exam

UNIVERSAL PATIENT CARE PROTOCOL

APPLY CARDIAC MONITOR

OXYGEN

CAPNOGRAPHY PROCEDURE

IV / IO PROCEDURE

Hypotensive /Symptomatic?

SBP < 90 / No Radial Pulses / AMS

Stable / Regular

12 LEAD EKG PROCEDURE

Attempt Vagal Maneuvers (NO carotid massage)

MONOMORPHIC WIDE COMPLEX TACHYCARDIA

Consider ADENOSINE (ADENOCARD) 6 mg IV push followed by 20 ml Normal Saline push

May consider ADENOSINE (ADENOCARD) 12 mg IV push if required

AMIODARONE (CORDARONE) 150 mg IV / IO mix in 100 ml D5W Over 10 minutes

If Amiodarone (Cordarone) Unavailable, See Medication Section for Lidocaine (Xylocaine)

STOP Must have USEABLE 12 Lead EKG and Have Transmitted to Hospital

Stable / Irregular

12 LEAD EKG PROCEDURE

Attempt Vagal Maneuvers (NO carotid massage)

If Torsades de pointes MAGNESEUM SULFATE 1 - 2 grams IV / IO over 5 to 60 minutes

AMIODARONE (CORDARONE) 150 mg IV / IO mix in 100 ml D5W Over 10 minutes

If Amiodarone (Cordarone) Unavailable, See Medication Section for Lidocaine (Xylocaine)

STOP Must have USEABLE 12 Lead EKG and Have Transmitted to Hospital

Unstable / Regular or Irregular

Consider Sedation
MIDAZOLAM (VERSED) 2.5 mg IV / IO or 5 mg IM / IN
OR
LORazepam (ATIVAN) 1 – 2 mg IV / IO / IM / IN

If Midazolam (Versed) or LORazepam (Ativan) Unavailable, See Medication Section for DiazePAM (Valium)

Synchronized CARDIOVERSION
100, 200, 300, 360 J
or biphasic equivalent

Irregular Rhythms / Afib

STOP Defibrillate if Torsades, Do not Synchronize Cardiovert

No Response 1 –2 minutes

Repeat Synchronized CARDIOVERSION
200, 300, 360 J or biphasic equivalent

Irregular Rhythms / Afib

STOP Defibrillate if Torsades, Do not Synchronize Cardiovert

Consider Medications if Cardioversion Unsuccessful

AMIODARONE (CORDARONE)
150 mg IV / IO
mix in 100 ml D5W
Over 10 minutes

If Amiodarone (Cordarone) Unavailable, See Medication Section for Lidocaine (Xylocaine)

STOP Must have USEABLE 12 Lead EKG and Have Transmitted to Hospital

If Torsades de pointes
MAGNESEUM SULFATE
1 - 2 grams IV / IO
Over 5 minutes

TRANSPORT to appropriate facility CONTACT receiving facility CONSULT Medical Direction where indicated APPROPRIATE transfer of care

EMT Intervention | AEMT Intervention | PARAMEDIC Intervention | Online Medical Control

WIDE– COMPLEX TACHYCARDIA

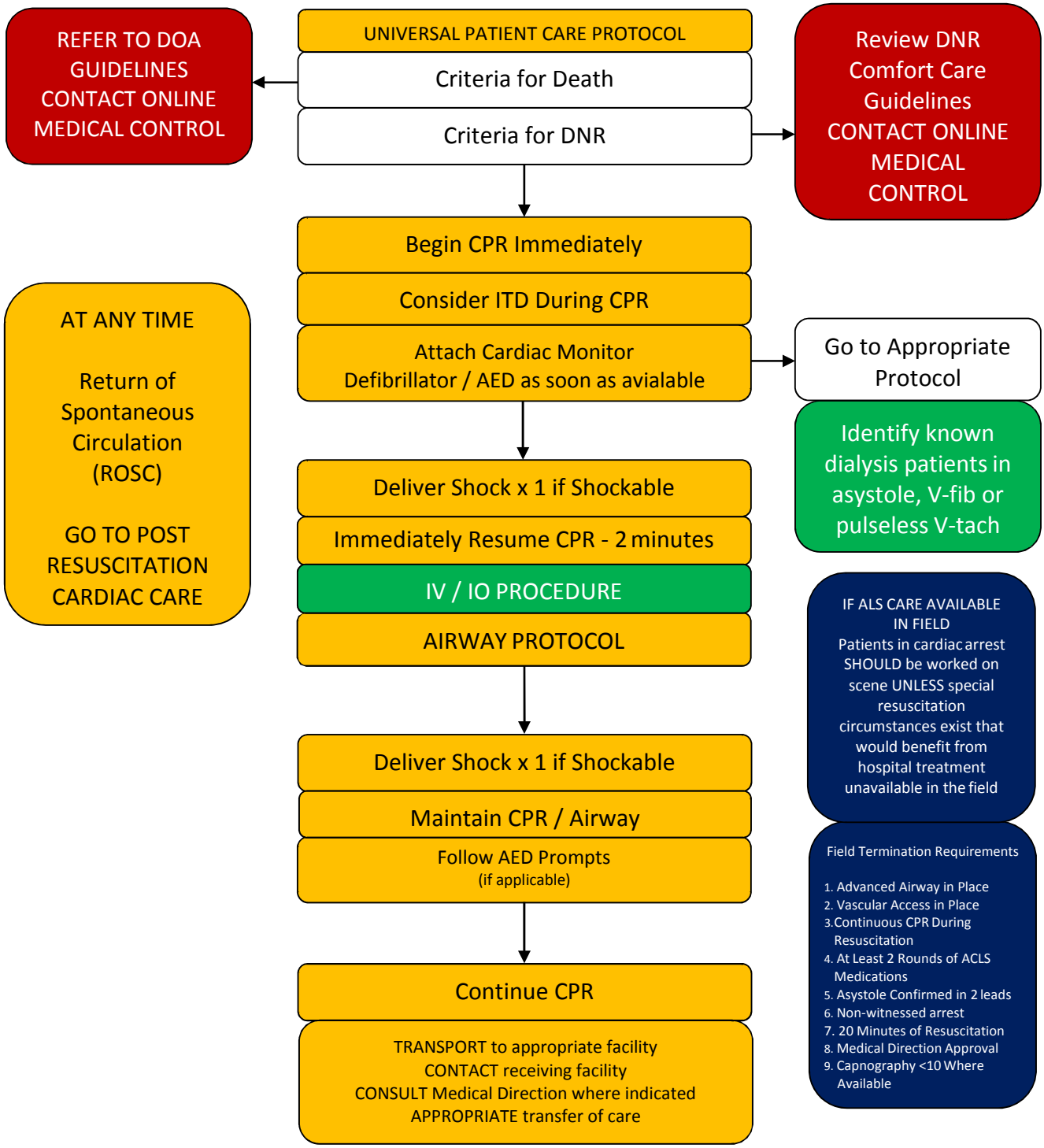
HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
• Past medical history / medications, diet, drugs. • Syncope / near syncope • Palpitations • Pacemaker • Allergies: Amiodarone (Cordarone)	• Ventricular tachycardia on ECG (runs or sustained) • Conscious, rapid pulse • Chest pain, shortness of breath • Dizziness • Rate usually 150 + bpm for sustained V-Tach	• Artifact / device failure • Cardiac • Endocrine / metabolic • Drugs • Pulmonary

KEY POINTS

- Exam: Mental Status, Skin, Neck, Lung, Heart, Abdomen, Back, Extremities, Neuro
- Polymorphic V-Tach (Torsades de Pointes) may benefit from the administration of Magnesium Sulfate.
- Polymorphic V-Tach (Torsades de Pointes) requires defibrillation rather than synchronized cardioversion.
- If the patient converts to another rhythm, refer to the appropriate protocol and treat accordingly.
- If the patient relapses back into wide complex tachycardia / ventricular tachycardia, initiate synchronized cardioversion with the joules setting that previously cardioverted the patient.
- Record 3 / 4 - Lead EKG strips during medication administration.
- Perform a 12- Lead EKG prior to and after medication administration, or synchronized cardioversion of wide complex tachycardia / ventricular tachycardia.
- Perform a code summary and attach it to the patient run report.
- Be sure to treat the patient and not the monitor.

ADULT PROTOCOL

CARDIAC ARREST



EMT Intervention | AEMT Intervention | PARAMEDIC Intervention | Online Medical Control

CARDIAC ARREST

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
• Events leading to arrest • Estimated downtime • Past medical history • Medications • Existence of terminal illness • Signs of lividity, rigor mortis • DNR	• Unresponsive • Apneic • Pulseless	• Medical vs. trauma • V-fib vs. pulseless V-tach • Asystole • Pulseless electrical activity (PEA)

KEY POINTS

- Exam: Mental Status
- Always minimize interruptions to chest compressions.
- Consider attachment of ITD to enhance circulation with chest compressions. Remove if there is a return of spontaneous circulation (ROSC).
- Success is based on proper planning and execution. Procedures require space and patient access, make room to work.
- Reassess airway frequently and with every patient move.
- Maternal arrest - Treat mother per appropriate protocol with immediate notification to Online Medical Control and rapid transport.
- If the patient converts to another rhythm, refer to the appropriate protocol and treat accordingly.
- Attempt to obtain patient history from family members or bystanders.
  - Estimated down time
  - Medical history
  - Complaints prior to arrest
  - Bystander CPR prior to EMS arrival
  - AED use prior to EMS arrival
- Administer Dextrose only if the patient has a blood glucose level < 70 mg / dl. Dextrose should be administered as soon as hypoglycemia is determined.
- Reassess the patient if the interventions do not produce any changes.
- If indicated, refer to the TERMINATION OF RESUSCIATION EFFORTS POLICY.
- If patient is pregnant and in cardiac arrest, manually manipulate the uterus to the left during CPR

ADULT PROTOCOL

ASYSTOLE / PULSELESS ELECTRICAL ACTIVITY (PEA)

UNIVERSAL PATIENT CARE PROTOCOL

Criteria for Death

Criteria for DNR

Refer to DOA Guidelines
CONTACT ONLINE MEDICAL CONTROL

Review DNR Comfort Care Guidelines
CONTACT ONLINE MEDICAL CONTROL

AT ANY TIME

Return of Spontaneous Circulation (ROSC)

GO TO POST RESUSCITATION CARDIAC CARE PROTOCOL

Begin CPR Immediately

Consider ITD during CPR

AIRWAY PROTOCOL

CAPNOGRAPHY PROCEDURE

IF ALS CARE AVAILABLE IN FIELD
Patients in cardiac arrest SHOULD be worked on scene UNLESS special resuscitation circumstances exist that would benefit from hospital treatment unavailable in the field

Apply Cardiac Monitor / AED

Asystole / PEA Persists

Continue CPR

Field Termination Requirements

1. Advanced Airway in Place
2. Vascular Access in Place
3. Continuous CPR During Resuscitation
4. At Least 2 Rounds of ACLS Medications
5. Asystole Confirmed in 2 leads
6. Non-witnessed arrest
7. 20 Minutes of Resuscitation
8. Medical Direction Approval
9. Capnography <10 Where Available

IV / IO PROCEDURE

EPINEPHrine (ADRENALINE)
1 mg IV / IO of 0.1 mg / ml (1:10,000)
Repeat every 3 - 5 minutes

Known dialysis patient consider:

Flush IV Line Then
CALCIUM GLUCONATE
1 – 3 Grams SLOW IV / IO
OR
CALCIUM CHLORIDE
1 Gram SLOW IV / IO

DO NOT MIX WITH SODIUM BICARBONATE IN SAME LINE

Flush IV Line Then
SODIUM BICARBONATE
1 mEq / kg up to 200 mEq IV / IO

If patient awakens during CPR or CPR device use, despite a non-life sustaining rhythm that interferes with treatment give
MIDAZOLAM (VERSED)
2.5 mg IV / IO
or
KETAMINE (KETALAR) 10 mg IV / IO
Repeat as needed to yield patient response permitting resuscitation

Continue CPR

Consider Termination – See Field Termination of Resuscitative Efforts Policy

TRANSPORT to appropriate facility
CONTACT receiving facility
CONSULT Medical Direction where indicated
APPROPRIATE transfer of care

EMT Intervention | AEMT Intervention | PARAMEDIC Intervention | Online Medical Control

ASYSTOLE / PULSELESS ELECTRICAL ACTIVITY (PEA)

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
• Past medical history • Medications • Events leading to arrest • End stage renal disease • Estimated downtime • Suspected hypothermia • Suspected overdose • DNR • Tricyclics • Digitalis • Beta blockers • Calcium channel blockers	• Pulseless • Apneic • No electrical activity on ECG • Cyanosis	• Medical vs. trauma • Hypoxia • Potassium (hypo / hyper) • Acidosis • Hypothermia • Device (lead) error • Death • Hypovolemia • Cardiac tamponade • Drug overdose (Tricyclics, digitalis, beta blockers, calcium channel blockers • Massive myocardial infarction • Tension pneumothorax • Pulmonary embolus

CONSIDER TREATABLE CAUSES	
• Hypovolemia • Hypo-hyperkalemia • Hypoxia • Hypoglycemia • Hydrogen ion (acidosis) • Hypothermia	• Toxins • Tamponade (cardiac) • Tension pneumothorax • Thrombosis (coronary or pulmonary) • Trauma

KEY POINTS

- Exam: Mental Status
- Always minimize interruptions to chest compressions.
- Consider attachment of ITD to enhance circulation with chest compressions. Remove if there is a return of spontaneous circulation (ROSC).
- Always confirm asystole in more than one lead.
- Consider each possible cause listed in the differential: Survival is based on identifying and correcting the cause!
- Discussion with Online Medical Control can be a valuable tool in developing a differential diagnosis and identifying possible treatment options.
- If the patient converts to another rhythm, refer to the appropriate protocol and treat accordingly.
- Early identification and treatment of reversible causes of PEA increases the chance of a successful outcome.
- Consider volume infusion for all patients in PEA. Be alert for fluid overload.
- Treat as ventricular fibrillation if you cannot differentiate between asystole and fine ventricular fibrillation.
- Dextrose should only be administered to a patient with a confirmed blood glucose level less than 70 mg / dl.
- If patient is pregnant and in cardiac arrest, manually manipulate the uterus to the left during CPR

Airway / Breathing

Circulation / Shock

Cardiac

Medical

Trauma

ADULT PROTOCOL

VENTRICULAR FIBRILLATION (V – FIB)
PULSELESS VENTRICULAR TACHYCARDIA

UNIVERSAL PATIENT CARE PROTOCOL

Criteria for DNR

Criteria for Death

Review DNR Comfort Care Guidelines
CONTACT ONLINE MEDICAL CONTROL

Refer to DOA Guidelines
CONTACT ONLINE MEDICAL CONTROL

Begin CPR Immediately

Consider ITD During CPR

Apply Cardiac Monitor
Defibrillator / AED – Confirm V-Fib / VTach

Defibrillate 200 J or Device Recommendation

Immediately resume CPR / 2 minutes

IF ALS CARE AVAILABLE IN FIELD
Patients in cardiac arrest SHOULD be worked on scene UNLESS special resuscitation circumstances exist that would benefit from hospital treatment unavailable in the field

AT ANY TIME

Return of Spontaneous Circulation (ROSC)

GO TO POST RESUSCITATION CARDIAC CARE

AIRWAY PROTOCOL

CAPNOGRAPHY PROCEDURE

IV / IO PROCEDURE

If patient awakens during CPR or CPR device use, despite a non-life sustaining rhythm that interferes with treatment give
MIDAZOLAM (VERSED)
2.5 mg IV / IO
or
KETAMINE (KETALAR) 10 mg IV / IO
Repeat as needed to yield patient response permitting resuscitation

Reassess Rhythm

Defibrillate 300 J or Device Recommendation

Immediately resume CPR / 2 minutes

Known dialysis patient consider:

EPINEPHrine (ADRENALINE)
1 mg IV / IO of 0.1 mg / ml (1:10,000)
Repeat every 3 - 5 minutes

Flush IV Line Then
CALCIUM GLUCONATE
1 - 3 Grams SLOW IV / IO
OR
CALCIUM CHLORIDE
1 Gram SLOW IV / IO

DO NOT MIX WITH SODIUM BICARBONATE IN SAME LINE

Flush IV Line Then
SODIUM BICARBONATE
1 mEq / kg up to 200 mEq
IV / IO

Reassess Rhythm

Defibrillate 360 J or Device Recommendation

Immediately resume CPR / 2 minute

Give ONE Antiarrhythmic during CPR

AMIODARONE (CORDARONE)
300 mg IV / IO
May repeat @ 150 mg IV / IO in 3 - 5 minutes

If Amiodarone (Cordarone) Unavailable, See Medication Section for Lidocaine (Xylocaine)

CONSIDER MAGNESIUM SULFATE
1 – 2 grams slow IV / IO
(Torsades, Alcoholism, Malnutrition ONLY)

Defibrillate 360 J or Device Recommendation

Immediately resume CPR / 2 minute

Reassess Rhythm

Defibrillate 360 J or Device Recommendation

Immediately resume CPR / 2 minute

REFRACTORY V-FIB / TACH
After failed highest defibrillation settings and antiarrhythmics
CONSIDER
DOUBLE SEQUENTIAL DEFIBRILLATION
If capable, after minimum of 4 unsuccessful EMS defibrillations
WHERE PARTICIPATING

TRANSPORT to appropriate facility
CONTACT receiving facility
CONSULT Medical Direction where indicated
APPROPRIATE transfer of care

Consider Field Termination of Resuscitative Efforts

EMT Intervention | AEMT Intervention | PARAMEDIC Intervention | Online Medical Control

VENTRICULAR FIBRILLATION (V – FIB)
PULSELESS VENTRICULAR TACHYCARDIA

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
• Estimated down time • Past medical history • Medications • Events leading to arrest • Renal failure / dialysis • DNR	• Unresponsive, apneic, pulseless • Ventricular fibrillation or ventricular tachycardia on ECG	• Asystole • Artifact / device failure • Cardiac • Endocrine / metabolic • Drugs • Pulmonary embolus

KEY POINTS

- Exam: Mental Status
- Always minimize interruptions to chest compressions.
- Consider attaching ResQPOD (ITD) to enhance circulation with chest compressions. Remove if there is a return of spontaneous circulation (ROSC).
- Effective CPR should be as continuous as possible with a minimum of 5 cycles or 2 minutes.
- Reassess and document endotracheal tube placement and Capnography frequently, after every move, and at discharge.
- Polymorphic V-Tach (Torsades de Pointes) may benefit from administration of Magnesium Sulfate.
- If the patient converts to another rhythm, or has a return of circulation, refer to the appropriate protocol and treat accordingly.
- If the patient converts back to ventricular fibrillation or pulseless ventricular tachycardia after being converted to ANY other rhythm, defibrillate at the previous setting used.
- Defibrillation following effective CPR is the definitive therapy for ventricular fibrillation and pulseless ventricular tachycardia. Magnesium Sulfate should be administered early in the arrest if hypomagnesemia (chronic alcoholic or malnourished patients) is suspected.
- If patient is pregnant and in cardiac arrest, manually manipulate the uterus to the left during CPR
- Zoll and Phillips equivalency settings are 120,150,200 Joules to Physio Control / Stryker 200,300,360 Joules. If unsure about settings use highest joule setting per AHA.
- Damage to defibrillators during double sequential defibrillation may not be covered by manufacturers, use the technique with prior approval from your department
- Do not delay transport or make stops to obtain a second defibrillator to accomplish double sequential defibrillation. This is only for situations where two are already on scene. The defibrillators do not have to be of the same make / model.

ADULT PROTOCOL

POST – RESUSCITATION CARDIAC CARE

Consider transport of resuscitated patient to facility with hypothermic resuscitation protocol and PCI where available

UNIVERSAL PATIENT CARE PROTOCOL

Continue Ventilatory Support with 100% OXYGEN

CAPNOGRAPHY PROCEDURE

IV / IO PROCEDURE

12 LEAD EKG PROCEDURE

Vital Signs

Bradycardia

Treat per BRADYCARDIA PROTOCOL

Hypotension

IV NORMAL SALINE BOLUS
To Maintain MAP > 70
or SBP 90 / Radial Pulses if NIBP Unavailable

DOPamine (INTROPIN)
Drip 5 - 20 mcg / kg / min
IV / IO
OR
EPINEPHrine (Adrenaline)
Drip 0.1 – 0.5 mcg / kg / min IV / IO
Titrate to effect
To Maintain MAP > 70
or SBP 90 / Radial Pulses if NIBP Unavailable

Electrical Conversion

Supportive Care Only
Anti-arrhythmic not necessary unless there is gross ventricular ectopy

Anti-Arrhythmic Given

AMIODARONE (CORDARONE)
150 mg IV / IO
mix in 100 ml D5W
Over 10 minutes
IF NOT ALREADY GIVEN (450 mg max during prehospital care)

⚠ If Amiodarone (Cordarone) Unavailable, See Medication Section for Lidocaine (Xylocaine)

If MAGNESIUM SULFATE Used
No additional magnesium to be given post-resuscitation

If arrest reoccurs, revert to appropriate protocol and / or initial successful treatment

TRANSPORT to appropriate facility CONTACT receiving facility CONSULT Medical Direction where indicated APPROPRIATE transfer of care

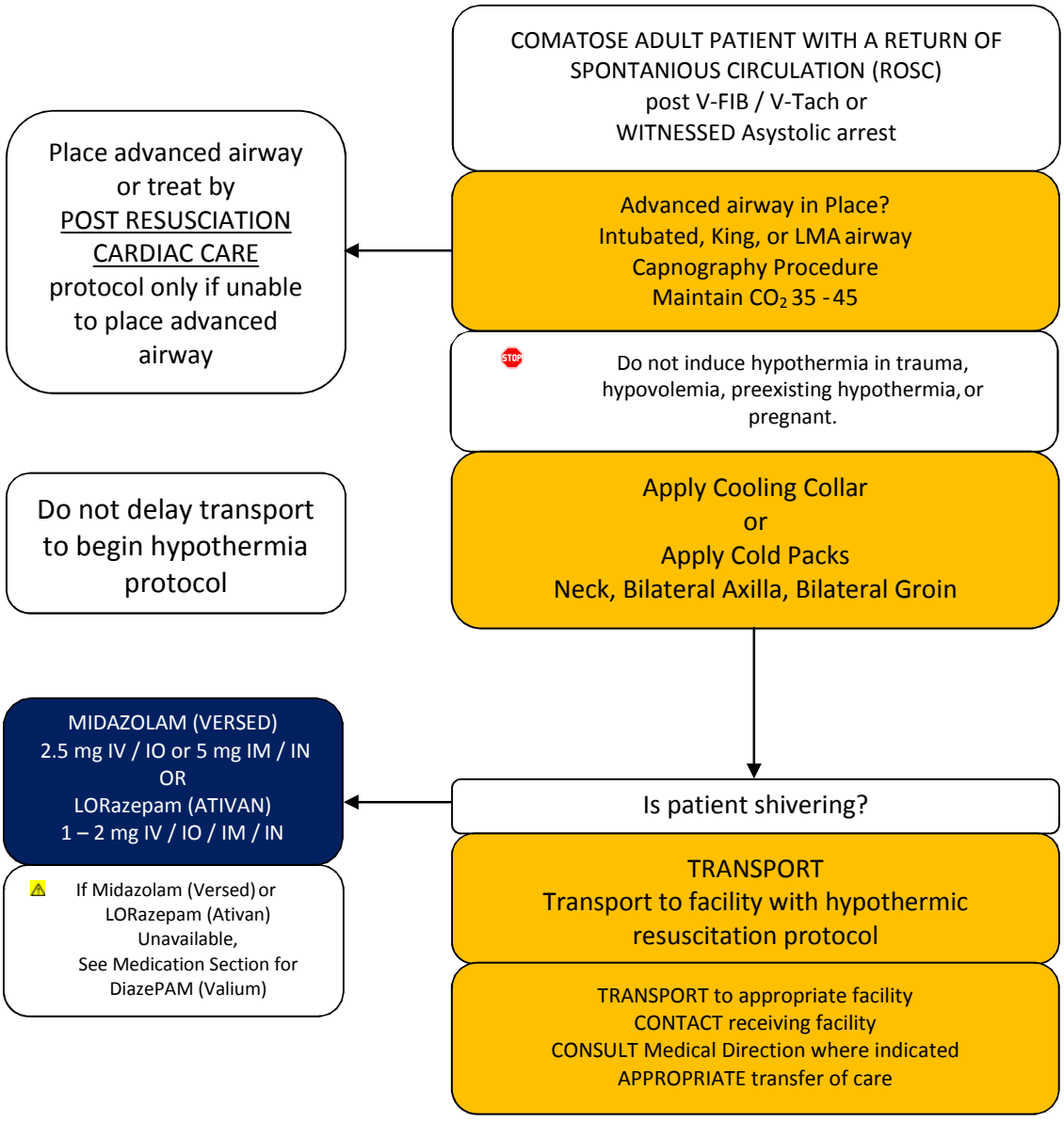
EMT Intervention | AEMT Intervention | PARAMEDIC Intervention | Online Medical Control

POST – RESUSCITATION CARDIAC CARE
INDUCED HYPOTHERMIA

RECEIVING HOSPITAL MUST BE ABLE TO CONTINUE COOLING!

Use of this protocol is dependent on the ability of the receiving hospital to continue the induced hypothermia protocol. Do not begin induced hypothermia if the receiving hospital is unable to continue cooling.

Use this protocol in conjunction with standard post resuscitation care. Maintain BP and heart rhythm with treatments in the POST RESUSCIATION CARDIAC CARE protocol. If patent loses pulses / re-arrests discontinue induced hypothermia and treat per appropriate arrest protocol.



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ADULT PROTOCOL

POST – RESUSCITATION CARDIAC CARE

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
• Respiratory arrest • Cardiac arrest	• Return of pulse	• Continue to address specific differentials associated with the original dysrhythmia

KEY POINTS

- Exam: Mental Status, Neck, Skin, Lungs, Heart, Abdomen, Extremities, Neuro
- Most patients immediately post resuscitation will require ventilatory assistance.
- The condition of post-resuscitation patients fluctuates rapidly and continuously, and they require close monitoring.
- Appropriate post-resuscitation management can best be planned in consultation with Online Medical Control.
- This is the period of time between restoration of spontaneous circulation and the transfer of care at the emergency department. The focus is aimed at optimizing oxygenation and perfusion.
- Post resuscitation SVT should initially be left alone, but routinely monitor the patient. Follow NARROW COMPLEX TACHYCARDIA PROTOCOL or contact Medical Direction.
- If the patient is profoundly bradycardic, refer to the BRADYCARDIA PROTOCOL and treat accordingly.
- Only administer oxygen if the patient is hypoxic with a SpO_2 of 94 or less. Do not withhold oxygen from patients that are short of breath regardless of SpO_2.

SECTION 5 - MEDICAL EMERGENCIES PROTOCOLS

Abdominal Pain 2-5
Alcohol / Withdrawal Related Emergencies 4-5
Altered Level of Consciousness 6-5
Anti-Emetic 8-5
Allergic Reaction (see section 4-3 Anaphylactic Shock / Reaction) 4-3
Behavioral / Psychiatric Emergencies 10-5
Diabetic Emergencies 12-5
Dialysis / Renal Patient 14-5
Hyperthermia / Heat Exposure 16-5
Hypertensive Emergencies 18-5
Hypothermia / Frostbite 20-5
Seizures 22-5
Severe Pain Management 24-5
Stroke/ CVA 26-5
Toxic Ingestion / Exposure / Overdose 28-5
Toxic Inhalation / Ingestion – Cyanide 30-5
Toxic Inhalation – Carbon Monoxide 32-5

ADULT PROTOCOL

ABDOMINAL PAIN

UNIVERSAL PATIENT CARE PROTOCOL

IV PROCEDURE
NORMAL SALINE BOLUS
To Maintain MAP > 70
or SBP 90 / Radial Pulses if NIBP Unavailable
IF HYPOTENSIVE

Consider ACUTE CORNARY SYNDROME PROTOCOL

12 LEAD EKG PROCEDURE
1ST Contact to EKG and Transmission < 10 Min

ONDANSETRON (ZOFRAN) 4 mg IV / IM
OR
PROMETHAZINE (PHENERGAN)
12.5 mg IV / 25 mg IM

Consider ONDANSETRON (ZOFRAN)
Oral Disintegrating Tabs (ODT)
4 mg Oral – may repeat max 8 mg

fentaNYL (SUBLIMAZE)
25 – 100 mcg IV / IO / IM / IN
May repeat q5 mins - Maximum 100 mcg
or
HYDROmorphone (DILAUDID)
0.5 - 1 mg IV / IO / IM
May repeat q10 mins - May Repeat to a Max 2 mg
HALF DOSE > 65, Liver or Renal Disease
or
KETAMINE (KETALAR)
0.1 – 0.3 mg / kg IV / IO / IM / IN
May repeat q5 mins - Up to 30 mg
USE 10 mg / ml Concentration

⚠ If FentaNYL (Sublimaze) or HYDROmorphone (Dilaudid) is unavailable, see medication section for MorphineSulfate

CAPNOGRAPHY PROCEDURE

TRANSPORT to appropriate facility
CONTACT receiving facility
CONSULT Medical Direction where indicated
APPROPRIATE transfer of care

Differentiate Flank Pain from Abdominal Pain and Treat per Pain Management Protocol

EMT Intervention | AEMT Intervention | PARAMEDIC Intervention | Online Medical Control

ABDOMINAL PAIN

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
• Age • Past medical / surgical history • Medications • Onset • Palliation / provocation • Quality (crampy, constant, sharp, dull, etc.) • Region / radiation / referred pain • Severity (1-10) • Time (duration / repetition) • Fever • Last meal eaten • Last bowel movement / emesis • Menstrual history (pregnancy)	• Pain (location / migration) • Tenderness • Nausea • Vomiting • Diarrhea • Dysuria • Constipation • Vaginal bleeding / discharge • Pregnancy Associated symptoms: (Helpful to localize source) • Fever, headache, weakness, malaise, myalgias, cough, headache, mental status changes, rash	• Pneumonia or pulmonary embolus • Liver (hepatitis, CHF) • Peptic ulcer disease / gastritis • Gallbladder • Myocardial infarction • Pancreatitis • Kidney stone • Abdominal aneurysm • Appendicitis • Bladder / prostate disorder • Pelvic (PID, ectopic pregnancy, ovarian cyst) • Spleen enlargement • Diverticulitis • Bowel obstruction • Gastroenteritis (infectious)

KEY POINTS

- Required Exam: Mental Status, Skin, HEENT, Neck, Heart, Lung, Abdomen, Back, Extremities, Neuro
- Abdominal pain in women of childbearing age should be treated as an ectopic pregnancy until proven otherwise.
- The diagnosis of abdominal aneurysm should be considered with abdominal pain in patients over 50.
- Appendicitis may present with vague, peri-umbilical pain, which migrates, to the RLQ over time.
- It is important to remember that abdominal pain can be caused by many different disease processes. The organ systems that may be involved in abdominal pain include esophagus, stomach, intestinal tract, liver, pancreas, spleen, kidneys, male and female genital organs, bladder, as well as referred pain from the chest that can involve the heart, lungs or pleura. Abdominal pain may also be caused by muscular and skeletal problems.
- Abdominal pain emergencies are likely to lead to death due to hypovolemia. There may also be severe electrolyte abnormalities that can cause arrhythmias.
- Myocardial infarction may present as abdominal pain especially in the diabetic and elderly.
- In some patients, cardiac chest pain may manifest as abdominal pain. Consider this in all patients with abdominal pain, especially patients with diabetes and in women.
- Because the abdominal pain may be of cardiac origin, perform cardiac monitoring and a 12-Lead EKG.
- DKA may present with abdominal pain, nausea, and vomiting. Check blood glucose level.

Airway / Breathing
Circulation / Shock
Cardiac
Medical
Trauma

ADULT PROTOCOL

ALCOHOL / WITHDRAWL RELATED EMERGENCIES

UNIVERSAL PATIENT CARE PROTOCOL
RULE OUT OTHER CAUSES / CONCURRENT ISSUES
OXYGEN to maintain SpO_2 >94 by NC when possible
IV / IO PROCEDURE
Apply Cardiac Monitor and Assess Vitals
BLOOD GLUCOSE PROCEDURE

Administer
THIAMINE 100 mg IV or IM
If IV / IO DEXTROSE required to treat Hypoglycemia in the Chronic Alcoholic Patient

Mild Symptoms

Nausea, Vomiting, Headache, Dehydration, Protecting own Airway, Dizzy, Lightheaded, Responsive

If Nausea / Vomiting
ONDANSETRON (ZOFRAN)
4 mg IV / IM
OR
PROMETHAZINE (PHENERGAN)
12.5 mg IV / 25 mg IM

OR
ONDASETRON (ZOFRAN) ODT
4 mg Oral - max 8 mg

IV NORMAL SALINE BOLUS
20 ml / kg
If Signs of Dehydration or
To Maintain MAP > 70
or SBP 90 / Radial Pulses if NIBP Unavailable

Violent / Combative

Combative, Violent, Irrational Behavior, Threat to Self or Others

⚠ NOT FOR
Obnoxious patient who is otherwise not a threat and is following commands

Summon Law Enforcement
Make Scene Safe
RESTRAINT PROCEDURE

KETAMINE (KETALAR)
250 mg IM
ONLY for VIOLENT Patient
May Repeat 250 mg IM in 2 Min if NO RESPONSE

If Signs of Emergence
MIDAZOLAM (VERSED)
2.5 mg IV / IO or 5 mg IM / IN
OR
LORazepam (ATIVAN)
1 – 2 mg IV / IO / IM / IN

OR

OLANZapine (ZyPREXA)
Orally Disintegrating Tablet
10 mg Oral

OR

HALOPERIDOL (HALDOL)
5 mg IM ONLY
Over Age 65 Give 2.5 mg
IM ONLY

AND
MIDAZOLAM (VERSED)
2.5 mg IV / IO or 5 mg IM / IN
OR
LORazepam (ATIVAN)
1 – 2 mg IV / IO / IM / IN

⚠ If Midazolam (Versed) or LORazepam (Ativan) Unavailable,
See Medication Section for diazePAM (Valium)

Any time After Injection: If Fasciculations, Extrapyramidal, Symptoms (EPS) Like Dystonia

diphenhydrAMINE (BENADRYL)
25 - 50 mg IV / IM
May Give Prophylactically

STOP Do not mix HALOPERIDOL (HALDOL) and diphenhydrAMINE (BENADRYL) in the same syringe - Incompatible

Obtunded

Unresponsive or only Mildly to Noxious Stimuli, Snoring, Questionable ability to Protect Airway, Possibly Vomiting

Protect Airway
AIRWAY PROTOCOL

Position on Left Side
Have Suction Immediately Available

Consider Need for Advanced Airway Placement

CAPNOGRAPHY PROCEDURE

IV NORMAL SALINE BOLUS
20 ml / kg
To Maintain MAP > 70
or SBP 90 / Radial Pulses if NIBP Unavailable

If Nausea / Vomiting
ONDANSETRON (ZOFRAN)
4 mg IV / IM
OR
PROMETHAZINE (PHENERGAN)
12.5 mg IV / 25 mg IM

OR
ONDASETRON (ZOFRAN) ODT
4 mg Oral - max 8 mg

12 LEAD EKG PROCEDURE

Alcohol / Benzos / Barbiturate Withdrawl

Chronic Alcoholic, Chronic Benzo / Barbiturate use, Shaking, Sweating, Fever, Hallucinations, Seizures, Tachycardia, HTN

COOLING MEASURES IF FEBRILE

If Patient Agitated, Consider
MIDAZOLAM (VERSED)
2.5 mg IV / IO or 5 mg IM / IN
OR
LORazepam (ATIVAN)
1 – 2 mg IV / IO / IM / IN

⚠ If Midazolam (Versed) or LORazepam (Ativan) Unavailable,
See Medication Section for diazePAM (Valium)

IV NORMAL SALINE BOLUS
20 ml / kg
To Maintain MAP > 70
or SBP 90 / Radial Pulses if NIBP Unavailable

If Patient BECOMES Combative, Violent, Threat to Self or Others
Follow Second Column

12 LEAD EKG PROCEDURE

TRANSPORT to appropriate facility CONTACT receiving facility CONSULT Medical Direction where indicated APPROPRIATE transfer of care

EMT Intervention | AEMT Intervention | PARAMEDIC Intervention | Online Medical Control

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ADULT PROTOCOL

ALTERED LEVEL OF CONSCIOUSNESS

UNIVERSAL PATIENT CARE PROTOCOL

Consider SPINAL MOTION RESTRICTION

AIRWAY PROTOCOL

12 LEAD EKG PROCEDURE

1ST Contact to EKG and Transmission < 10 Min

OXYGEN / PULSE OXIMETRY PROCEDURE

CAPNOGRAPHY PROCEDURE

BLOOD GLUCOSE PROCEDURE

IV PROCEDURE

Identify Treatable Causes
Treat Per Specific Protocol

- Seizure – Treat per Seizure Protocol
- Hypoxia – Treat per Airway / Breathing Protocols
- Anaphylaxis / Allergic Reaction
- Sepsis – Treat per Septic Shock Protocol
- Hypotension – Treat per Specific Shock Protocols
- Arrhythmia – Treat per Correct Arrhythmia Protocol
- Psychiatric – Treat per Behavioral Emergencies
- Hypo / Hyperglycemia – Treat per Diabetic Protocol
- Hypo / Hyperthermia – Treat per Specific Protocol
- Stroke CVA / TIA – Treat per Stroke Protocol
- Overdose – Treat per Toxic Ingestion Protocol
- Head Trauma – Treat per Head Trauma Protocol

EMT Intervention | AEMT Intervention | PARAMEDIC Intervention | Online Medical Control

ALTERED LEVEL OF CONSCIOUSNESS

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
• Known diabetic, medic alert tag • Drugs, drug paraphernalia • Report of illicit drug use or toxic ingestion • Past medical history • Medications • History of trauma	• Decreased mental status • Change in baseline mental status • Bizarre behavior • Hypoglycemia (cool, diaphoretic skin) • Hyperglycemia (warm, dry skin; fruity breath; Kussmal resps; signs of dehydration)	• Head trauma • CNS (stroke, tumor, seizure, infection) • Cardiac (MI, CHF) • Infection • Thyroid (hyper / hypo) • Shock (septic, metabolic, traumatic) • Diabetes (hyper / hypoglycemia) • Toxicological incident • Acidosis / alkalosis • Environmental exposure • Pulmonary (hypoxia) • Electrolyte abnormality • Psychiatric disorder

KEY POINTS

- Exam: Mental Status, HEENT, Skin, Heart, Lungs, Abdomen, Back, Extremities, Neuro
- Be aware of AMS as potential sign of an environmental toxin or Haz-Mat exposure and protect personal safety.
- It is safer to assume hypoglycemia than hyperglycemia if doubt exists.
- Do not let alcohol confuse the clinical picture. Alcoholics frequently develop hypoglycemia and need Thiamine before glucose.
- Low glucose (< 70), normal glucose (70 - 120), high glucose (> 250).
- Consider restraints if necessary for patient's and / or personnel's protection per the restraint procedure.
- Protect the patient airway and support ABCs.
- Document the patient's glasgow coma score pre-and post-treatment.
- Signs and symptoms of narcotic overdose include respiratory depression and altered mental status.
- Naloxone (Narcan) administration may cause the patient to go into acute opiate withdraw, which includes vomiting, agitation, and / or combative behavior. Always be prepared for combative behavior.
- Naloxone (Narcan) may wear off in as little as 20 minutes causing the patient to become more sedate and possibly hypoventilate. All A&O 4 patients having received Naloxone (Narcan) should be transported. If patient refuses transport, contact Online Medical Control before release.

ADULT PROTOCOL

ANTI - EMETIC PROTOCOL

UNIVERSAL PATIENT CARE PROTOCOL

Administer OXYGEN

IV PROCEDURE

Patient has Nausea or Vomiting

12 LEAD EKG PROCEDURE

1ST Contact to EKG and Transmission < 10

ONDANSETRON (ZOFRAN) 4 mg IV / IM
OR
PROMETHAZINE (PHENERGAN)
12.5 mg IV / 25 mg IM
OR

ONDANSETRON (ZOFRAN)
Orally Disintegrating Tablet
4 mg Oral – may repeat max 8 mg

TRANSPORT to appropriate facility
CONTACT receiving facility
CONSULT Medical Direction where indicated
APPROPRIATE transfer of care

ANTI – EMETIC PROTOCOL

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
• Nausea • Vomiting • Medication(s) administration such as narcotic analgesics	• Complaints of nausea and / or vomiting	• Consider AMI / 12 lead EKG • Gastroenteritis • Toxic ingestion / food poisoning • Bowel obstruction • Appendicitis • Gastritis • Cholecystitis (gallbladder) • Hepatitis / cirrhosis • Headaches / migraine • Pregnancy • Hypertensive crisis • Electrolyte imbalances • DKA • Intracranial pressure • Sepsis / infections

KEY POINTS

- Position patient to protect airway as appropriate. (Recovery position, sitting up, etc.)
- Immediately position entire patient or their head to side if patient begins vomiting then retrieve suction.
- Patients with altered LOC and nausea / vomiting need to have airway maintenance prioritized before medication.
- Prepare and test suction prior to its need.
- Give Ondansetron (Zofran) or Promethazine (Phenergan) over at least 2 minutes, slow IV. Follow up with second dose in if symptoms unresolved.
- Treat patients early, no need to wait for patient to begin vomiting to administer Ondansetron (Zofran) or Promethazine (Phenergan).
- Patients receiving medications such as narcotic analgesics may require concurrent administration of Ondansetron (Zofran) or Promethazine (Phenergan) to reduce nausea associated with such medications.

ADULT PROTOCOL

BEHAVIORAL / PSYCHIATRIC EMERGENCIES

For Use in *ADULT* Psychosis Only
NOT For Medical Emergencies Such As Hypoxemia, Sepsis, Seizure, Encephalitis, Hypoglycemia, or Stroke

If patient is Hyperthermic begin cooling with ice packs in groin and axilla.

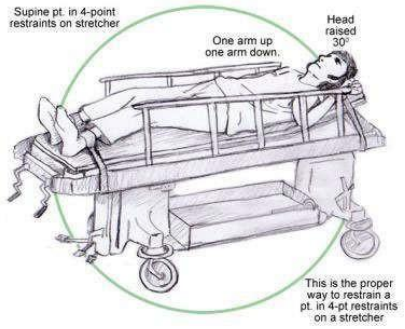
SCENE SAFETY
SUMMON LAW ENFORCEMENT

UNIVERSAL PATIENT CARE PROTOCOL

Remove patient from Stressful environment

Verbal techniques
(Reassurance, calm, establish rapport)

Treat Suspected Problems per Appropriate Protocol
AMS - Overdose - Head Trauma - Hypoglycemia



Agitation – Not Combative

Consider
OLANZapine (ZyPREXA)
Orally Disintegrating Tablet
10 mg Oral

MIDAZOLAM (VERSED)
2.5 mg IV / IO or 5 mg IM / IN
OR
LORazepam (ATIVAN)
1 – 2 mg IV / IO / IM / IN

⚠ If Midazolam (Versed) or LORazepam (Ativan) Unavailable,
See Medication Section for diazePAM (Valium)

CAPNOGRAPHY PROCEDURE

Combative – not Violent
Risk to Self or others

RESTRAINT PROCEDURE

HALOPERIDOL (HALDOL)
5 mg IM ONLY
Over Age 65 Give 2.5 mg
IM ONLY

AND
MIDAZOLAM (VERSED)
2.5 mg IV / IO or 5 mg IM / IN
OR
LORazepam (ATIVAN)
1 – 2 mg IV / IO / IM / IN

⚠ If Midazolam (Versed) or LORazepam (Ativan) Unavailable,
See Medication Section for diazePAM (Valium)

Any time After Injection: If Fasciculations, Extrapyramidal, Symptoms (EPS) Like Dystonia

diphenhydrAMINE (BENADRYL)
25 - 50 mg IV / IM
May Give Prophylactically

STOP Do not mix HALOPERIDOL (HALDOL) and diphenhydrAMINE (BENADRYL) in the same syringe - Incompatible

CAPNOGRAPHY PROCEDURE

Combative - Violent
Significant Threat to Providers

RESTRAINT PROCEDURE

KETAMINE (KETALAR)
250 mg IM
USE 100 mg / ml Concentration
May Repeat 250 mg IM
in 2 Min if NO RESPONSE

If Signs of Emergence After KETAMINE Administer
MIDAZOLAM (VERSED)
2.5 mg IV / IO or 5 mg IM / IN
OR
LORazepam (ATIVAN)
1 – 2 mg IV / IO / IM / IN

⚠ If Midazolam (Versed) or LORazepam (Ativan) Unavailable,
See Medication Section for diazePAM (Valium)

⚠ Notify receiving Physician Ketamine (Ketalar) administered so patient presentation is not misconstrued as other etiology

CAPNOGRAPHY PROCEDURE

Constant reassessment of ABC's, personal, and patient safety

TRANSPORT to appropriate facility CONTACT receiving facility
CONSULT Medical Direction where indicated APPROPRIATE transfer of care

EMT Intervention | AEMT Intervention | PARAMEDIC Intervention | Online Medical Control

BEHAVIORAL / PSYCHIATRIC EMERGENCIES

ALL RESPONDERS SHOULD HAVE A HEIGHTENED AWARENESS OF SCENE SAFETY

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
· Situational crisis · Psychiatric illness / medications · Injury to self or threats to others · Medic alert tag · Substance abuse / overdose · Diabetes	· Anxiety, agitation, confusion · Affect change, hallucinations · Delusional thoughts, bizarre behavior · Combative violent · Expression of suicidal / homicidal thoughts	· See Altered Mental Status differential diagnosis · Alcohol Intoxication · Toxin / substance abuse · Medication effect / OD · Withdrawal syndromes · Depression · Bipolar (manic-depressive) · Schizophrenia · Anxiety disorders
Agitated – Non-Combative Patient is experiencing a period of high anxiety seemingly from a psychiatric event not otherwise treatable by EMS who is not a treat to self or others	Combative – Not Violent Patient is a treat to self or others and can be controlled and restrained with appropriate help without significant risk to the providers	Combative – Violent Patient is in a violent state that puts providers at significant risk despite appropriate help

Criteria for Restraint Use:

- Patient out of control and may cause harm to self or others.
- Necessary force required for patient control without causing harm.
- Position of patient must not impede airway or breathing.
- Restraints must not impede circulation.
- Place mask on patient for body secretion protection. May use TB mask, or Non-rebreather if patient needs oxygen.
- Use supine or lateral positioning ONLY.
- MSP checks are required every 15 min.
- DOCUMENT methods used.

Criteria for medication use for anxiolysis / combative patients:

- Patient out of control and may cause harm to self or others.
- Patient is NOT a medical patient (treat underlying causes).
- Patient is an ADULT patient.
- Ketamine (Ketalar) or Haloperidol (Haldol) can be given safely without harm to patient or EMS.
- Use necessary force required for patient control without causing harm.
- Position of patient must not impede airway or breathing.
- DOCUMENT methods used.

Emergence Symptoms	Extrapyramidal Symptoms (EPS)	Neuroleptic Malignant Syndrome
Confusion Excitement Irrational Behavior Hallucinations	Involuntary Movements Purposeless Movements Tongue Protrusion - Rapid Eye Blinking Facial Grimacing - Lip Smacking / Puckering	Increased Body Temp > 38C (100.4F) Muscle Rigidity Diaphoresis Altered LOC

KEY POINTS

- Exam: Mental Status, Skin, Heart, Lungs, Neuro
- All psychiatric patients must have medical clearance at a hospital ED before transport to a mental health facility.
- Your safety first!!
- Be sure to consider all possible medical / trauma causes for behavior. (Hypoglycemia, overdose, substance abuse, hypoxia, head injury, seizure, etc.)
- Do not irritate the patient with a prolonged exam.
- Do not overlook the possibility of associated domestic violence or child abuse.
- The safety of on scene personnel is the priority. Protect yourself and others by summoning law enforcement to assure everyone's safety and if necessary, to enable you to render care. Do not approach the patient if he / she is armed with a weapon.
- Consider the medical causes of acute psychosis. Causes may include; head trauma, hypoglycemia, acute intoxication, sepsis, CNS insult and hypoxia.
- Suicide ideation or attempts must be transported for evaluation.
- Be alert for rapidly changing behaviors.
- Limit patient stimulation and use de-escalation techniques.
- If the patient has been placed in handcuffs by a law enforcement agency, then a member from that agency MUST ride with the patient in the ambulance to the hospital.
- Consider treatment of agitation / anxiety combativeness for patients requiring restraint procedure.

ADULT PROTOCOL

DIABETIC EMERGENCIES

UNIVERSAL PATIENT CARE PROTOCOL

BLOOD GLUCOSE PROCEDURE

IV PROCEDURE

Glucose < 70 or symptomatic

ORAL GLUCOSE
15 -37.5 grams
(If Alert With NO Vascular Access)

OR

THIAMINE 100 mg IV or IM
If Chronic Alcoholism or Malnourished

DEXTROSE 10%
Glucose < 40 mg/dl
25 Grams IV / IO
Glucose 40 – 70 mg/dl
12.5 Grams IV / IO

⚠ If DEXTROSE 10% Is unavailable, see medication section for DEXTROSE 50%

OR

If No Vascular Access
GLUCAGON (GLUCAGEN)
1 mg IM

Recheck Blood Glucose Level

May Repeat Medications
in 5 - 20 Minutes
if Still Hypoglycemic

Glucose 70 – 250

No Diabetic Treatment Required

Glucose > 250

NORMAL SALINE
20 ml / kg if signs / symptoms of Dehydration and NO Contraindications

Monitor and Reassess

12 LEAD EKG PROCEDURE

TRANSPORT to appropriate facility CONTACT receiving facility CONSULT Medical Direction where indicated APPROPRIATE transfer of care

EMT Intervention | AEMT Intervention | PARAMEDIC Intervention | Online Medical Control

DIABETIC EMERGENCIES

HYPOGLYCEMIA

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
• Known diabetic, medic alert tag • Past medical history • Medications • Last meal • Recent Blood Sugar Analysis	• Altered level of consciousness • Dizziness • Irritability • Diaphoresis • Convulsions • Hunger • Confusion	• ETOH • Toxic Overdose • Trauma • Seizure • Syncope • CNS disorder • Stroke • Pre-existing condition

HYPERGLYCEMIA

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
• Known diabetic, medic alert tag • Past medical history • Medications • Last meal • Recent BGL check	• Altered level of consciousness / coma • Abdominal pain • Nausea / vomiting • Dehydration • Frequent thirst and urination • General weakness malaise • Hypovolemic shock • Hyperventilation • Deep / rapid respirations	• ETOH • Toxic overdose • Trauma • Seizure • Syncope • CSN disorder • Stroke • Diabetic ketoacidoss

Hypoglycemic patients who are receiving oral hypoglycemics should be STRONGLY urged to be transported to the hospital. The half-life of such oral medications is long and these patients will need to be closely monitored for recurrent hypoglycemia.

KEY POINTS

Hyperglycemia:

- Diabetic ketoacidosis (DKA) is a complication of diabetes mellitus. It can occur when insulin levels become inadequate to meet the metabolic demands of the body for a prolonged amount of time (onset can be within 12 – 24 hours). Without enough insulin, the blood glucose increases, and cellular glucose depletes. The body removes excess blood glucose by dumping it into the urine. Pediatric patients in DKA should be treated as hyperglycemic under the Pediatric Diabetic Emergency Protocol.
- Patients can have hyperglycemia without having DKA.

Hypoglycemia:

- Always suspect hypoglycemia in patients with an altered mental status.
- If a blood glucose analysis is not available, a patient with altered mental status and signs and symptoms consistent with hypoglycemia should receive Dextrose or Glucagon (Glucagen).
- Dextrose is used to elevate BGL *but it will not maintain it.* The patient will need to follow up with a meal (carbs), if not transported to a hospital.

Miscellaneous:

- If IV access is successful after Glucagon (Glucagen) IM and the patient is still symptomatic, Dextrose IV / IO can be administered.
- For alcoholic or malnourished patients, give 100 mg Thiamine IV or IM before giving glucose to avoid possible Wernicke's encephalopathy.
- Shut off wearable insulin pumps if patient is hypoglycemic.
- Treat if the patients' blood glucose is 70 or less, or any level with signs and symptoms.

ADULT PROTOCOL

DIALYSIS / RENAL PATIENT

UNIVERSAL PATIENT CARE PROTOCOL

CAPNOGRAPHY PROCEDURE

AIRWAY PROTOCOL

IV / IO PROCEDURE

12 LEAD EKG PROCEDURE

1ST Contact to EKG and Transmission < 10 Min

Breathing Difficulty

Assess Breath Sounds

See Respiratory Distress Protocol or Congestive Heart Failure Protocol based on Lung Sounds

Chest Pain

Treat with Acute Coronary Symptoms Protocol

Symptomatic HYPERtension

Blurred Vision
Headache
Diaphoresis

DISCUSS each case with Online Medical Control After STROKE ASSESMENT

Bleeding Catheter / Shunt

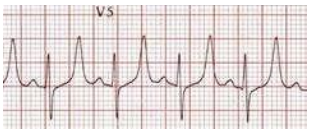
Apply Pressure Over Site / Pressure Points

Apply Tourniquet if risk of Exsanguination
Not over Shunt

Hemostatic Agents may be considered in CHEST and GROIN ACCESS ONLY

Missed Dialysis / Cardiac Changes

Wide Complex QRS / Peaked T Waves / Bradycardia Suspected Hyperkalemia

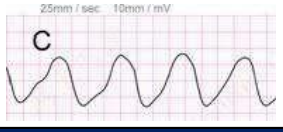


ALBUTEROL (PROVENTIL)
Serial Aerosols during Entire Transport

Flush IV then
CALCIUM GLUCONATE
1 – 3 Grams IV / IO or
CALCIUM CHLORIDE
1 GRAM IV / IO

STOP Patient on Digoxin (Digitalis)

ONLY IF EKG IS SINE WAVE



Flush IV then
CALCIUM GLUCONATE
1 – 3 Grams IV / IO or
CALCIUM CHLORIDE
1 GRAM IV / IO

STOP Patient on Digoxin (Digitalis)

Flush IV then
SODIUM BICARBONATE
1 mEq / kg

Symptomatic HYPOtension

Pre Dialysis
Consider
Septic Shock
Cardiogenic Shock

Post Dialysis
Consider
Volume Depletion

CONSIDER ITD PROCEDURE

STOP NO ITD if Cardiogenic Shock

Treat Per Appropriate Shock Protocol

STOP DO NOT MIX IN THE SAME LINE

TRANSPORT to appropriate facility
CONTACT receiving facility
CONSULT Medical Direction where indicated
APPROPRIATE transfer of care

EMT Intervention | AEMT Intervention | PARAMEDIC Intervention | Online Medical Control

DIALYSIS / RENAL PATIENT

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
• Renal failure • Dialysis treatment • Anemia • Dialysis treatment schedule • Previous implications • Long term catheter access • Shunt access • Hyperkalemia	• Hypotension • Bleeding • Fever • Electrolyte imbalances • Nausea • Vomiting • Altered mental status • Seizure • Dysrhythmias	• Congestive heart failure • Pericarditis • Diabetic problem

KEY POINTS

The chronic renal dialysis patient has numerous medical problems. The kidneys help maintain electrolyte balance, acid-base balance and rid the body of metabolic waste. Kidney failure results in a build-up of toxins within the body, which can cause many problems.

Dialysis is a process, which filters out the toxins, excess fluids and restores electrolyte balance. The process may be done in two ways:

1. Peritoneal Dialysis
   Toxins are absorbed by osmosis through a solution infused into the peritoneal cavity; and then drained out. The solution is placed into the abdomen by means of a catheter, which is placed below the navel. This process must be done frequently, as frequently as every 12 hours for a period of 1 - 2 hours.

2. Hemodialysis
   Removes toxins by directly filtering the blood using equipment that functions like an electric kidney, circulating the blood through a Shunt that is connected to a vein and an artery. This process usually needs to be done every 2 - 3 days for a period of 3 - 5 hours. A permanent shunt can be surgically formed as a fistula.

POSSIBLE COMPLICATIONS OF DIALYSIS TREATMENT

1. Hypotension (15-30%)
   - May result in angina, MI, dysrhythmia, altered mental status, and seizure
2. Removal of therapeutic medications
   - Example: Tegretol
3. Disequilibrium syndrome
   - Cause: shift of urea and / or electrolytes
   - Signs and symptoms: Nausea and / or vomiting, altered mentation, or seizure
4. Bleeding
   - These patients are often treated with heparin and they may have a low platelet count
   - Bleeding may be at the catheter site, retro peritoneal, gastrointestinal, or subdural
5. Equipment malfunctions
   - Possible air embolus
   - Possible fever or endotoxin

- Do not take blood pressure in arm that has the shunt.
- T waves must be higher than the QRS to qualify as tall / peaked.

ADULT PROTOCOL

HYPERTHERMIA / HEAT EXPOSURE

UNIVERSAL PATIENT CARE PROTOCOL

Document Patient Temperature

Remove Patient from Heat Source

Remove Patient Clothing

Apply Room Temperature Water to Patient Skin and Increase Air Flow around Patient

CAPNOGRAPHY PROCEDURE

Apply ICE PACKS to Patient
(Groin, Axilla, and Posterior Neck)
Consider Cooling Collar

IV / IO PROCEDURE

HEAT EXAUSTION
IV Normal Saline Bolus 20 ml / kg

HEAT STROKE (AMS)
IF HYPOTENSIVE - IV Normal Saline Bolus 20 ml / kg
IF NORMOTENSIVE - IV Normal Saline TKO

BLOOD GLUCOSE PROCEDURE

Cardiac Monitor / 12 Lead Procedure

Monitor and Reassess

Appropriate Protocol Based on Patient Symptoms

TRANSPORT to appropriate facility
CONTACT receiving facility
CONSULT Medical Direction where indicated
APPROPRIATE transfer of care

EMT Intervention | AEMT Intervention | PARAMEDIC Intervention | Online Medical Control

HYPERTHERMIA / HEAT EXPOSURE

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
• Age • Exposure to increased temperatures and humidity • Past medical history / medications • Extreme exertion • Time and length of exposure • Poor PO intake • Fatigue and / or muscle cramping	• Altered mental status or unconsciousness • Hot, dry, or sweaty skin • Hypotension or shock • Seizures • Nausea	• Fever (infection) • Dehydration • Medications • Hyperthyroidism (storm) • Delirium tremens (DT's) • Heat cramps • Heat exhaustion • Heat stroke • CNS lesions or tumors

Heat Exhaustion: Dehydration	Heat Stroke: Cerebral Edema
• Muscular / abdominal cramping • General weakness • Diaphoresis • Febrile • Confusion • Dry mouth / thirsty • Tachycardia • BP normal or orthostatic hypotension	• Confusion • Bizarre behavior • Skin hot dry, febrile • Tachycardia • Hypotensive • Seizure • Coma

KEY POINTS

- Exam: Mental Status, Skin, HEENT, Heart, Lungs, Neuro
- Extremes of age are more prone to heat emergencies (i.e. young and old).
- Predisposed by use of: tricyclic antidepressants, phenothiazines, anticholinergic medications, and alcohol.
- Cocaine, amphetamines, and salicylates may elevate body temperatures.
- Sweating generally disappears as body temperature rises
- Intense shivering may occur as patient is cooled.
- Heat Cramps consists of benign muscle cramping 2° to dehydration and is not associated with an elevated temperature.
- Heat Exhaustion consists of dehydration, salt depletion, dizziness, fever, mental status changes, headache, cramping, nausea and vomiting. Vital signs usually consist of tachycardia, hypotension, and an elevated temperature.
- Heat Stroke consists of dehydration, tachycardia, hypotension, elevated temperature, and altered mental status.
- Patients at risk for heat emergencies include neonates, infants, geriatric patients, and patients with mental illness. Other contributory factors may include heart medications, diuretics, cold medications and / or psychiatric medications.
- Heat exposure can occur either due to increased environmental temperatures or prolonged exercise or a combination of both. Environments with temperature > 90° F and humidity > 60% present the most risk.
- Heat stroke occurs when the cooling mechanism of the body (sweating) ceases due to temperature overload and / or electrolyte imbalances. Be alert for cardiac dysrhythmias for the patient with heat stroke.
- In patents with significant hyperthermia (temp > 104° F) begin actively cooling with natural or chemical ice packs applied to the patients' groin, armpits (axilla), and back of neck.

ADULT PROTOCOL

HYPERTENSIVE EMERGENCIES

UNIVERSAL PATIENT CARE PROTOCOL

IV / IO PROTOCOL

Assess Neuro Status – Record and Trend GCS
MEND Stroke Exam

12 LEAD EKG PROCEDURE

1ST Contact to EKG and Transmission < 10 Min

BLOOD GLUCOSE PROCEDURE

Consider Potential Causes

↓

Concurrent Chest Pain? - Refer to ACS Protocol

Concurrent Pulmonary Edema? - Treat Per CHF / Pulmonary Edema Protocol

↓

Discontinuation / Non –Compliance with Anti-Hypertensive Medications) – Supportive Care

Head Trauma (Cushing's Reflex) – See Head Trauma Protocol

Sympathomimetics (Cocaine, Amphetamines, Etc.) – Supportive Care

Aortic Dissection – Supportive Care / Pain Management

Pre-Eclampsia / Eclampsia – See OB Emergencies

↓

Consult Online Medical Direction
If EMS Needs Consideration of Other Interventions
on a Per Case Basis

TRANSPORT
Head Up ≥ 30 Degrees Position

TRANSPORT to appropriate facility
CONTACT receiving facility
CONSULT Medical Direction where indicated
APPROPRIATE transfer of care

EMT Intervention | AEMT Intervention | PARAMEDIC Intervention | Online Medical Control

HYPERTENSIVE EMERGENCIES

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
• Documented hypertension • Related diseases: diabetes, CVA renal failure, cardiac • Medications (compliance?) • Pregnancy	One of these: • Systolic BP 220 or greater • Diastolic BP 120 or greater AND at least one of these: • Headache • Nosebleed • Blurred vision • Dizziness	• Hypertensive encephalopathy • Primary CNS Injury (Cushing's response = bradycardia with hypertension) • Myocardial infarction • Aortic dissection • Pre-eclampsia / Eclampsia • Sympathomimetic ingestion (cocaine)

KEY POINTS

- Prehospital treatment of hypertension is very conservative because a CVA in progress may be made worse by a drop in B/P following aggressive hypertension treatment.
- Consider treatment ONLY if patient has signs and symptoms of CHF or Cardiac Chest Pain!
- Hypertensive emergencies are life threatening emergencies characterized by an acute elevation in blood pressure AND end-organ damage to the cardiac, CNS or renal systems. These crisis situations may occur when patients have poorly controlled chronic hypertension.
- All symptomatic patients with hypertension should be transported with their head elevated.
- Evidence of neurological deficit includes: confusion, slurred speech, facial asymmetry, focal weakness, coma, lethargy and seizure activity.
- Evidence of cardiac impairment includes: angina, jugular vein distention, chest discomfort and pulmonary edema.
- Toxic ingestion such as cocaine may present with a hypertensive emergency.
- Hypertension can be a neuroprotective reflex in patients with increased intracranial pressure.

ADULT PROTOCOL

HYPOTHERMIA

UNIVERSAL PATIENT CARE PROTOCOL

AIRWAY PROTOCOL

OXYGEN

CAPNOGRAPHY PROCEDURE

Remove wet clothing

Handle Patient Gently

Indirectly Apply Hot Packs and / or Blankets
and Turn Up Vehicle Heat

BLOOD GLUCOSE PROCEDURE

IV / IO PROCEDURE

CARDIAC MONITORING PROCEDURE

Appropriate Protocol(s)
Based on Patient Signs and Symptoms

TRANSPORT to appropriate facility
CONTACT receiving facility
CONSULT Medical Direction where indicated
APPROPRIATE transfer of care

HYPOTHERMIA / FROSTBITE

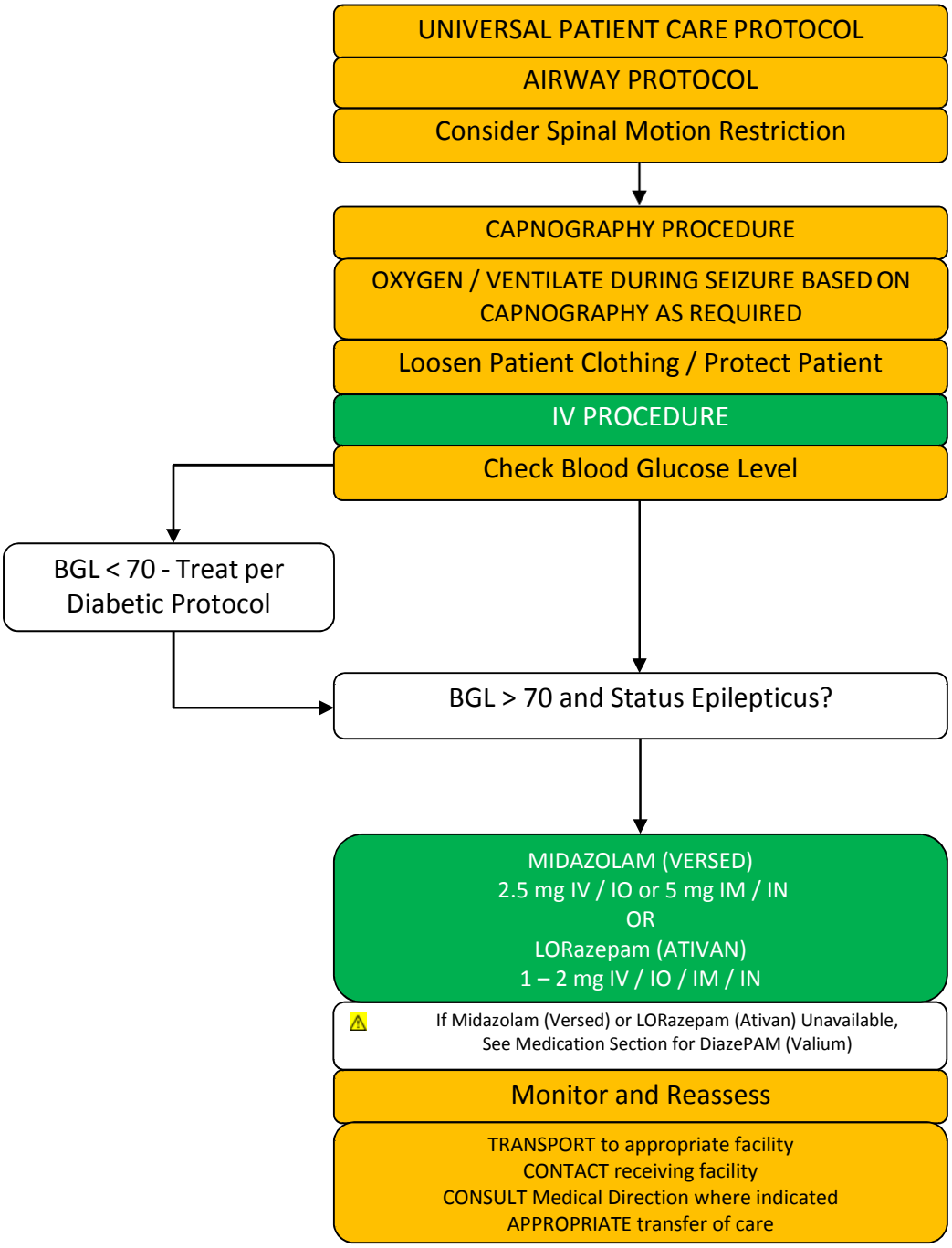
HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
• Past medical history • Medications • Exposure to environment even in normal temperatures • Exposure to extreme cold • Extremes of age • Drug use: alcohol, barbiturates • Infections / sepsis • Length of exposure / wetness	• Cold, clammy • Shivering • Mental status changes • Extremity pain or sensory abnormality • Bradycardia • Hypotension or shock	• Sepsis • Environmental exposure • Hypoglycemia • CNS dysfunction • Stroke • Head injury • Spinal cord injury

KEY POINTS

- Exam: Mental Status, Heart, Lungs, Abdomen, Extremities, Neuro
- Hypothermic / drowning / near drowning patients that appear cold and dead are NOT dead until they are warm and dead, or have other signs of obvious death (putrification, traumatic injury unsustainable to life).
- Defined as core temperature < 93.2° F (34° C).
- Extremes of age are most susceptible (i.e. young and old).
- Patients with low core temperatures will not respond to ALS drug interventions. Maintain warming procedure and supportive care. Warming procedures includes removing wet clothing, limiting exposure, and covering the patient with warm blankets if available.
- Do not allow patients with frozen extremities to ambulate.
- Do not attempt to rewarm deep frostbite unless there is an extreme delay in transport, and there is a no risk that the affected body part will be refrozen. Contact medical direction prior to rewarming a deep frostbite injury.
- With temperature less than 86° F (30° C) ventricular fibrillation is common cause of death. Handling patients gently may prevent this.
- If the temperature is unable to be measured, treat the patient based on the suspected temperature.
- Hypothermia may produce severe bradycardia.
- Shivering stops below 90° F (32° C).
- Hot packs can be activated and placed in the armpit and groin area if available.
- Care should be taken not to place the packs directly against the patient's skin.
- Consider withholding CPR if patient has organized rhythm. Discuss with Online Medical Control.
- Patients with low core temperatures may not respond to ALS drug interventions. Discuss ACLS drug use with Online Medical Control in severely hypothermic patients.
- Maintain warming procedure and supportive care. Warming procedures includes removing wet clothing, limiting exposure, and covering the patient with warm blankets if available.
- The most common mechanism of death in hypothermia is ventricular fibrillation. If the hypothermia victim is in ventricular fibrillation, CPR should be initiated. If V-FIB is not present, then all treatment and transport decisions should be tempered by the fact that V-FIB can be caused by rough handling, noxious stimuli or even minor mechanical disturbances, this means that respiratory support with 100% oxygen should be done gently, including intubation, avoiding hyperventilation.
- The heart is most likely to fibrillate between 85 - 88° F (29 - 31° C.) Defibrillate VF / VT x1 if no change, perform CPR and defer repeat defibrillation attempts until patient has been rewarmed.
- Do not allow patients with frozen extremities to ambulate.
- Superficial frostbite can be treated by using the patient's own body heat.

ADULT PROTOCOL

SEIZURES



EMT Intervention | AEMT Intervention | PARAMEDIC Intervention | Online Medical Control

SEIZURES

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
• Reported / witnessed seizure activity • Previous seizure history • Medical alert tag information • Seizure medications • History of trauma • History of diabetes • History of pregnancy	• Decreased mental status • Sleepiness • Incontinence • Observed seizure activity • Evidence of trauma	• CNS (head) trauma • Tumor • Metabolic, hepatic, or renal failure • Hypoxia • Electrolyte abnormality (na, ca, mg) • Drugs, medications, non-compliance • Infection / fever • Alcohol withdrawal • Eclampsia • Stroke • Hyperthermia

Categories of Seizures

Complex = Unconscious	Focal = Partial, Localized
Simple = Conscious	Generalized = All Body

- Simple Focal
- Simple Generalized
- Complex Focal
- Complex Generalized

KEY POINTS

- Exam: Mental Status, HEENT, Heart, Lungs, Extremities, Neuro
- Status epilepticus is defined as two or more successive seizures without a period of consciousness or recovery. This is a true emergency requiring rapid airway control, treatment, and transport.
- Grand mal seizures (generalized) are associated with loss of consciousness, incontinence, and possibly tongue trauma.
- Focal seizures (petit mal) effect only a part of the body and are not usually associated with a loss of consciousness.
- For any seizure in a pregnant patient, follow the OB Emergencies Protocol and call Online Medical Control
- Benzodiazepine administration is reserved for patients who are actively seizing only, not for prophylaxis of seizures.
- Be prepared to manage the airway and breathing of patients who have received benzodiazepines such as Lorazepam (Ativan) or Midazolam (Versed)
- Jacksonian seizures are seizures that start as a focal seizure and become generalized.
- Be prepared for airway problems and continued seizures.
- Assess possibility of occult trauma and substance abuse.
- The seizure has usually stopped by the time the EMS personnel arrive and the patient will be found in the postictal state.
- There are many causes for seizures including; epilepsy, head trauma, tumor, overdose, infection, hypoglycemia, and withdrawal. Be sure to consider these when doing your assessment.
- Routinely assess the patient's airway.
- If the patient is combative and postictal, DO NOT use the Restraint Procedure before assessing for /treating hypoglycemia and hypoxia.
- If the patient is actively seizing, move any objects that may injure the patient. Protect, but do not try to restrain them.

ADULT PROTOCOL

SEVERE PAIN MANAGEMENT

PATIENT HAS:

- Burns
- Intractable Flank Pain
- Intractable Back Pain
- Musculoskeletal and / or Fracture Pain
- Sickle Cell Pain Crisis (Use Supplemental O_2)
- Unremitting Abdominal Pain (NOT OB)

fentaNYL (SUBLIMAZE)
25 – 100 mcg IV / IO / IM / IN
May repeat q5 mins - Maximum 100 mcg

⚠ Preferred analgesic for trauma / ACS
⚠ Push slow IV / IO
⚠ If Fentanyl (Sublimaze) is unavailable, see medication section for Morphine Sulfate

OR

HYDROmorphone (DILAUDID)
0.5 - 1 mg IV / IO / IM
May repeat q10 mins - May Repeat to a Max 2 mg
HALF DOSE > 65, Liver or Renal Disease

⚠ Preferred analgesic for intractable / unremitting pain
⚠ If HYDROmorphone (Dilaudid) is unavailable, see medication section for Morphine Sulfate

OR

KETAMINE (KETALAR)
0.1 – 0.3 mg / kg IV / IO / IM / IN
May repeat q5 mins - Up to 30 mg
USE 10 mg / ml Concentration

OR

KETOROLAC (TORADOL)
15 mg IV / IO – 1 DOSE LIMIT
30 mg IM – 1 DOSE LIMIT

⚠ Preferred analgesic for kidney stones, Flank pain
STOP >65 Years old, Renal disease
STOP Any recent or suspected bleeding (GI bleeds, CVA)
STOP Allergy / Hypersensitivity to NSAIDS, Asthma
STOP Known or obvious pregnancy, Nursing mothers

Consider as needed for Nausea / Vomiting
ONDANSETRON (ZOFRAN) 4 mg IV / IM
OR
PROMETHAZINE (PHENERGAN)
12.5 mg IV / 25 mg IM

Consider ONDANSETRON (ZOFRAN)
Orally Disintegrating Tablet
4 mg Oral – may repeat max 8 mg

CAPNOGRAPHY PROCEDURE
Monitor Airway, Breathing, Vitals

TRANSPORT to appropriate facility
CONTACT receiving facility
CONSULT Medical Direction where indicated
APPROPRIATE transfer of care

Pain Other Than Listed
Contact Online Medical Control

NOT FOR
Altered Mentation, Traumatic Abdominal Pain, Head Trauma, Hypovolemia, Multiple System Trauma

EMT Intervention | AEMT Intervention | PARAMEDIC Intervention | Online Medical Control

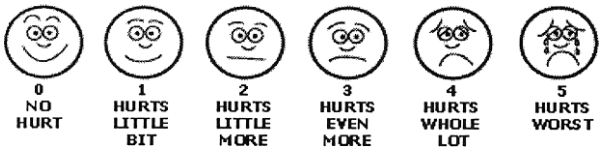
SEVERE PAIN MANAGEMENT

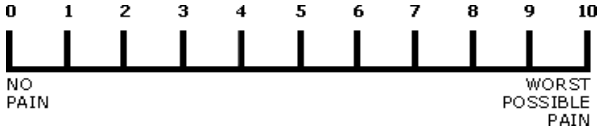
HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
• Age / onset • Location • Duration • Severity (0 - 10) • Past medical history • Medications • Drug allergies	• Severity (pain scale) • Quality (sharp, dull, etc.) • Radiation • Relation to movement, respiration • Increased with palpation of area	• Per the specific protocol • Musculoskeletal • Visceral (abdominal) • Cardiac • Pleuritic (respiratory) • Neurogenic • Renal (colic)

PAIN SCALE

The Wong-Baker Faces Pain Rating Scale

Designed for children aged 3 years and older, the Wong-Baker Faces Pain Rating Scale is also helpful for elderly patients who may be cognitively impaired. If offers a visual description for those who don't have the verbal skills to explain how their symptoms make them feel.





To use this scale, your doctor should explain that each face shows how a person in pain is feeling. That is, a person may feel happy because he or she has no pain (hurt), or a person may feel sad because he or she has some or a lot of pain.

A Numerical Pain Scale

A numerical pain scale allows you to describe the intensity of your discomfort in numbers ranging from 0 to 10 (depending on the scale). Rating the intensity of sensation is one way of helping your doctor determine treatment. Numerical pain scales may include words or descriptions to better label your symptoms, from feeling no pain to experiencing excruciating pain. Some researchers believe that this type of combination scale may be most sensitive to gender and ethnic differences in describing pain.

KEY POINTS

- Exam: Mental Status, Area of Pain, Neuro
- Pain is an unpleasant sensory and emotional experience associated with actual or potential tissue damage.
- Pain is subjective (whatever the patient says it is).
- Pain severity (0-10) is a vital sign to be recorded pre, and post medication delivery and at disposition.
- Use analgesia for suspected cardiac chest pain within the ACS protocol.
- Abdominal pain patients must have a 12 lead EKG to rule out cardiac involvement.
- Vital signs should be obtained pre, 10 minutes post, and at disposition with all pain medications.
- Contraindications to HYDROmorphone (Dilaudid), or FentaNYL (Sublimaze) use include hypotension, head injury, respiratory distress or severe COPD.
- All patients should have drug allergies documented prior to administering pain medications.
- All patients who receive pain medications must be observed 15 minutes for drug reaction.
- All patients who receive medication for pain must have continuous ECG monitoring, pulse oximetry, and oxygen administration.
- The patient's vital signs must be routinely reassessed.
- Routine assessments and reassessments must be documented on the run report.
- Have Naloxone (Narcan) on hand if the patient has respiratory depression or hypotension after HYDROmorphone (Dilaudid), or FentaNYL (Sublimaze) administration. Be prepared to ventilate.
- DO NOT administer narcotic analgesics if there is any suspicion of a head injury.
- Capnography is required if patient already has narcotic analgesics on board prior to supplementation.
- Capnography is required if second doses of narcotic analgesics are required to control the patient's pain.
- Consider asking patient history of opiate addiction – consider non-narcotic options.

ADULT PROTOCOL

STROKE / CVA

UNIVERSAL PATIENT CARE PROTOCOL

AIRWAY PROTOCOL

OXYGEN

CAPNOGRAPHY PROCEDURE

BLOOD GLUCOSE PROCEDURE

Cincinnati Prehospital Stroke Screen – On Scene

IV PROCEDURE
2 Large Bore in AC if Possible for TPA

Cincinnati
Pre-Hospital Stroke Assessment
On Scene

Level of Consciousness	Awake & alert
Facial Droop	Both sides move equally well on smile/grimace
Motor—Arm Drift (eyes closed)	Raised arms do not drift down (both together)
Speech	Repeats You can't teach an old dog new tricks using correct words and no slurring

If Community Participating in Mobile Stroke Program

- Cancel MSTU if Cincinnati is Negative –continue with transport to appropriate Stroke Hospital
- Cancel MSTU if response time will extend scene time greater than 10 min
- If MTSU continuing, continue with on scene treatment and extrication while waiting

Where Participating
LABETALOL (TRANDATE)
10 mg IVP SLOW over 2 min
ONLY IF SBP > 220 or DBP > 120 verified by 2 readings,
in different 2 locations, at least 1 manual
Reassess in 10 – 15 mins and repeat
LABETALOL (TRANDATE) only
20 mg IVP SLOW over 2 min
if SBP > 220 or DBP > 120 verified by 2 readings

Identify Last Time Known Normal and Record

Identify Point of Contact for Last Known Normal

Move to Ambulance Rapid Transport

MEND Exam
Pre-Hospital Stroke Assessment
En-Route

Mental Status	
Level of Consciousness	Awake & alert
Speech	Repeats You can't teach an old dog new tricks using correct words and no slurring
Questions	Says the month and own age correctly
Commands	Closes & opens eyes to command
Cranial Nerves	
Facial Droop	Both sides move equally well on smile/grimace
Visual Fields	Sees fingers in all 4 quadrants
Horizontal Gaze	Moves eyes completely side to side
Limbs	
Motor—Arm Drift (eyes closed)	Raised arms do not drift down (both together)
Motor—Leg Drift (eyes open)	Each raised leg does not drift down (1 at a time)
Sensory—Arm (eyes closed)	Feels touch on each arm normally
Sensory—Leg (eyes closed)	Feels touch on each leg normally
Coordination—Arm	Finger-to-nose accurate & smooth
Coordination—Leg	Heel-to-shin accurate & smooth

En-Route Conduct MEND Exam

12 Lead EKG Procedure

Relay MEND Exam to Hospital

CONSIDER THROMBECTOMY CAPABLE STROKE CENTER
IF SYMPTOMS >4.5 HOURS or on ANTI-PLATELETS
TRANSPORT to appropriate facility
CONTACT receiving facility
CONSULT Medical Direction where indicated
APPROPRIATE transfer of care

EMT Intervention | AEMT Intervention | PARAMEDIC Intervention | Online Medical Control

STROKE / CVA

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
• Previous CVA, TIA's • Previous cardiac / vascular surgery • Associated diseases: diabetes, hypertension, CAD • Atrial fibrillation • Medications (blood thinners) • History of trauma	• Altered mental status • Weakness / paralysis • Blindness or other sensory loss • Aphasia • Syncope • Vertigo / dizziness • Vomiting • Headache • Seizures • Respiratory pattern change • Hyper / hypotension	• See Altered Mental Status • TIA (transient ischemic attack) • Seizure • Hypoglycemia • Stroke • Thrombotic • Embolic • Hemorrhagic • Tumor • Trauma

Identify Last Time Known Normal and Document

KEY POINTS
• Exam: Mental Status, HEENT, Heart, Lungs, Abdomen, Extremities, Neuro • Onset of symptoms is defined as the last witnessed time the patient was symptom free. (i.e. awakening with stroke symptoms would be defined as an onset time of the previous night when patient was symptom free) • The differential diagnosis listed on the Altered Mental Status Protocol should also be considered. • Elevated blood pressure is commonly present with stroke. • Be alert for airway problems (swallowing difficulty, vomiting, diminished or absent gag reflex). • Hypoglycemia can present as a localized neurological deficit, especially in the elderly. • Patients who experience transient ischemic attack (TIA) develop most of the same signs and symptoms as those who are experiencing a stroke. The signs and symptoms of TIA' s can last from minutes up to one day. Thus, the patient may initially present with typical signs and symptoms of a stroke, but those findings may progressively resolve. The patient needs to be transported, without delay, to the most appropriate hospital for further evaluation. • Document the time of onset for the symptoms, or the last time the patient was seen "normal" for them. • Reassess neurological deficit every 10 minutes and document the findings. Evidence of neurological deficit includes; confusion, slurred speech, facial asymmetry and focal weakness, coma, lethargy, aphasia, dysarthria, and seizure activity. • Hypertensive emergencies are life threatening emergencies characterized by an acute elevation in blood pressure AND end-organ damage to the cardiac, CNS or renal systems. These crisis situations may occur when patients have poorly controlled chronic hypertension or stroke. • Blood pressures MUST be taken bilaterally and be similar, contact Online Medical Control if they vary more than 20 mmHg. • Verify automated BP readings with manual cuff. • Document pts GCS score. • Check patient's pupils and rule out head trauma. • All symptomatic patients with hypertension should be transported with their head elevated.

ADULT PROTOCOL

TOXIC INGESTION / EXPOSURE / OVERDOSE

If Suspected Carbon Monoxide (CO) or Cyanide Poisoning see Specific Protocol

UNIVERSAL PATIENT CARE PROTOCOL

AIRWAY PROTOCOL
Monitor Lung Sounds for Fluid Overload

OXYGEN

IV / IO PROCEDURE

Apply Cardiac Monitor and Assess Vitals

CAPNOGRAPHY PROCEDURE

Decontaminate and remove clothes if patient is exposed to any dangerous or noxious substances

Narcotic Overdose AMS / Respiratory Depression

TAKE PPE PRECAUTIONS
GLOVES / MASK minimum
Contact / aerosol risk with fentanyl-based substances

ASSURE BLS VENTILATION WITH BVM

Support Hemodynamically
Utilize Shock Protocol

NALOXONE (NARCAN)
2 – 4 mg IN Atomized
SUMMON ALS IF NO RESPONSE TO IN DOSE

NALOXONE (NARCAN)
1 - 2 mg
IV / IM / IO

May repeat every 2 min as necessary if obvious or suspected opiate OD until respiratory improvement or 12 mg Max

If patient is unresponsive to Naloxone (Narcan), supply is exhausted, or the medication is unavailable, consider Advanced Airway and Support Hemodynamically

Tricyclic Anti – Depressants / Sodium Channel Blocker

Patient on any TRICYCLIC listed below or otherwise with QRS > 0.12

Adapin	Doxepin
Anafranil	Clomipramine
Elavil	Amitriptyline
Endep	Maprotine
Ludiomil	Desipramine
Norpramin	Doxepin
Pamelor	Nortryptyline
Pertofrane	Trimipramine
Sinequn	Imipramine
Surmontil	Protriptyline
Tofranil	Benadryl
Vivactil	Diphenhydramine

SODIUM BICARBONATE
1 mEq / kg SLOW IV / IO
Until QRS narrows / condition improves
If no improvement contact ONLINE MEDICAL CONTROL

Beta Blocker / Calcium Channel Blocker

TRANSCUTANEOUS PACING PROCEDURE

IV NORMAL SALINE BOLUS
20 ml / kg
To Maintain MAP > 70 or SBP 90 / Radial Pulses if NIBP Unavailable

DOPamine (INTROPIN)
Drip 5 - 20 mcg / kg / min IV / IO
OR
EPINEPHrine (Adrenaline)
Drip 0.1 – 0.5 mcg / kg / min IV / IO
Titrate to effect
(If MAP remains < 70 or SBP < 90)

Treat with specific antidote

Calcium Channel Blockers OD
CALCIUM GLUCONATE
1 – 3 Grams IV / IO
OR
CALCIUM CHLORIDE
1 Gram IV / IO

Organophosphates / Carbamates

ATROPINE
1 mg IV / IO
Repeat every 3 – 5 Minutes or as needed to control secretions

⚠ Given to dry secretions
⚠ No max dose

TRANSPORT to appropriate facility CONTACT receiving facility CONSULT Medical Direction where indicated APPROPRIATE transfer of care

EMT Intervention | AEMT Intervention | PARAMEDIC Intervention | Online Medical Control

ADULT PROTOCOL

TOXIC INGESTION / EXPOSURE / OVERDOSE

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
· Ingestion or suspected ingestion of a potentially toxic substance · Substance ingested, route, quantity · Time of ingestion · Reason (suicidal, accidental, criminal) · Available medications in home · Past medical history, medications	· Mental status changes · Hypo / hypertension · Decreased respiratory rate · Tachycardia, dysrhythmias · Seizures	· Tricyclic antidepressants (TCAs) · Acetaminophen (Tylenol) · Depressants · Stimulants · Anticholinergic · Cardiac medications · Solvents, alcohols, Cleaning agents · Insecticides (organophosphates) · Respiratory depression · Other organophosphates · Carbamates

COMMON BETA BLOCKERS			
Acebutolol	Carvedilol	Labetolol	Propranolol
Atenolol	Coreg	Levatol	Sectral
Betapace	Corgard	Lopressor	Sotalol
Betoxolol	Esmolol	Metoprolol	Tenormin
Bisoprolol	Inderal	Nadolol	Timolol
Brevibloc	Innopran XL	Nebivolol	Trandate
Bystolic	Kerlone	Pindolol	Zabeta
COMMON CALICUM CHANNEL BLOCKERS			
Acalas	Cardene	Lacidipine	Nitrepin
Adalat	Cardif	Lacipil	Nivadil
Amlodipine	Cardizem	Landel	Norvasc
Aranidipine	Cilnidipine	Lercanidipine	Plendil
Atelec	Cinalong	Madipine	Pranidipine
Azelnidipine	Clevidipine	Manidipine	Procardia
Barnidipine	Cleviprex	Motens	Procorum
Baylotensin	Coniel	Nicardipine	Sapresta
Baymycard	Diltiazem	Nifedipine	Siscard
Benidipine	Efonidipine	Nilvadipine	Sular
Calan	Felodipine	Nimodipine	Syscor
Calblock	Gallopamil	Nimotop	Verapamil
Calslot	HypoCa	Nisoldipine	Zanidip
Carden SR	Isoptin	Nitrendipine	

KEY POINTS

- Exam: Mental Status, Skin, HEENT, Heart, Lungs, Abdomen, Extremities, Neuro
- Do not rely on patient history of ingestion, especially in suicide attempts.
- Bring bottles, contents, and emesis to ED.
- Tricyclic: 4 major areas of toxicity: seizures, dysrhythmias, hypotension, decreased mental status or coma; rapid progression from alert mental status to death.
- Acetaminophen: initially normal or nausea / vomiting. If not detected and treated, causes irreversible liver failure.
- Depressants: decreased HR, decreased BP, decreased temperature, decreased respirations, non-specific pupils.
- Stimulants: increased HR, increased BP, increased temperature, dilated pupils, and seizures.
- Anticholinergics: increased HR, increased temperature, dilated pupils, and mental status changes.
- Cardiac Medications: dysrhythmias and mental status changes.
- Solvents: nausea, vomiting, and mental status changes.
- Insecticides: increased or decreased HR, increased secretions, nausea, vomiting, diarrhea, pinpoint pupils.
- Consider restraints if necessary for patient's and / or personnel's protection per the Restraint Procedure.
- If it can be done safely, take whatever container the substance came from to the hospital along with readily obtainable samples of medication unless this results in an unreasonable delay of transport.
- If applicable, DO NOT transport a patient to the hospital until properly decontaminated.
- Naloxone (Narcan) administration may cause the patient to go into acute opiate withdraw, which includes vomiting, agitation, and / or combative behavior. Always be prepared for combative behavior.
- Naloxone (Narcan) goal is to reverse life threating respiratory depression
- Naloxone (Narcan) may wear off in as little as 20 minutes causing the patient to become more sedate and possibly hypoventilate. All A&O 4 patients having received Naloxone (Narcan) should be transported. If patient refuses transport, contact Online Medical Control before release.

CARBON MONOXIDE POISONING OR CYANIDE POISONING – SEE SPECIFIC PROTOCOL

POISON CONTROL 1-800-222-1222

ADULT PROTOCOL

TOXIC INHALATION / INGESTION CYANIDE

POTENTIAL EXPOSURES

Smoke Inhalation

Intentional or unintentional poisoning or ingestion of Laetrile (vitamin B17) or multiple fruit pits.

Industrial exposure such as metal plating and recovery, plastics, industrial uses of hydrogen cyanide or medical complications from the use of sodium nitroprusside.

UNIVERSAL PATIENT CARE PROTOCOL

Cyanide Ingestion or Inhalation

Immediately Remove
From Continued Exposure
Avoid Exertion to Limit
Tissue Oxygen Demand
Determine Exposure Time

APPLY HIGH FLOW OXYGEN

CAPNOGRAPHY PROCEDURE

Secure Airway If Comatose or Compromised Airway

INTUBATION PROCEDURE

KING AIRWAY or LMA

CARDIAC MONITORING PROCEDURE

PULSE OXIMETRY
PULSE CO-OXIMETRY (If Available)

IV / IO PROCEDURE
To Maintain MAP > 70
or SBP 90 / Radial Pulses if NIBP Unavailable
Place 2 IV's
Draw blood sample if considering / supplied with Hydroxocobalamin (Cyanokit)

DOPamine (INTROPIN)
Drip 5 - 20 mcg / kg / min IV / IO
OR
EPINEPHrine (Adrenaline)
Drip 0.1 – 0.5 mcg / kg / min IV / IO
Titrate to effect
If continued Hypotension

TRANSPORT to appropriate facility
CONTACT receiving facility
CONSULT Medical Direction where indicated
APPROPRIATE transfer of care

Aggressive airway management with delivery of 100% oxygen can be lifesaving. Supportive care with administration of oxygen alone has proven effective in a number of poisonings. It can also treat potential simultaneous CO exposure.

EMT Intervention | AEMT Intervention | PARAMEDIC Intervention | Online Medical Control

TOXIC INHALATION / INGESTION
CYANIDE

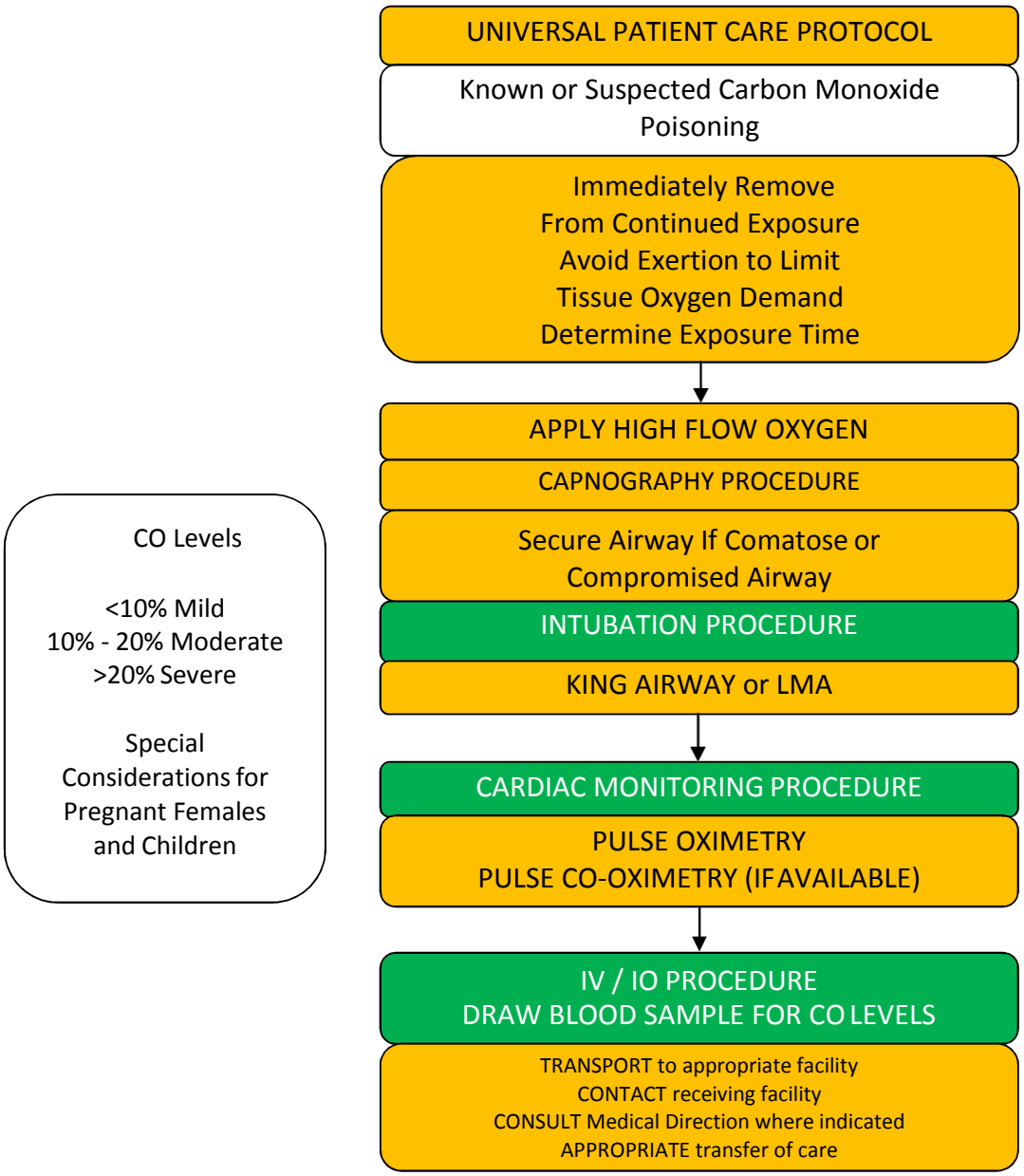
HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
· Inhalation or ingestion of cyanides · Duration of exposure · Reason (suicidal, accidental, criminal) · Past medical history, medications	· Malaise, fatigue, drowsiness · Reddened skin · Dyspnea · Chest pain · Nausea / vomiting · Abdominal pain · Dizziness / vertigo · Memory disturbances · Syncope · Seizures · Coma	· Flu / severe cold · Chronic fatigue · Migraine · Myocardial infarction / ACS · Encephalitis · Anaphylaxis · Other ingested toxins · Pulmonary embolism

POISON CONTROL 1-800-222-1222

KEY POINTS
· Exam: Mental Status, Skin, HEENT, Heart, Lungs, Abdomen, Extremities, Neuro · Cyanide is generally considered to be a rare source of poisoning. · Cyanide exposure occurs relatively frequently in patients with smoke inhalation from fires. · Numerous forms of cyanide exist, including gaseous hydrogen cyanide (HCN), water-soluble potassium and sodium cyanide salts, and poorly water-soluble mercury, copper, gold, and silver cyanide salts. · Several synthesized (polyacrylonitrile, polyurethane, polyamide, urea-formaldehyde, melamine) and natural (wool, silk) compounds produce HCN when burned. · Industry widely uses nitriles as solvents and in the manufacturing of plastics. Nitriles may release HCN during burning or when metabolized following absorption by the skin or gastrointestinal tract. · Cyanide poisoning also may occur in other industries, particularly in the metal trades, mining, electroplating, jewelry manufacturing, and x-ray film recovery. · Depending on its form, cyanide may cause toxicity through parenteral administration, inhalation, ingestion, or dermal absorption. · Rapid aggressive therapy, consisting of supportive care and antidote administration, is lifesaving. · The delay between exposure and onset of symptoms depends on type of cyanide involved, route of entry, and dose. Rapidity of symptom onset, depending on the type of cyanide exposure, occurs in the following order (most rapid to least rapid): gas, soluble salt, insoluble salt, and cyanogens.

ADULT PROTOCOL

TOXIC INHALATION
CARBON MONOXIDE



EMT Intervention | AEMT Intervention | PARAMEDIC Intervention | Online Medical Control

TOXIC INHALATION
CARBON MONOXIDE

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
• Inhalation of potentially carbon monoxide containing atmosphere • Duration of exposure • Reason (suicidal, accidental, criminal) • Past medical history, medications	• Malaise, fatigue, drowsiness • Flu like symptoms • Headache • Dyspnea • Nausea / vomiting • Diarrhea • Abdominal pain • Dizziness • Visual disturbances • Memory disturbances • Syncope • Seizures • Coma • Incontinence	• Flu / severe cold • Chronic fatigue • Migraine • Myocardial infarction • Diabetic emergencies • Altitude sickness • Ingested toxins • Meningitis • Hypothyroidism

CO Levels

<10% Mild
10% - 20% Moderate
>20% Severe
Special Considerations for Pregnant Females and Children

KEY POINTS

- Exam: Mental Status, Skin, HEENT, Heart, Lungs, Abdomen, Extremities, Neuro
- Consider CO poisoning with any patient exposed to products of combustion.
- Causes and exposure may include malfunctioning gas appliances, vehicle exhaust, improper use of gas burning heaters, animal dung, environmental waste and fires.
- Normal CO levels do not necessarily mean there was not CO poisoning. This is especially true if the patient has already received extensive oxygen therapy.
- Patients that show signs and symptoms at lower CO levels include: pregnant females, infants, children and the elderly.
- Vitals may be normal but could be tachycardic, hypo or hypertensive.
- Cherry red skin is rarely seen.
- PREGNANT patients are special circumstances as the affinity for fetal hemoglobin to carbon monoxide is very high and therapy including hyperbaric care is considered early on.
- Patients that demonstrate altered mental status may NOT sign refusals for treatment or transport.
- Known or suspected CO poisoning patients should receive high flow oxygen despite Spo2 readings.
- The use of a pulse oximeter is not effective in the diagnosis of carbon monoxide poisoning, as patients suffering from carbon monoxide poisoning may have a normal oxygen saturation level on a pulse oximeter.
- Pulse oximetry is still used on all CO poisonings as hypoxia in addition to the CO represents serious compounding respiratory issues possibly from other causes.
- Pulse CO-oximeters estimate carboxyhemoglobin levels with a non-invasive finger clip similar to a pulse oximeter.

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SECTION 6 - TRAUMA PROTOCOLS

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TRAUMA EMERGENCIES

The Golden Period

GUIDELINES FOR LOAD AND GO TRAUMA TRANSPORTS

INDICATIONS

- Uncorrectable airway obstruction
- Tension pneumothorax
- Pericardial tamponade
- Penetrating chest wounds with signs of shock
- Hemothorax with signs of shock
- Head trauma with unilaterally dilated pupils
- Head trauma with rapidly deteriorating condition
- Unconsciousness

KEY POINTS

- A trauma victim is considered to be a pediatric patient if they are 15 years old or younger.
- Once the patient is determined to be an actual or potential major trauma / multiple system patient, personnel on scene and / or medical control must quickly determine the appropriate course of action including:
    1. Requesting aeromedical evacuation from scene. See AEROMEDICAL TRANSPORT PROCEDURE.
    2. Ground transportation directly to an appropriate facility.
- Major trauma patients are to be transported to the closest Trauma Center.
- Contact the receiving hospital for all major trauma or critical patients.
- Cover open wounds, burns, and eviscerations.
- With the exception of airway control, initiate ALS enroute when transporting major trauma patients.
- If the EMT is unable to access patient airway and ventilate, transport to the closest facility for airway stabilization.
- The on scene time for major trauma patients should not exceed 10 minutes without a documented, acceptable reason for the delay.
- All major trauma patients should receive oxygen administration, an IV(s), and cardiac monitoring.
- Provide a documented reason if an intervention could not be performed.

Mass Casualty Incidents (MCI)

- Upon arrival at a MCI, the first arriving unit should notify their dispatch of the need to implement the mass casualty plan, call for additional resources, establish a safe staging area, and estimate the total number of victims.
- Each EMS service has a pre-defined coordinating facility based on their county's mass casualty plan. It is the responsibility of the responding jurisdiction to notify their appropriate coordinating hospital as soon as possible, giving a brief description of the incident and the estimated number of victims. The coordinating facility will then notify the receiving hospitals of the MCI. The transportation officer should maintain a constant contact with the coordinating facility until the scene has been cleared of salvageable victims.
- Refer to the county MCI protocol

THE GOLDEN PERIOD FOR THE PATIENT BEGINS WHEN THE TRAUMA HAPPENS
DO NOT WASTE VALUABLE TIME ON SCENE

TRAUMA GUIDELINES

Emergency medical service personnel shall use the following criteria, consistent with their certification, to evaluate whether an injured person qualifies as an adult trauma victim or pediatric trauma victim, in conjunction with the definition of trauma per the State of Ohio Trauma Triage Guidelines.

An Adult Trauma Victim is a person 16 years – 64 years exhibiting one or more of the following physiologic or anatomic conditions:

Physiologic conditions	Anatomic conditions

• Glasgow Coma Scale less than or equal to 13;
• Loss of consciousness greater than 5 minutes;
• Deterioration in level of consciousness at the scene or during transport;
• Failure to localize to pain;
• Respiratory rate < 10 or > 29;
• Requires ventilator support;
• Requires relief of tension pneumothorax;
• Pulse > 120 in combination with evidence of hemorrhagic shock;
• Systolic blood pressure < 90, or absent radial pulse with carotid pulse present;
	• Penetrating trauma to the head, neck, or torso;
	• Significant, penetrating trauma to extremities proximal to the knee or elbow with evidence of neurovascular compromise;
	• Injuries to the head, neck, or torso where the following physical findings are present:
	  ○ Visible crush injury;
	  ○ Abdominal tenderness, distention, or seatbelt sign;
	  ○ Pelvic fracture;
	  ○ Flail chest;
	• Injuries to the extremities where the following physical findings are present:
	• Amputations proximal to the wrist or ankle;
	  ○ Visible crush injury;
	  ○ Fractures of two or more proximal long bones;
	  ○ Evidence of neurovascular compromise.
	• Signs or symptoms of spinal cord injury;
	• 2nd or 3rd Degree > 10% total BSA, or other significant burns involving the face, feet, hands, genitalia, or airway.
	• Open skull injury
	• Vehicle telemetry data consistent with a high risk for injury

A Geriatric Trauma Victim is a person greater than 65 years exhibiting one or more of the following physiologic or anatomic conditions:

Physiologic conditions	Anatomic conditions

• Glasgow Coma Scale less than or equal to 14 with a known or suspected traumatic brain injury;
• Glasgow Coma Scale less than or equal to 13;
• Loss of consciousness greater than 5 minutes;
• Deterioration in level of consciousness at the scene or during transport;
• Failure to localize to pain;
• Respiratory rate < 10 or > 29;
• Requires ventilator support;
• Requires relief of tension pneumothorax;
• Pulse > 120 in combination with evidence of hemorrhagic shock;
• Systolic blood pressure < 100, or absent radial pulse with carotid pulse present;
	• Penetrating trauma to the head, neck, or torso;
	• Significant, penetrating trauma to extremities proximal to the knee or elbow with evidence of neurovascular compromise;
	• Injuries to the head, neck, or torso where the following physical findings are present:
	  ○ Visible crush injury;
	  ○ Abdominal tenderness, distention, or seatbelt sign;
	  ○ Pelvic fracture;
	  ○ Flail chest;
	• Injuries to the extremities where the following physical findings are present:
	• Amputations proximal to the wrist or ankle;
	  ○ Visible crush injury;
	  ○ Fractures of two or more proximal long bones;
	  ○ Fractures of one proximal long bones from motor vehicle crash;
	  ○ Evidence of neurovascular compromise.
	• Signs or symptoms of spinal cord injury;
	• 2nd or 3rd Degree > 10% total BSA, or other significant burns involving the face, feet, hands, genitalia, or airway.
	• Open skull injury
	• Pedestrian struck by motor vehicle
	• Fall from any height, including standing, with evidence of traumatic brain injury.
	• Vehicle telemetry data consistent with a high risk for injury

Field Trauma Triage Criteria: Mechanism of Injury (MOI) & Special Considerations

Co-Morbid Diseases and Special Considerations:	Mechanisms of Injury (MOI)
• Age < 5 or > 55 • Cardiac disease • Respiratory disease • Diabetes • Immunosuppression • Morbid obesity • Pregnancy • Substance abuse / intoxication • Liver disease • Renal disease • Bleeding disorder / anticoagulation	• High speed MVC • Ejection from vehicle • Vehicle rollover • Death in same passenger compartment • Extrication time > 20 minutes • Falls greater than 20 feet • Vehicle versus bicycle / pedestrian • Pedestrian struck, thrown or run over • Motorcycle crash > 20 mph with separation of rider from bike • Fall from any height, including standing, with signs of traumatic brain injury

KEY POINTS

Exceptions to Mandatory Transport to a Trauma Center:

- Emergency Medical Service personnel shall transport a trauma victim directly to an adult or pediatric trauma center that is qualified to provide appropriate adult or pediatric care, unless one or more of the following exceptions apply:

  1. It is medically necessary to transport the victim to another hospital for initial assessment and stabilization before transfer to an adult or pediatric trauma center;
  2. It is unsafe or medically inappropriate to transport the victim directly to an adult or pediatric trauma center due to adverse weather or ground conditions or excessive transport time;
  3. Transporting the victim to an adult or pediatric trauma center would cause a shortage of local emergency medical service resources;
  4. No appropriate adult or pediatric trauma center is able to receive and provide adult or pediatric trauma care to the trauma victim without undue delay;
  5. Before transport of a patient begins, the patient requests to be taken to a particular hospital that is not a trauma center or, if the patient is less than eighteen years of age or is not able to communicate, such a request is made by an adult member of the patient's family or a legal representative of the patient.

Glasgow Coma Scale		
INFANT	Eye Opening	ADULT
Birth to age 4		*Age 4 to Adult*
4 Spontaneously		Spontaneously 4
3 To speech		To command 3
2 To pain		To pain 2
1 No response		No Response 1
	Best Verbal Response	
5 Coos, babbles		Oriented 5
4 Irritable cries		Confused 4
3 Cries to pain		Inappropriate words 3
2 Moans, grunts		Incomprehensible 2
1 No response		No response 1
	Best Motor Response	
6 Spontaneous		Obeys commands 6
5 Localizes pain		Localizes pain 5
4 Withdraws from pain		Withdraws from pain 4
3 Flexion (decorticate)		Flexion (decorticate) 3
2 Extension (decerebrate)		Extension (decerebrate) 2
1 No response		No response 1
___ = TOTAL		TOTAL = ___

ADULT PROTOCOL

NOTS ADULT TRAUMA FIELD TRIAGE

Step 1- Measure vital signs and level of consciousness of patient with a traumatic mechanism

- ☐ Glasgow Coma Scale < 13 with traumatic mechanism
- ☐ Systolic blood pressure < 90mmHg or
- ☐ Respiratory rate < 10 or> 29 breaths/minute or requiring airway/ventilator support

Step 2- Assess anatomy of injury

- ☐ Significant penetrating injuries to the head, neck, torso or extremities proximal the elbow or knee
- ☐ Presence of/suspicion of a flail chest
- ☐ Two or more proximal long-bone fractures
- ☐ Crushed, degloved, threatened, pulseless or mangled extremity
- ☐ Amputation proximal to wrist or ankle
- ☐ Pelvic fractures
- ☐ Open or depressed skull fracture
- ☐ Paralysis

Step 3- Assess mechanism of injury and evidence of high-energy impact

- ☐ Falls
  - ○ Adults > 10ft (one story is equal to 10 ft.)
- ☐ High-risk auto crash
  - ○ Intrusion: Including roof: > 12 in. occupant site, >18 in. any site
  - ○ Extrication time over 20 minutes
  - ○ Ejection (partial or complete) from automobile
  - ○ Death in same passenger compartment
  - ○ Vehicle telemetry data consistent with high risk of injury
- ☐ Auto vs. Pedestrian/Bicyclist thrown, run over or with significant (> 20 mph) impact
- ☐ Motorcycle crash > 20 mph
- ☐ Other motorized equipment crashes where the patient has the potential of significant injury

Step 4-Assess special patient or system considerations of trauma patients

- ☐ GCS: 12-14 with evidence of traumatic injury
- ☐ Age- ≥ 65 years old to a Trauma Center
- ☐ Anticoagulant and bleeding disorders on prescription blood thinners
- ☐ Significant burns (+/- trauma mechanism) or inhalation injury, chemical injury electrical injury or frostbite triage to MetroHealth
- ☐ Open fractures regardless of location of fracture, except single digit fractures
- ☐ Pregnancy > 20 weeks gestation
- ☐ EMS Provider Judgment- When in doubt transfer to a trauma center

Step 5- Patients not meeting above criteria

NOTS Transfer Line:
1-216-778-7850

Scene Referrals

Cleveland Clinic Hospitals
1-844-223-3822
MetroHealth Medical Center
1-800-233-5433
University Hospitals
1-877-842-3822

Red/Priority 1

Take to a trauma center, these patients should be transported preferentially to the highest level of care within the trauma system. If transport to a Level I will add greater than 15 minutes, transport to the nearest trauma facility

Level I Adult Trauma Centers:
MetroHealth Medical Center,
University Hospitals Cleveland Medical Center
CCF Akron General

Level II Adult Trauma Centers:
CCF Fairview Hospital
CCF Hillcrest Hospital

Level III Adult Trauma Centers:
UH Geauga Medical Center
UH Portage Medical Center
Southwest Medical Center
UH St. John Medical Center

Yellow/Priority 2

Transport patient to nearest trauma center within trauma system, need not be the highest level of trauma center

Green/Priority 3

Transport to the closest appropriate emergency department

ADULT PROTOCOL

ABDOMINAL TRAUMA

UNIVERSAL PATIENT CARE PROTOCOL

BLEEDING / HEMORRHAGE CONTROL PROCEDURE

AIRWAY PROTOCOL

SPINAL MOTION RESTRICTION PROCEDURE

OXYGEN

CAPNOGRAPHY PROCEDURE

Determine if Load & Go

Multiple Trauma Protocol if criteria

Evisceration: Cover, clean saline dressing to loosely stabilize

Penetrating Object: Cover, clean saline dressing – Immobilize object. If too large to transport – attempt to cut with care not to further injure tissue

Penetrating Wounds: Cover, clean saline dressing. Look for exit wound

Blunt Trauma: Assess for change – distention. Note mechanism

IV / IO PROCEDURE
To Maintain MAP > 70
or SBP 90 (100 systolic if >70 years old) / Radial Pulses if NIBP Unavailable

IF Evidence of current or previous uncontrolled hemorrhage, HR > 120 and / or SBP < 90, and within 60 mins of injury
Consider TRANEXAMIC ACID (TXA)
1 Gram mixed in 100 ml D5W over 10 mins

Monitor and Reassess

INITATE TRAUMA ALERT

TRANSPORT to appropriate facility
CONTACT receiving facility
CONSULT Medical Direction where indicated
APPROPRIATE transfer of care

EMT Intervention | AEMT Intervention | PARAMEDIC Intervention | Online Medical Control

ABDOMINAL TRAUMA

MECHANISM	SIGNS & SYMPTOMS
• Blunt	• Altered mental status • Shock • Distention • Swelling • Bulging • Nausea and vomiting
• Penetrating	• Altered mental status • Bleeding • Tenderness • Pain • Distention • Evisceration • Discoloration • Entrance / exit wounds • Nausea & vomiting

KEY POINTS

Trauma to the abdomen is either Blunt or Penetrating. Blunt injuries are harder to detect and diagnose, and have a death rate twice that of penetrating wounds. Key signs and symptoms of blunt trauma include a patient in shock with no obvious injuries. Distention of the abdomen is an indication of internal hemorrhage. Pain may not be a significant factor. Many abdominal trauma injuries are Load & Go cases.

- Look for both an entrance and exit wound for all penetrating trauma, and treat accordingly.
- For all major trauma patients, the on scene time should be less than ten minutes.

Airway / Breathing

Circulation / Shock

Cardiac

Medical

Trauma

ADULT PROTOCOL

BURNS

UNIVERSAL PATIENT CARE PROTOCOL

CONSIDER SPINAL MOTION RESTRICTION PROCEDURE

AIRWAY PROTOCOL

OXYGEN

CAPNOGRAPHY PROCEDURE

If Chest, Neck, Face, Airway Involvement – Prepare for Invasive Airway Procedures
Perform Early Intubation
Needle Cric or Quick Trach (If Approved)
In rare circumstances for life saving measures only

Remove rings, bracelets, and other constricting items

Thermal

If burn < 10% body surface area (using rule of nines)
Cool down wound with NORMAL SALINE

Cover burn with dry sterile sheet or dressings

IV / IO PROCEDURE
If Burns ≥ 25% then 60 drops / min (Macrodrip set) otherwise KVO

SEVERE PAIN PROTOCOL

Chemical

Eye Injury
Continuous flushing with Normal Saline

Remove clothing and / or expose area

Flush area with NORMAL SALINE for 10 – 15 minutes

SEVERE PAIN PROTOCOL

Initiate Trauma Alert

TRANSPORT to appropriate facility
CONTACT receiving facility
CONSULT Medical Direction where indicated
APPROPRIATE transfer of care

EMT Intervention | AEMT Intervention | PARAMEDIC Intervention | Online Medical Control

BURNS

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
• Type of exposure (heat, gas, chemical) • Inhalation injury • Time of injury • Past medical history • Medications • Other trauma • Loss of consciousness • Tetanus / immunization status	• Burns, pain, swelling • Dizziness • Loss of consciousness • Hypotension / shock • Airway compromise / distress • Singed facial or nasal hair • Hoarseness / wheezing	• Superficial (1°) red and painful • Partial thickness (2°) superficial partial thickness, deep partial thickness, blistering • Full thickness (3°) painless and charred or leathery skin • Chemical • Thermal • Electrical • Radiation

KEY POINTS

- Exam: Mental Status, HEENT, Neck, Heart, Lungs, Abdomen, Extremities, Back, Neuro
- Early intubation is required in significant inhalation injuries with airway compromise.
- Critical Burns: >25% body surface area (BSA); full thickness burns >10% BSA; partial thickness superficial partial thickness, deep partial thickness and full thickness burns to face, eyes, hand or feet; electrical burns; respiratory burns; deep chemical burns; burns with extremes of age or chronic disease; and burns with associated major traumatic injury. These burns may require hospital admission or transfer to a burn center.
- Potential CO exposure should be treated with 100% oxygen.
- Circumferential burns to extremities are dangerous due to potential vascular compromise partial thickness to soft tissue swelling.
- Burn patients are prone to hypothermia – Never apply ice or cool burns that involve >10% body surface area.
- Do not overlook the possibility of multiple system trauma.
- Do not overlook the possibility of child abuse with children and burn injuries.
- See appendix for rule of nines.

1. Thermal (dry and moist):
    a. Stop burning process: i.e. remove patient from heat source, cool skin, remove clothing
    b. If patient starts to shiver or skin is cool, stop cooling process.
    c. Estimate extent (%) and depth of burn (see chart). Determine seriousness (see chart) of burn, contact Medical Control and transport accordingly.
    Cover burn areas with sterile dressing.
2. Radiation Burns:
    a. Treat as thermal burns except when burn is contaminated with radioactive source, then treat as chemical burn.
    b. Wear appropriate protective clothing when dealing with contamination.
    c. Contact HAZ MAT TEAM for assistance in contamination cases.
3. Chemical Burns:
    a. Wear appropriate protective clothing and respirators.
    b. Remove patient from contaminated area to decontamination site (NOT SQUAD).
    c. Determine chemicals involved; contact appropriate agency for chemical information.
    d. Remove patient's clothing and flush skin.
    e. Leave contaminated clothes at scene. Cover patient over and under before loading into squad.
    f. Patient should be transported by personnel not involved in decontamination process.
    g. Determine severity (see chart), contact Medical Control and transport accordingly.
    h. Relay type of substance involved to Medical Control.
4. Electrical Burns:
    a. Shut down electrical source; do not attempt to remove patient until electricity is CONFIRMED to be shut off.
    b. Assess for visible entrance and exit wounds and treat as thermal burns.
    c. Assess for internal injury, i.e., vascular damage, tissue damage, fractures, and treat accordingly.
    d. Determine severity of burn, contact Medical Control and transport accordingly.
5. Inhalation Burns:
    a. Always suspect inhalation burns when the patient is found in closed smoky environment and / or exhibits any of the following: burns to face / neck, singed nasal hairs, cough and / or stridor, soot in sputum.
    b. Provide oxygen therapy, contact Medical Control and transport.

- Handle patients gently to avoid further damage of the patient's skin.
- If the patient is exposed to a chemical, whenever possible, get the name of the chemical, and document it on the patient run report. DO NOT transport any hazardous materials with the patient.
- Look for signs of dehydration and shock.
- Initiate early intubation for symptomatic patients with inhalation burns.
- Patients with major burns should be transported to the a Regional Burn Center.
- Patients with unstable airway or who are rapidly deteriorating should be transported to the closest appropriate facility.
- Patients with large surface burns lose the ability to regulate their body temperature. Avoid heat loss by covering the patient.

ADULT PROTOCOL

CHEST TRAUMA

UNIVERSAL PATIENT CARE PROTOCOL

BLEEDING / HEMORRHAGE CONTROL PROCEDURE

AIRWAY PROTOCOL

SPINAL MOTION RESTRICTION PROTOCOL

HIGH FLOW OXYGEN

CAPNOGRAPHY PROCEDURE

If S&S of Tension Pneumothorax
(No lung sounds on affected side, Hypotension, JVD)
NEEDLE CHEST DECOMPRESSION PROCEDURE

IV / IO PROCEDURE
Normal Saline Bolus to Maintain MAP > 70
or SBP 90 (100 systolic if >70 years old) / Radial Pulses if NIBP Unavailable

IF Evidence of current or previous uncontrolled hemorrhage, HR >120 and / or SBP < 90, and within 60 mins of injury
Consider TRANEXAMIC ACID (TXA)
1 Gram mixed in 100 ml D5W over 10 mins

APPLY CARDIAC MONITOR

Cardiac Tamponade: Assess for + Beck's Triad (Hypotension, +JVD and muffled heart sounds). Paradoxical Pulse (no radial pulse when breathing in) is likely. LOAD AND GO

Massive Hemothorax: Shock, then difficulty breathing. No JVD, decreased breath sounds, dull to percussion. LOAD AND GO

Open Pneumothorax / Sucking Chest Wound: Close wound with occlusive dressing secured on THREE SIDES or commercial device. LOAD AND GO

Flail Chest: Stabilize flail segment with manual pressure then apply bulky dressing and tape. LOAD AND GO

Suspected: Traumatic Aortic Rupture, Tracheal or Bronchial Tree Injury, Myocardial Contusion, Diaphragmatic Tears, Esophageal Injury, And Pulmonary Contusion:
Ensure an Airway, Administer Oxygen, LOAD AND GO

INITATE TRAUMA ALERT

TRANSPORT to appropriate facility
CONTACT receiving facility
CONSULT Medical Direction where indicated
APPROPRIATE transfer of care

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CHEST TRAUMA

SIGNS AND SYMPTOMS

SIMPLE PNEUMOTHORAX	OPEN PNEUMOTHORAX	TENSION PNEUMOTHORAX	HEMOTHORAX
· Shortness of breath · Dyspnea · Tachypnea · Cyanosis · Chest pain · Absent diminished Lung sounds on the affected side	· Shortness of breath · Dyspnea · Cyanosis · Sucking chest wound · Shock · Absent / diminished Lung sounds on affected side	· Shortness of breath · Cyanosis · Shock · Absent / diminished Lung sounds · Tracheal deviation · Hypotension · JVD · Tachycardia · Dyspnea (late sign)	· Shortness of breath · Dyspnea · Cyanosis · Dullness to Percussion sounds · Flat neck veins · Hypotension · Shock · Absent / diminished breath sounds · Tachycardia

CARDIAC TAMPONADE	TRAUMATIC ASPHYXIA	FLAIL CHEST
· Hypotension · Decreasing pulse pressure · Elevated neck veins · Muffled heart tones · Bruising over the sternum · Tachycardia	· Bloodshot, bulging eyes · Blue, bulging tongue · JVD · Cyanotic upper body	· Paradoxical chest wall movement · Asymmetric chest movement Upon inspiration · Dyspnea · Unstable chest segment · Significant chest wall pain

KEY POINTS

Thoracic injuries have been called the deadly dozen. The first six are obvious at the primary assessment.

1. Airway obstruction
2. Flail chest
3. Cardiac tamponade
4. Massive hemothorax
5. Open pneumothorax
6. Tension pneumothorax

The second six injuries may be more subtle and not easily found in the field:

7. Traumatic aortic rupture
8. Esophageal injury
9. Myocardial contusion
10. Diaphragmatic tears
11. Tracheal / bronchial tree injury
12. Pulmonary contusion

- A sucking chest wound is when the thorax is open to the outside. The occlusive dressing may be anything such as petroleum gauze, plastic, or a defibrillator pad. Tape only 3 sides down so that excess intrathoracic pressure can escape, preventing a tension pneumothorax. May help respirations to place patient on the injured side, allowing unaffected lung to expand easier.
- A flail chest is when there are extensive rib fractures present, causing a loose segment of the chest wall resulting in paradoxical and ineffective air movement. This movement must be stopped by applying a bulky pad to inhibit the outward excursion of the segment. Positive pressure breathing via BVM will help push the segment and the normal chest wall out with inhalation and to move inward together with exhalation, getting them working together again. Do not use too much pressure to prevent additional damage or pneumothorax.
- A penetrating object must be immobilized by any means possible. If it is very large, cutting may be possible, with care taken not to move it about when making the cut. Place an occlusive and bulky dressing over the entry wound.
- A tension pneumothorax is life threatening, look for *HYPOTENSION*, unequal breath sounds, JVD, increasing respiratory distress, and decreasing mental status. The pleura must be decompressed with a needle to provide relief. Decompress between the 2nd and 3rd ribs, midclavicular placing the catheter over the 3rd rib. Once the catheter is placed, watch closely for reocclusion. Repeat if needed to prevent reocclusion. Decompress with 3.25" 14 ga catheter or Chest Decompression Needle based on patient's size.

ADULT PROTOCOL

DROWNING / NEAR DROWNING

UNIVERSAL PATIENT CARE PROTOCOL

SPINAL MOTION RESTRICTION PROCEDURE
Place backboard while still in water if able.

AIRWAY PROTOCOL
Initiate ventilation while patient is still in water if not breathing.

IF DECOMPRESSION SICKNESS
Give oxygen – no positive pressure ventilation unless NOT breathing.

OXYGEN ASAP

CAPNOGRAPHY PROCEDURE

Apply Cardiac Monitor

IF HYPOTHERMIC
Treat per HYPOTHERMIA PROTOCOL

IV / IO PROCEDURE
Normal Saline TKO

Monitor and Reassess

TRANSPORT to appropriate facility
CONTACT receiving facility
CONSULT Medical Direction where indicated
APPROPRIATE transfer of care

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DROWNING / NEAR DROWNING

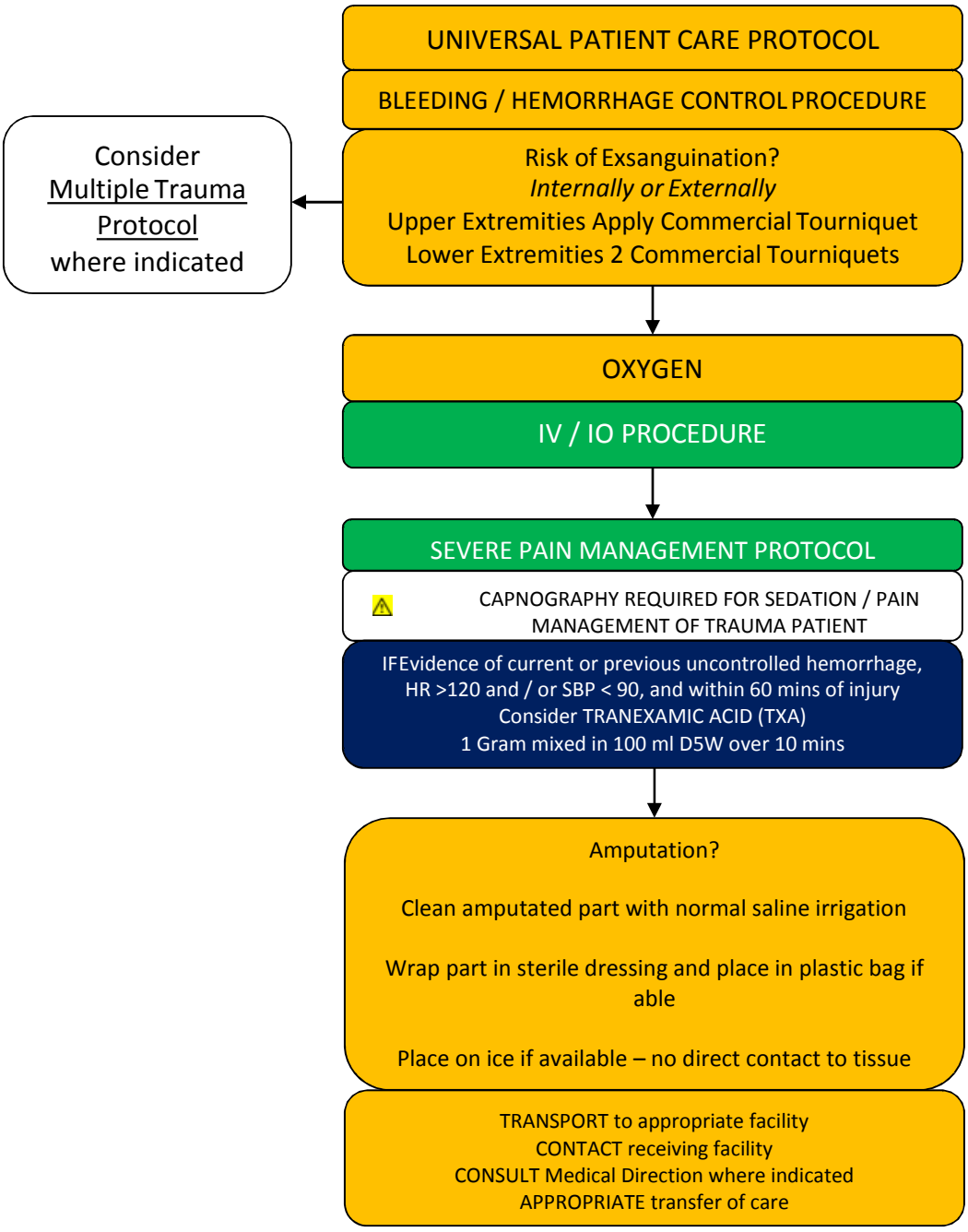
HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
• Submersion in water regardless of depth • Possible trauma i.e.; fall, diving board • Duration of immersion • Temperature of water • Salt vs. fresh water	• Period of unconsciousness • Unresponsive • Mental status changes • Decreased or absent vital signs • Vomiting • Coughing	• Trauma • Pre-existing medical problem • Barotrauma (diving) • Decompression sickness

KEY POINTS

- Exam: Trauma Survey, Head, Neck, Chest, Abdomen, Pelvis, Back, Extremities, Skin, Neuro
- Drowning due to suffocation from submersion in water.
- 2 causes – breath holding which leads to aspiration of water; & laryngospasm which closes the glottis.
- Both causes lead to profound hypoxia and death.
- Fresh water drowning ventricular fibrillation may be likely.
- Salt water drowning may cause pulmonary edema in time.
- Pulmonary edema can develop within 24 - 48 hours after submersion.
- All victims should be transported for evaluation due to potential for worsening over the next several hours.
- Drowning is a leading cause of death among would-be rescuers.
- Allow appropriately trained and certified rescuers to remove victims from areas of danger.
- With pressure injuries (decompression / barotrauma), consider transport for availability of a hyperbaric chamber.
- All hypothermic / hypothermic / near-drowning patients should have resuscitation performed until care is transferred, or if there are other signs of obvious death (putrification, traumatic injury unsustainable to life).
- A drowning patient is in cardiac arrest after the submersion.
- Consider a c-spine injury in all drowning cases. Always immobilize a drowning patient.
- Patients with low core temperatures will not respond to ALS drug interventions. Maintain warming procedures and supportive care.
- DO NOT perform the Heimlich maneuver to remove water from the lungs prior to resuscitation.

ADULT PROTOCOL

EXTREMITY TRAUMA / AMPUTATION



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EXTREMITY TRAUMA / AMPUTATION

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
• Type of injury • Mechanism: crush / penetrating / amputation • Time of injury • Open vs. closed wound / fracture • Wound contamination • Medical history • Medications	• Pain, swelling • Deformity • Altered sensation / motor function • Diminished pulse / capillary refill • Decreased extremity temperature	• Abrasion • Contusion • Laceration • Sprain • Dislocation • Fracture • Amputation

KEY POINTS

- Exam: Mental Status, Extremity, Neuro
- In amputations, time is critical. Transport and notify medical control immediately, so that the appropriate destination can be determined.
- Hip dislocations and knee and elbow fracture / dislocations have a high incidence of vascular compromise.
- Urgently transport any injury with vascular compromise.
- Blood loss may be concealed or not apparent with extremity injuries.
- Lacerations must be evaluated for repair within 6 hours from the time of injury.

Extremity Trauma

- DO NOT take the time to splint injured extremities in major trauma patients unless it does not delay the scene time or prevents you from performing more pertinent patient care.
- Splint the extremity if the patient has signs and symptoms of a fracture or dislocation.
- Treat all suspected sprains or strains as fractures until proven otherwise.
- Splint the joint above and below for all suspected fractures.
- Splint the bone above and below for all suspected joint injuries.
- Check and document the patient's MSP's before and after splinting.
- A traction splint with a backboard is the preferred splint to use for femur fractures.

Traumatic Amputation

- Care of the amputated extremity include:
  - Cleanse an amputated extremity with normal saline or sterile water.
  - DO NOT place any amputated tissue directly on ice or cold pack. Instead, place the amputated limb into a plastic bag. Put the bag into a container of cool water with a few ice cubes (if available).
- Contact the receiving hospital with the patient information and include the status of the amputated limb.
- Focus on patient care and not on the amputated extremity.
- Tourniquets should be applied early if there is a risk of exsanguination (bleeding out) from extremity injury.
- Remember to calm and reassure the patient. Do not give the patient or their family member's false hope of re-attachment of the affected limb. A medical team at the receiving hospital makes this decision.
- Delegate someone to do an on-scene search for the amputated part when it cannot be readily found and continue with patient care.

ADULT PROTOCOL

HEAD TRAUMA

UNIVERSAL PATIENT CARE PROTOCOL
Oxygen for all head trauma

SPINAL MOTION RESTRICTION PROCEDURE

BLEEDING / HEMORRHAGE CONTROL PROCEDURE

Determine and Trend GCS

Consider Other Protocols

Multiple Trauma Protocol
(if Not Isolated Head Trauma)
Altered Level of Consciousness Protocol
Seizure Protocol (if Seizure Activity)

Isolated Uncomplicated Head Trauma?

AIRWAY PROTOCOL

⚠ Do NOTHYPERVENTILATE

IV / IO PROCEDURE
Limit IV fluids due to cerebral edema
To Maintain MAP > 70 or SBP 90
(100 systolic if >70 years old) / Radial Pulses if NIBP Unavailable

⚠ Do NOT allow patient to become hypotensive

Evidence of, or Suspect
Traumatic Brain Injury (TBI)?

AIRWAY PROTOCOL

Do *NOT* Allow Patient to Become Hypoxic During ANY Airway Management
Maintain SpO_2 > 94% At All Times!
Apply Capnography If Advanced Airway Used

Ventilate To Maintain
CO_2 35 or 12 Breaths / min

IV / IO PROCEDURE
Normal Saline Bolus to Maintain MAP > 90
or SBP 110 / Radial Pulses if NIBP Unavailable

⚠ Do NOT allow patient to become hypotensive

Monitor and Reassess

INITATE TRAUMA ALERT

TRANSPORT to appropriate facility
CONTACT receiving facility
CONSULT Medical Direction where indicated
APPROPRIATE transfer of care

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HEAD TRAUMA

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
· Time of injury · Mechanism: blunt /penetrating · Loss of consciousness · Bleeding · Medical history · Medications · Evidence of multi-trauma · Helmet use or damage to helmet	· Pain, swelling, bleeding · Altered mental status · Unconscious · Respiratory distress / failure · Vomiting · Significant mechanism of injury	· Skull fracture · Brain injury (concussion, contusion, hemorrhage, or laceration) · Epidural hematoma · Subdural hematoma · Subarachnoid hemorrhage · Spinal injury · Abuse

Glasgow Coma Scale

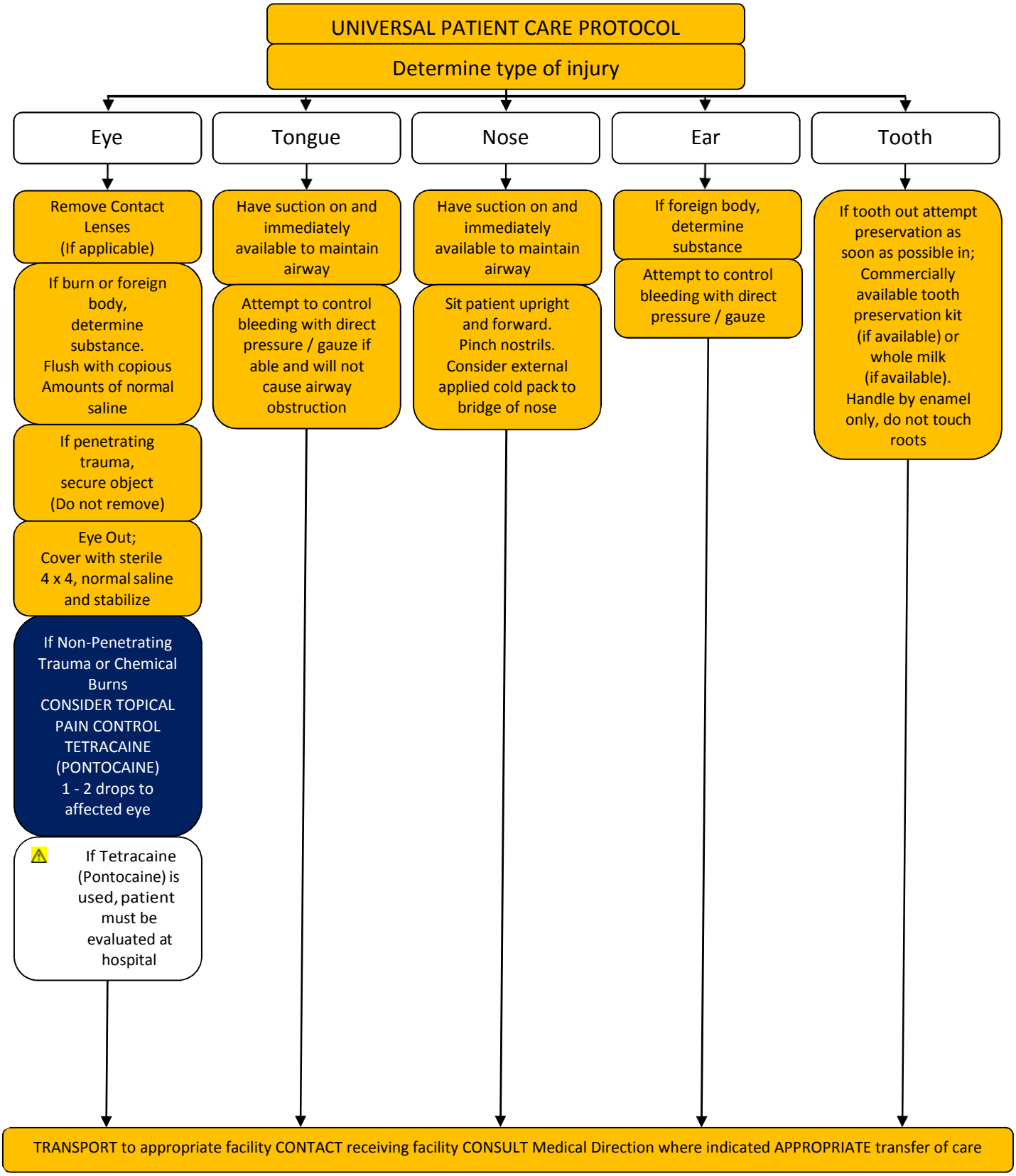
INFANT		ADULT
Birth to age 4	Eye Opening	*Age 4 to Adult*
4 Spontaneously		Spontaneously 4
3 To speech		To command 3
2 To pain		To pain 2
1 No response		No Response 1
	Best Verbal Response	
5 Coos, babbles		Oriented 5
4 Irritable cries		Confused 4
3 Cries to pain		Inappropriate words 3
2 Moans, grunts		Incomprehensible 2
1 No response		No response 1
	Best Motor Response	
6 Spontaneous		Obeys commands 6
5 Localizes pain		Localizes pain 5
4 Withdraws from pain		Withdraws from pain 4
3 Flexion (decorticate)		Flexion (decorticate) 3
2 Extension (decerebrate)		Extension (decerebrate) 2
1 No response		No response 1
___ = TOTAL		TOTAL = ___

KEY POINTS

- Exam: Mental Status, HEENT, Heart, Lungs, Abdomen, Extremities, Back, Neuro
- If GCS < 12 consider air / rapid transport and if GCS < 9 intubation should be anticipated.
- GCS ≤ 8? Intubate!
- DO NOT allow patients to become hypoxic, maintain SpO_2 > 94%, abandon intubation attempts if this cannot be maintained. Secure airway by other means.
- Increased intracranial pressure (ICP) may cause hypertension and bradycardia (Cushing's Reflex).
- Hypotension usually indicates injury or shock unrelated to the head injury and should be aggressively treated.
- Limit IV fluids unless patient is hypotensive (systolic BP < 90) fluid resuscitate if necessary to maintain BP, Do NOT allow patients to become hypotensive.
- DO NOT attempt to lower the blood pressure in hypertensive head injured patients with medications such as Nitroglycerine (Nitro-Stat).
- Be alert for c-spine injuries with head trauma.
- Continually reassess the patient, including pupils, LOC, and neurological status.
- Any decrease in GCS suggests a TBI surgical emergency, transport to trauma center
- Capnography is critical! Maintain the CO_2 ranges indicated in protocol, 1 point of CO_2 change = 3% decrease in cerebral perfusion.
- The most important item to monitor, trend, and document is a change in the level of consciousness / GCS.
- Herniation may occur. Signs are:
  - Cushing's reflex; Bradycardia, hypertension, widening pulse pressure
  - Decreasing level of consciousness progressing towards coma.
  - Dilation of pupils – may be unilateral or bilateral
  - Decerebrate posturing (extension of arms and legs)
  - Decorticate posturing (flexion arms and legs)
- Concussions are periods of confusion or LOC associated with trauma, which may have resolved by the time EMS arrives. A physician ASAP should evaluate any prolonged confusion or mental status abnormality, which does not return to normal within 15 minutes or any documented loss of consciousness.
- Consider Restraints if necessary for patient's and / or personnel's protection per the RESTRAINT PROCEDURE.

ADULT PROTOCOL

MAXILLOFACIAL TRAUMA



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MAXILLOFACIAL / EYE TRAUMA

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
• Trauma of any type that results in injury to one or both eyes.	• Irritation to eye • Visual disturbances • Obvious penetrating injury • Burn (chemical, thermal) • Loss of vision • Dizziness • Loss of consciousness • Nausea	• Hypertension • Contact lens problem

KEY POINTS

- If unsure if something can be flushed with water, contact Medical Command.
- A garden hose can be used to help flush the patient's eye(s) if available. DO NOT use a high-pressure hose or at a high force. If needed, irrigate the patient's eyes for approximately 5 -15 minutes.
- Begin irrigating immediately, because irreversible damage can occur in a few minutes.

TRAUMA

- Do not allow eye injury to distract you from the basics of trauma care.
- Do not remove any foreign body imbedded in the eye or orbit. Stabilize any large protruding foreign bodies.
- With blunt trauma to the eye, if time permits, examine the globe briefly for gross laceration as the lid may be swollen tightly shut later. Sclera rupture may lie beneath an intact conjunctiva.
- Covering both eyes when only one eye is injured may help to minimize trauma to the injured eye, but in some cases the patient is too anxious to tolerate this.
- Transport patient supine unless other life threats prohibit this from being done. (This is based on physics, the goal of not letting the fluid within the eye drain out of the eye)

CHEMICAL BURNS

- When possible determine type of chemical involved first. The eye should be irrigated with copious amounts of water or saline, using IV tubing wide open for a minimum of 15 minutes started as soon as possible. Any delay may result in serious damage to the eye.
- Always obtain name and, if possible, a sample of the contaminant or ask that they be brought to the hospital as soon as possible.

CONTACT LENSES

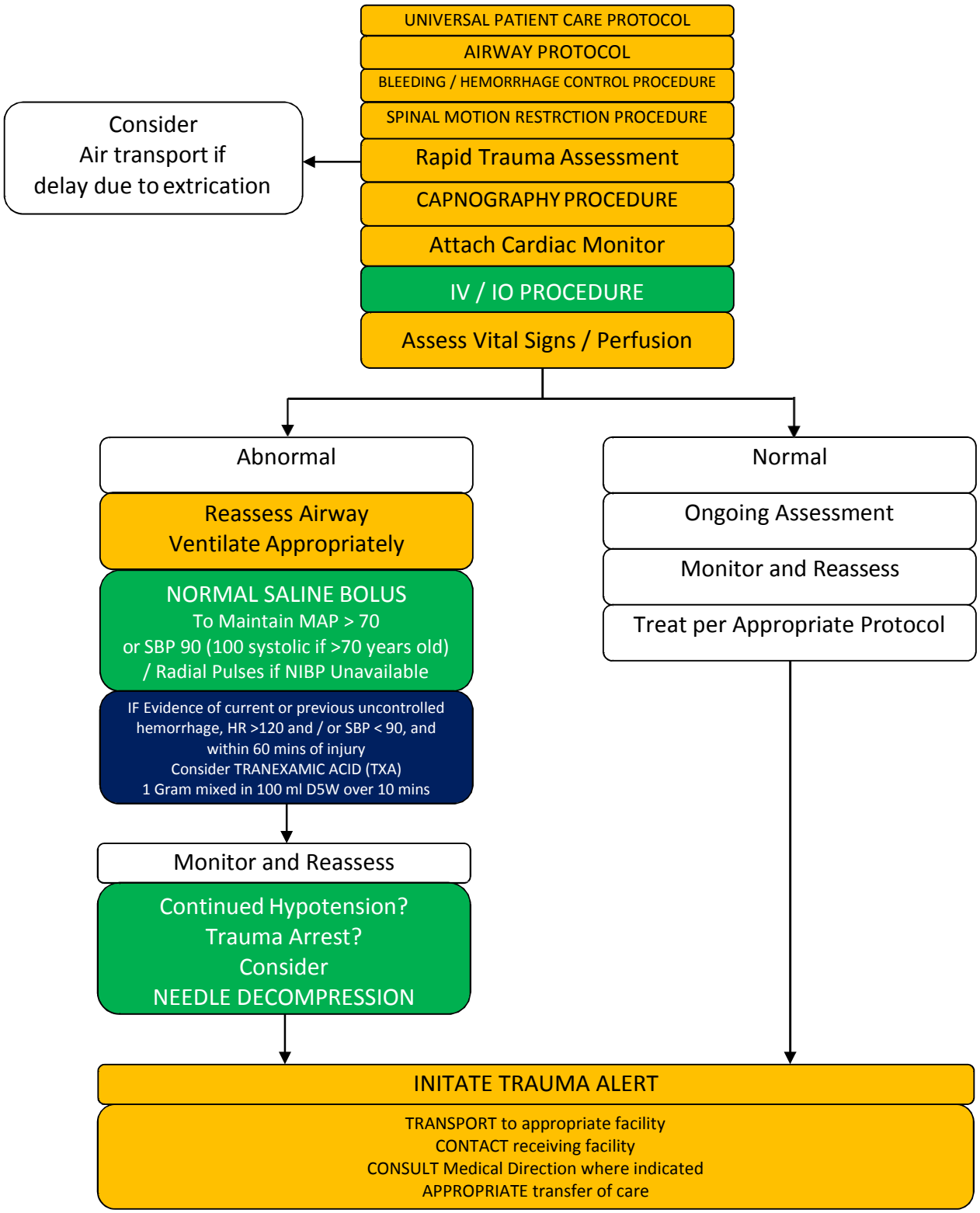
- If possible, contact lenses should be removed from the eye; be sure to transport them to the hospital with the patient. If the lenses cannot be removed, notify the ED personnel as soon as possible.
- If the patient is conscious and alert, it is much safer and easier to have the patient remove their lenses.

ACUTE, UNILATERAL VISION LOSS

- When a patient suddenly loses vision in one eye with no pain, there may be a central retinal artery occlusion. Urgent transport and treatment is necessary.
- Patient should be transported flat.

ADULT PROTOCOL

MULTIPLE TRAUMA



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MULTIPLE TRAUMA

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
• Time and mechanism of injury • Damage to structure or vehicle • Location in structure or vehicle • Others injured or dead • Speed and details of MVC • Restraints / protective equipment • Past medical history • Medications	• Pain, swelling • Deformity, lesions, bleeding • Altered mental status or unconscious • Hypotension or shock • Arrest	• Flail chest • Tension pneumotorax • Pericardial tamponade • Open chest wound • Hemothorax • Intra-abdominal bleeding • Pelvis / femur fracture • Spine fracture / spinal cord injury • Head injury • Extremity fracture / dislocation • HEENT (airway obstruction) • Hypothermia

KEY POINTS
• Exam: Mental Status, Skin, HEENT, Heart, Lung, Abdomen, Extremities, Back, Neuro • Mechanism is the most reliable indicator of serious injury. • In prolonged extrications or serious trauma, consider air transportation for transport times and the ability to give blood. • Do not overlook the possibility of associated domestic violence or abuse

ADULT PROTOCOL

TRAUMA ARREST

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
• Time of injury • Mechanism: blunt / penetrating • Loss of consciousness • Bleeding • Medications • Evidence of multi-trauma	• Excessive bleeding • Unresponsive; not breathing • Cardiac arrest • Significant mechanism of injury	• Obvious DOA • Death

UNIVERSAL PATIENT CARE PROTOCOL

BLEEDING / HEMORRHAGE CONTROL PROCEDURE

SPINAL MOTION RESTRICTION PROTOCOL

AIRWAY PROTOCOL
BEGIN RESUSCITATION

CAPNOGRAPHY PROCEDURE

BILATERAL NEEDLE DECOMPRESSION

IV / IO PROCEDURE

Apply Cardiac Monitor

Appropriate Protocol based on Signs and Symptoms

INITATE TRAUMA ALERT

TRANSPORT to appropriate facility
CONTACT receiving facility
CONSULT Medical Direction where indicated
APPROPRIATE transfer of care

Consider DOA / Termination of Efforts Protocol for Blunt Trauma Arrest Patients Who Do Not Respond to Treatment or Meet DOA Criteria

Transport All Penetrating Trauma Patients to Trauma Centers

KEY POINTS

- Immediately transport traumatic cardiac arrest patients.
- Except for airway management, traumatic cardiac arrests are “load and go” situations.
- Resuscitation should not be attempted in trauma arrest patients with;
  1. Spinal transection
  2. Decapitation
  3. Total body burns
  4. Severe blunt trauma that are without vital signs
  5. Without pupillary response
  6. Without an organized or shockable cardiac rhythm at the scene
- Patients in cardiac arrest with deep penetrating cranial injuries and patients with penetrating cranial or truncal wounds associated with asystole and a transport time of more than 15 minutes to a definitive care facility are unlikely to benefit from resuscitative efforts.
- Extensive, time-consuming care of trauma victims in the field is usually not warranted. Unless the patient is trapped, they should be enroute to a medical facility within 10 minutes after arrival of the ambulance on the scene.

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GLASGOW COMA SCALE

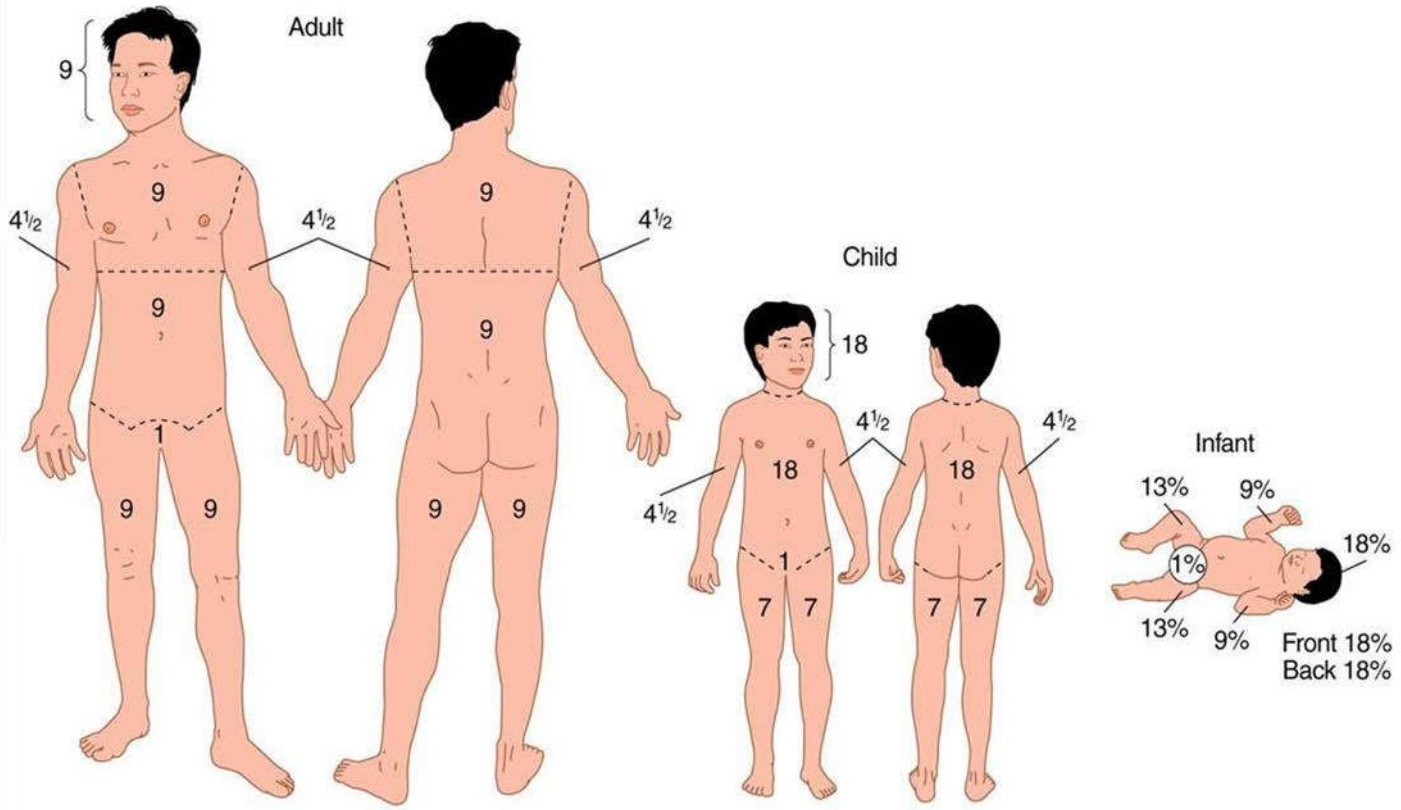
		GCS
EYES	SPONTANEOUSLY	4
	TO VERBAL COMMAND	3
	TO PAIN	2
	NO RESPONSE	1
BEST MOTOR RESPONSE	OBEYS VERBAL COMMAND	6
	PURPOSEFUL MOVEMENT TO PAIN	5
	FLEXION - WITHDRAWAL	4
	FLEXION – ABNORMAL	3
	EXTENSION	2
	NO RESPONSE	1
BEST VERBAL RESPONSE	ORIENTED & CONVERSES	5
	DISORIENTED & CONVERSES	4
	INAPPROPRIATE WORDS	3
	INCOMPREHENSIBLE SOUNDS	2
	NO RESPONSE	1

TRAUMA ASSESSMENT CHARTS

REVISED TRAUMA SCORE

		RTS
GLASGOW COMA SCALE	13 – 15	4
	9 – 12	3
	6 – 8	2
	4 – 5	1
	0 – 3	0
RESPIRATORY RATE	GREATER THAN 29	4
	10 – 29	3
	6 – 9	2
	1 – 5	1
	0	0
SYSTOLIC BLOOD PRESSURE	GREATER THAN 89	4
	76 – 89	3
	50 – 75	2
	1 – 49	1
	0	0

RULE OF NINES



1% is equal to the surface of the palm of the patient's hand. If unsure of %, describe injured area.

MAJOR BURN CRITERIA

- 2° and 3° burns > 10% surface area
- Burns of the face, hands feet genitalia
- Electrical shock with burn injury
- Burn with inhalation injury any burn with potential functional or cosmetic impairment

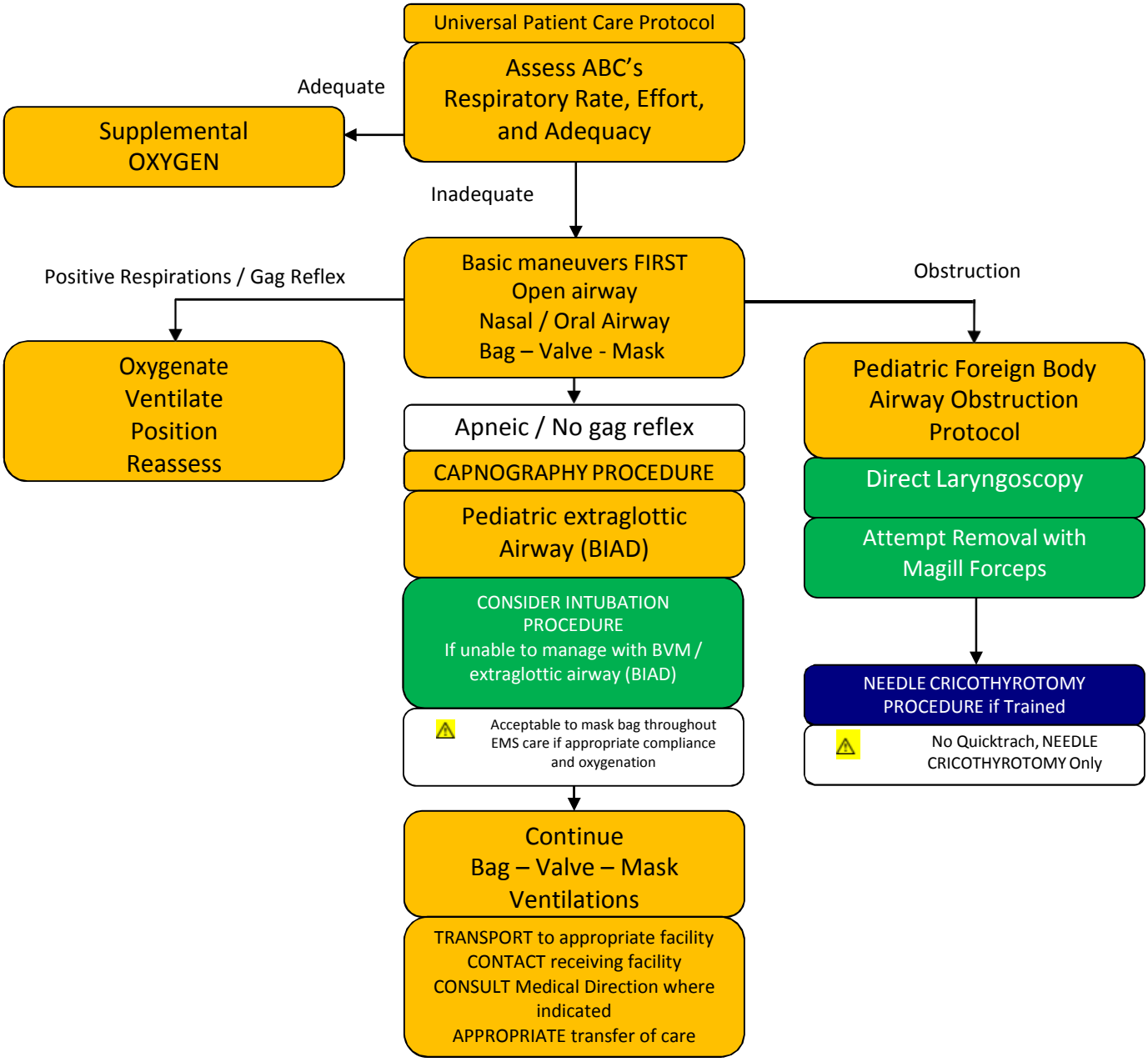
SECTION 7 - PEDIATRIC AIRWAY / BREATHING

Pediatric Airway 2-7
Pediatric Foreign Body Airway Obstruction (FBAO) 4-7
Pediatric Respiratory Distress – Upper Airway (Croup) 6-7
Pediatric Respiratory Distress – Lower Airway 8-7
Pediatric Traumatic Breathing 10-7

PEDIATRIC PROTOCOL

AIRWAY

3-5 kg	6-7 kg	8-9 kg	10-11 kg	12-14 kg	15-18 kg	19-23 kg	24-29 kg	30-36 kg
6-11 lbs	13-15 lbs	18-20 lbs	22-24 lbs	26-31 lbs	33-37 lbs	42-51 lbs	53-64 lbs	66-81 lbs
18-24 in	24-26 in	26-29 in	29-33 in	33-38 in	38-43 in	43-48 in	48-52 in	52-57 in



KEY POINTS

- EtCo2 measurement is mandatory with all methods of intubation. Document results of SpO_2.
- Limit intubation attempts to 2 per patient max.
- BVM and oral airway is acceptable means of airway control and ventilation during prehospital care.
- If unable to intubate, continue BVM ventilations, transport rapidly, and notify receiving hospital early.
- Provide Spinal Motion Restriction for patients with suspected spinal injury.
- Do not assume hyperventilation is psychogenic - use oxygen, not a paper bag.
- Consider c-collar to help maintain ETT placement for all intubated patients.

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Airway / Breathing

Circulation / Shock

Cardiac

Medical

Trauma

PEDIATRIC PROTOCOL

FOREIGN BODY AIRWAY OBSTRUCTION (FBAO)

3-5 kg	6-7 kg	8-9 kg	10-11 kg	12-14 kg	15-18 kg	19-23 kg	24-29 kg	30-36 kg
6-11 lbs	13-15 lbs	18-20 lbs	22-24 lbs	26-31 lbs	33-37 lbs	42-51 lbs	53-64 lbs	66-81 lbs
18-24 in	24-26 in	26-29 in	29-33 in	33-38 in	38-43 in	43-48 in	48-52 in	52-57 in

Infant (0 – 12 months)

Head Tilt / Chin Lift / Jaw Thrust / Airway Maneuvers

- Coughing Conscious
  - OXYGEN
    10 – 15 L Infant Mask
    as tolerated
- Complete Obstruction Conscious
  - 5 Back Blows / 5 Chest thrusts
- Complete Obstruction Unconscious
  - Visualize
    Finger Sweep
    (Only if visualized / attainable)
  - Consider use of
    Laryngoscope / Magill Forceps
  - Open airway / ventilate
    (May reposition and repeat)
  - Chest Compressions / CPR
  - If unable to ventilate,
    repeat / continue sequence

TRANSPORT to appropriate facility
CONTACT receiving facility
CONSULT Medical Direction where indicated
APPROPRIATE transfer of care

Child (1 – 8 years)

Head Tilt / Chin Lift / Jaw Thrust / Airway Maneuvers

- Coughing Conscious
  - Encourage patient to cough
  - OXYGEN
    10 – 15 LPM Pediatric Mask
    as tolerated
- Complete Obstruction Conscious
  - Abdominal Thrusts
- Complete Obstruction Unconscious
  - Visualize
    Finger Sweep
    (Only if visualized / attainable)
  - Consider use of
    Laryngoscope / Magill Forceps
  - Open airway / ventilate
    (May reposition and repeat)
  - Chest Compressions / CPR
  - If unable to ventilate,
    repeat / continue sequence

TRANSPORT to appropriate facility
CONTACT receiving facility
CONSULT Medical Direction where indicated
APPROPRIATE transfer of care

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FOREIGN BODY AIRWAY OBSTRUCTION (FBAO)

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
• Coughing • Choking • Inability to speak • Unresponsive	• Witnessed aspiration • Sudden episode of choking • Audible stridor • Change in skin color • Decreased LOC • Increased / decreased Respiratory rate • Labored breathing • Unproductive cough	• Cardiac arrest • Respiratory arrest • Anaphylaxis

KEY POINTS

- Infants 0 -12 months DO NOT receive abdominal thrusts. Use chest thrusts.
- NEVER perform blind finger sweeps in infants or children.
- Attempt to clear the airway should only be made if foreign body aspiration is witnessed or very strongly suspected and there is complete airway obstruction.
- Even with a complete airway obstruction, positive-pressure ventilation is often successful.

PEDIATRIC PROTOCOL

RESPIRATORY DISTRESS UPPER AIRWAY - CROUP

3-5 kg	6-7 kg	8-9 kg	10-11 kg	12-14 kg	15-18 kg	19-23 kg	24-29 kg	30-36 kg
6-11 lbs	13-15 lbs	18-20 lbs	22-24 lbs	26-31 lbs	33-37 lbs	42-51 lbs	53-64 lbs	66-81 lbs
18-24 in	24-26 in	26-29 in	29-33 in	33-38 in	38-43 in	43-48 in	48-52 in	52-57 in

UNIVERSAL PATIENT CARE PROTOCOL

IF WHEEZING GO TO RESPIRATORY DISTRESS LOWER AIRWAY PROTOCOL

Calm Patient
Position Patient in Position of Comfort
Do not Lay Patient Down
Do Not Perform Digital Airway Exam

PULSE OXIMETERY PROCEDURE

CARDIAC MONITOR

These patients present with "Seal Bark Cough" or Stridor. If Patient is wheezing, it is a lower airway etiology and should be treated by the Respiratory Distress Lower Airway Protocol

Mild Distress

Nebulized Normal Saline throughout transport

Moderate / Severe Distress - Stridor / Bark at Rest

RACEMIC EPINEPHRINE
Unit Dose (2.25% 0.5ml) mixed in 3ml of Normal Saline
Nebulized x1 Dose

NOT for Foreign Body Airway Obstructions
If Racemic Epinephrine is unavailable,
see medication section for aerosol Epinephrine
1mg / ml (1:1000)

methylPREDNISolone (SOLU-MEDROL)
2 mg / kg
Max Dose 125 mg

TRANSPORT to appropriate facility CONTACT receiving facility CONSULT Medical Direction where indicated APPROPRIATE transfer of care

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RESPIRATORY DISTRESS UPPER AIRWAY - CROUP

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL
· Time of onset · Possibility of foreign body · Medical history · Medications · Fever or respiratory infection · Other sick siblings · History of trauma	· Anxious appearance · Barking cough · Stridor · Gagging · Drooling · Inability to swallow · Increased respiratory effort	· Asthma · Aspiration · Foreign body · Infection · Pneumonia · Epiglotitis · Congenital heart disease · Medication or toxin · Trauma

KEY POINTS

- Exam: Mental Status, HEENT, Skin, Neck, Heart, Lungs, Abdomen, Extremities, Neuro
- CONSIDER FOREIGN BODY AIRWAY OBSTRUCTION
- Do not force a child into a position. They will protect their airway by their body position.
- The most important component of respiratory distress is airway control.
- Croup typically affects children < 2 years of age. It is viral, possible fever, gradual onset, no drooling is noted.
- Epiglottitis is rare and typically affects children > 2 years of age. Patients will appear very sick. It is bacterial, with fever, rapid onset, possible stridor, patient wants to sit up to keep airway open, and drooling is common. Airway manipulation may worsen the condition. DO NOT attempt invasive procedures on the conscious patient who is suspected to have epiglottis.
- DO NOT attempt an invasive airway procedure unless the patient is in respiratory arrest.
- Tracheitis presents in a similar manner to epiglottitis and the patient will also appear very sick.
- Stridor, gagging or choking in the breathing patient with respiratory distress may indicate upper airway obstruction.
- Wheezing in the breathing patient with respiratory distress indicates lower airway disease, which may come from a variety of causes. The patient with severe lower airway disease may have altered LOC, be unable to talk, may have absent or markedly decreased breath sounds and severe retractions with accessory muscle use.
- If the patient has signs of respiratory failure, begin to assist ventilations with BVM, even when they are breathing.

PEDIATRIC PROTOCOL

RESPIRATORY DISTRESS LOWER AIRWAY

3-5 kg	6-7 kg	8-9 kg	10-11 kg	12-14 kg	15-18 kg	19-23 kg	24-29 kg	30-36 kg
6-11 lbs	13-15 lbs	18-20 lbs	22-24 lbs	26-31 lbs	33-37 lbs	42-51 lbs	53-64 lbs	66-81 lbs
18-24 in	24-26 in	26-29 in	29-33 in	33-38 in	38-43 in	43-48 in	48-52 in	52-57 in

UNIVERSAL PATIENT CARE PROTOCOL

PULSE OXIMETERY PROCEDURE

CAPNOGRAPHY PROCEDURE

CARDIAC MONITOR

Respiratory Failure?

If the patient presents with stridor, or a "seal bark cough", it is a upper airway etiology and should be treated by the Respiratory Distress Upper Airway – Croup Protocol

Patients under 2 years with no history of asthma
CONSIDER BRONCHIOLITIS
Treat with OXYGEN
Bronchodilators ineffective

Yes → Pediatric Airway Protocol

No → Position to Patient Comfort

Mild

ALBUTEROL (PROVENTIL)
Nebulized Unit Dose

STOP EMT use only with DIRECT Medical Control

If Repeat Treatment Required

DUONEB
(ALBUTEROL / IPRATROPIUM)
Nebulized Unit Dose
May Repeat x1 if Required

STOP EMT use only with DIRECT Medical Control

Moderate / Severe

DUONEB
(ALBUTEROL / IPRATROPIUM)
Nebulized Unit Dose

STOP EMT use only with DIRECT Medical Control

If evidence of poor air exchange
EPINEPHrine (ADRENALINE)
0.01 mg / kg IM of
1 mg / ml (1:1000)
Max dose 0.5 mg

IV PROCEDURE
Attempt only if severe respiratory distress

methylPREDNISolone
(SOLU-MEDROL)
2 mg / kg IV / IO
Max Dose 125 mg

TRANSPORT to appropriate facility
CONTACT receiving facility
CONSULT Medical Direction where indicated
APPROPRIATE transfer of care

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RESPIRATORY DISTRESS LOWER AIRWAY

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL
· Time of onset · Possibility of foreign body · Medical history · Medications · Fever or respiratory infection · Other sick siblings · History of trauma	· Wheezing or stridor · Respiratory retractions · Increased heart rate · Altered level of consciousness · Anxious appearance	· Asthma · Aspiration · Foreign body · Infection · Pneumonia · Croup · Epiglottitis · Congenital heart disease · Medication or toxin · Trauma

KEY POINTS

- Exam: Mental Status, HEENT, Skin, Neck, Heart, Lungs, Abdomen, Extremities, Neuro
- Do not force a child into a position. They will protect their airway by their body position.
- The most important component of respiratory distress is airway control.
- DO NOT attempt an invasive airway procedure unless the patient is in respiratory arrest.
- For some patients in severe respiratory distress, wheezing may not be heard.
- Use Albuterol (Proventil) and Ipratropium (Atrovent) for the known asthmatic in severe respiratory distress.
- Stridor, gagging or choking in the breathing patient with respiratory distress may indicate upper airway obstruction.
- Wheezing in the breathing patient with respiratory distress indicates lower airway disease, which may come from a variety of causes. The patient with severe lower airway disease may have altered LOC, be unable to talk, may have absent or markedly decreased breath sounds and severe retractions with accessory muscle use.
- If the patient has signs of respiratory failure, begin to assist ventilations with BVM, even when they are breathing.

PEDIATRIC PROTOCOL

TRAUMATIC BREATHING

3-5 kg	6-7 kg	8-9 kg	10-11 kg	12-14 kg	15-18 kg	19-23 kg	24-29 kg	30-36 kg
6-11 lbs	13-15 lbs	18-20 lbs	22-24 lbs	26-31 lbs	33-37 lbs	42-51 lbs	53-64 lbs	66-81 lbs
18-24 in	24-26 in	26-29 in	29-33 in	33-38 in	38-43 in	43-48 in	48-52 in	52-57 in

UNIVERSAL PATIENT CARE PROTOCOL
Evidence of Trauma – Blunt or Penetrating
Abnormal breath sounds, inadequate respiratory rate, unequal symmetry, diminished chest excursion, cyanosis

Identify Treatable Causes

- Jaw Thrust Airway Maneuver
  Give High Flow Oxygen
- Sucking Chest Wound
  Apply 3-sided Occlusive Dressing or Commercial Chest Seal
- Flail Chest
  Splint with Bulky Dressing
  Assist with Ventilation – Gentle Positive Pressure
- Penetrating Object
  Immobilize Object
  Apply Sterile Saline Dressing
- Suspect Tension Pneumothorax
  NEEDLE DECOMPRESSION PROCEDURE
- ⚠ Decompress when HYPOTENSIVE
  ⚠ Be Prepared to Repeat *IF* S&S Return

TRANSPORT to appropriate facility CONTACT receiving facility CONSULT Medical Direction where indicated APPROPRIATE transfer of care

KEY POINTS

- These injuries involve the airway and are life-threatening.
- Do not become distracted by non-life-threatening injuries that appear terrible.
- A sucking chest wound is when the thorax is open to the outside. The occlusive dressing may be anything such as petroleum gauze, plastic, or a defibrillator pad. Tape only 3 sides down so that excess intrathoracic pressure can escape, preventing a tension pneumothorax. It may help respirations to place patient on the injured side, allowing unaffected lung to expand easier.
- A flail chest is when there are extensive rib fractures present, causing a loose segment of the chest wall resulting in paradoxical and ineffective air movement. This movement must be stopped by applying a bulky pad to inhibit the outward excursion of the segment. Positive pressure breathing via BVM will help push the segment and the normal chest wall out with inhalation and to move inward together with exhalation, getting them working together again. Do not use too much pressure, as to prevent additional damage or pneumothorax.
- A penetrating object must be immobilized by any means possible. If it is very large, cutting may be possible, with care taken to not move it while making the cut. Place an occlusive & bulky dressing over the entry wound.
- A tension pneumothorax is life threatening, look for *HYPOTENSION*, unequal breath sounds, JVD, increasing respiratory distress, and decreasing mental status. The pleura must be decompressed with a needle to provide relief. Use the intercostal space between the 2nd and 3rd ribs on the midclavicular line, going in on the top side of the 3rd rib. Once the catheter is placed, watch closely for reocclusion. Be prepared to repeat decompression if signs of tension pneumothorax return. Use a 18-14 gauge needle, length based on the patient.

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SECTION 8 - PEDIATRIC CIRCULATION / SHOCK

Pediatric Shock Guidelines 2-8
Pediatric Anaphylactic Shock / Reaction 4-8
Pediatric Cardiogenic Shock 5-8
Pediatric Hypovolemic Shock 5-8
Pediatric Neurogenic Shock 5-8
Pediatric Septic Shock 5-8

PEDIATRIC PROTOCOL

SHOCK

TYPES OF SHOCK	SIGNS AND SYMPTOMS
CARDIOGENIC SHOCK	· Hypotension · Difficulty breathing · Cool, clammy skin · Weakness
HYPOVOLEMIC SHOCK	· Tachycardia · Weak, thready pulse · Hypotension with narrow pulse pressure · Hypotension or falling systolic BP · Pale skin · Clammy or dry skin · Dyspnea · Altered LOC / coma · Decreased urine output · Restlessness · Irritability · Decreased urine output
ANAPHYLACTIC SHOCK (Distributive Shock)	· Hypotension · Severe respiratory distress · Shock · Dyspnea · Wheezing · Hoarseness / stridor · Cyanosis · Facial / airway edema · Urticaria / hives · Warm burning feeling · Itching · Rhinorrhea · Altered LOC / coma · Pulmonary edema
NEUROGENIC SHOCK (Distributive Shock)	· Hypotension with a narrow pulse pressure · Evidence of trauma (lacerations, bruising, swelling, deformity) · Normal or bradycardic HR · Compromise in neurological function · Normal or flushed skin color
SEPTIC SHOCK (Distributive Shock)	· Hypotension with a narrow pulse pressure · Dyspnea · Febrile · Tachycardia · Signs of infection · Hx of UTI · Hypovolemia (Fever, Sweating) · Dehydration · Altered LOC / coma
OBSTRUCTIVE SHOCK	· Obstruction that interferes with preload / afterload · Commonly caused by tension pneumothorax / pulmonary embolism · Hypotension · Chest pain · Hypoxia · Absent lung sounds (tension pneumothorax) · Present lung sounds (pulmonary embolism)

SHOCK

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
• Blood loss • Fluid loss • Vomiting • Diarrhea • Fever • Infection	• Restlessness, confusion, weakness • Dizziness • Increased HR, rapid pulse • Decreased BP • Pale, cool, clammy skin • Delayed capillary refill	• Trauma • Infection • Dehydration • Vomiting • Diarrhea • Fever • Congenital heart disease • Medication or toxin

ALLERGIC REACTION / ANAPHYLAXIS

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
• Onset and location • Insect sting or bite • Food allergy / exposure • Medication allergy / exposure • New clothing, soap, detergent • Past history of reactions • Past medical history • Medication history	• Warm burning feeling • Itching • Rhinorrhea • Hoarseness • Stridor • Wheezing • Respiratory distress • Altered LOC / coma • Cyanosis • Pulmonary edema • Facial / airway edema • Urticaria / hives • Dyspnea	• Urticaria (rash only) • Anaphylaxis (systemic effect) • Shock (vascular effect) • Angioedema (drug induced) • Aspiration / airway obstruction • Vasovagal event • Asthma

Do Not Confuse Epinephrine 1 mg / ml (1:1000) and 0.1 mg / ml (1:10,000)

Fluid Resuscitate to systolic of 70 + 2 x age

KEY POINTS
• Exam: Mental Status, Skin, HEENT, Heart, Lung, Abdomen, Extremities, Back, Neuro • Consider all possible causes of shock and treat per appropriate protocol. • Decreasing heart rate is a sign of impending collapse. • Most maternal medications pass through breast milk to the infant. Examples: Narcotics, Benzodiazepines. • Be sure to use the appropriate sized BP cuff. • Findings in the primary assessment should alert you that the patient is in shock. Pay particular attention to the patient's mental status, tachycardia, skin color, and capillary refill. • Shock is not only caused by blood loss. The provider must evaluate for fluid loss from other causes. such as excessive vomiting and / or diarrhea, heat exposure and malnutrition. • Do not use only the patient's blood pressure in evaluating shock; also look for lower body temperature, poor capillary refill, decreased LOC, increased heart rate and / or poor skin color or turgor. • Routinely reassess the patient and provide supportive care.

Airway / Breathing

Circulation / Shock

Cardiac

Medical

Trauma

PEDIATRIC PROTOCOL

ANAPHYLACTIC REACTION / SHOCK

3-5 kg	6-7 kg	8-9 kg	10-11 kg	12-14 kg	15-18 kg	19-23 kg	24-29 kg	30-36 kg
6-11 lbs	13-15 lbs	18-20 lbs	22-24 lbs	26-31 lbs	33-37 lbs	42-51 lbs	53-64 lbs	66-81 lbs
18-24 in	24-26 in	26-29 in	29-33 in	33-38 in	38-43 in	43-48 in	48-52 in	52-57 in

UNIVERSAL PATIENT CARE PROTOCOL

OXYGEN

CAPNOGRAPHY PROCEDURE

IV / IO PROCEDURE

Apply Cardiac Monitor and Assess Vitals

DO NOT CONFUSE
EPINEPHrine
1 mg / ml – IM (1:1000)
vs.
0.1 mg / ml - IV / IO
(1:10,000)

Mild

Rash, itching,
No difficulty breathing or throat tightening,
B/P – normal limits

diphenhydrAMINE
(BENADRYL)
1 mg / kg
slow IV / IM / IO
Max Dose 50 mg

Consider - If history of severe reaction
EPINEPHrine AUTO-INJECTOR
if available
15 - 30 kg (33 - 66 lbs)
AUTO-INJECTOR JR
(0.15 mg dose)
> 30 kg (66 lbs)
AUTO-INJECTOR JR
(0.3 mg dose)

Consider - If history of severe reaction
EPINEPHrine
(ADRENALINE)
1 mg / ml (1:1000) Concentration
0.01 mg / kg IM
Max Dose 0.5 mg

STOP Never Given IV

Moderate / Severe

Radial Pulses Present
Rash, itching,
Airway compromise,
Wheezing, Swelling,
GI Symptoms
Hypotension

EPINEPHrine AUTO-INJECTOR
if available
15 - 30 kg (33 - 66 lbs)
AUTO-INJECTOR JR
(0.15 mg dose)
> 30 kg (66 lbs)
AUTO-INJECTOR JR
(0.3 mg dose)

EPINEPHrine
(ADRENALINE)
1 mg / ml (1:1000) Concentration
0.01 mg / kg IM
Max Dose 0.5 mg

diphenhydrAMINE
(BENADRYL)
1 mg / kg
slow IV / IM / IO
Max Dose 50 mg

STOP

DUONEB
(ALBUTEROL / IPRATROPIUM)
Nebulized Unit Dose

STOP EMT use only with ONLINE Medical Control

IV NORMAL SALINE BOLUS
20 ml / kg
May Repeat up to 3 times as required

Consider repeat EPINEPHrine (ADRENALINE) after 5 min. if no improvement

methylPREDNISolone
(SOLU-MEDROL)
2 mg / kg
Max Dose 125 mg

Impending Arrest Anaphylactic Shock

NO Radial Pulses
Severe Hypotension
Any AGE
Decreased LOC
Airway compromise

Secure Airway and Ventilate

EPINEPHrine
(ADRENALINE)
0.01 mg / kg IV / IO
0.1 mg / ml (1:10,000) Concentration
Max Dose 0.5 mg

If ONLY AEMT Available
EPINEPHrine (ADRENALINE)
1 mg / ml (1:1000) Concentration
0.01 mg / kg IM
Max Dose 0.5 mg

IF ONLY EMT Available
EPINEPHrine AUTO-INJECTOR
if available
15 - 30 kg (33 - 66 lbs)
AUTO-INJECTOR JR
(0.15 mg dose)
> 30 kg (66 lbs)
AUTO-INJECTOR JR
(0.3 mg dose)

diphenhydrAMINE
(BENADRYL)
1 mg / kg
slow IV / IM / IO
Max Dose 50 mg

IV NORMAL SALINE BOLUS
20 ml / kg
May Repeat up to 3 times as required

methylPREDNISolone
(SOLU-MEDROL)
2 mg / kg
Max Dose 125 mg

TRANSPORT to appropriate facility CONTACT receiving facility CONSULT Medical Direction where indicated APPROPRIATE transfer of care

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HYPOVOLEMIC, NEUROGENIC, CARDIOGENIC, AND SEPTIC SHOCK

3-5 kg	6-7 kg	8-9 kg	10-11 kg	12-14 kg	15-18 kg	19-23 kg	24-29 kg	30-36 kg
6-11 lbs	13-15 lbs	18-20 lbs	22-24 lbs	26-31 lbs	33-37 lbs	42-51 lbs	53-64 lbs	66-81 lbs
18-24 in	24-26 in	26-29 in	29-33 in	33-38 in	38-43 in	43-48 in	48-52 in	52-57 in

UNIVERSAL PATIENT CARE PROTOCOL

AIRWAY PROTOCOL
Monitor Lung Sounds for Fluid Overload

OXYGEN

IV / IO PROCEDURE

Apply Cardiac Monitor and Assess Vitals

CAPNOGRAPHY PROCEDURE

Hypovolemic Shock	Cardiogenic Shock	Neurogenic Shock	Septic Shock
		Consider SPINAL MOTION RESTRICTION PROCEDURE	
IV NORMAL SALINE BOLUS 20 ml / kg May Repeat up to 3 times as required	IV NORMAL SALINE BOLUS 20 ml / kg	IV NORMAL SALINE BOLUS 20 ml / kg May Repeat up to 3 times as required	IV NORMAL SALINE BOLUS 20 ml / kg May Repeat up to 3 times as required
BLOOD GLUCOSE PROCEDURE	BLOOD GLUCOSE PROCEDURE	BLOOD GLUCOSE PROCEDURE	BLOOD GLUCOSE PROCEDURE
Treatment per Appropriate Trauma Protocol If Indicated	Contact Medical Control for the use of vasopressors if failed fluid bolus DOPamine (INTROPIN) Drip 5 - 20 mcg / kg / min IV / IO *OR* EPINEPHrine (Adrenaline) Drip 0.1 – 0.5 mcg / kg / min IV / IO Titrate to effect	Contact Medical Control for the use of vasopressors if failed fluid bolus DOPamine (INTROPIN) Drip 5 - 20 mcg / kg / min IV / IO *OR* EPINEPHrine (Adrenaline) Drip 0.1 – 0.5 mcg / kg / min IV / IO Titrate to effect	Contact Medical Control for the use of vasopressors if failed fluid bolus DOPamine (INTROPIN) Drip 5 - 20 mcg / kg / min IV / IO *OR* EPINEPHrine (Adrenaline) Drip 0.1 – 0.5 mcg / kg / min IV / IO Titrate to effect

TRANSPORT to appropriate facility CONTACT receiving facility CONSULT Medical Direction where indicated APPROPRIATE transfer of care

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SECTION 9 - PEDIATRIC CARDIAC

Pediatric Asystole / Pulseless Electrical Activity (PEA) 2-9
Pediatric Bradycardia 4-9
Pediatric Narrow Complex Tachycardia (SVT) 6-9
Pediatric Post Resuscitation Care 8-9
Pediatric Ventricular Fibrillation (V-FIB) and Pulseless Ventricular Tachycardia 10-9
Pediatric Wide Complex Tachycardia 12-9

Airway / Breathing

Circulation / Shock

Cardiac

Medical

Trauma

PEDIATRIC PROTOCOL

ASYSTOLE / PULSELESS ELECTRICAL ACTIVITY (PEA)

3-5 kg	6-7 kg	8-9 kg	10-11 kg	12-14 kg	15-18 kg	19-23 kg	24-29 kg	30-36 kg
6-11 lbs	13-15 lbs	18-20 lbs	22-24 lbs	26-31 lbs	33-37 lbs	42-51 lbs	53-64 lbs	66-81 lbs
18-24 in	24-26 in	26-29 in	29-33 in	33-38 in	38-43 in	43-48 in	48-52 in	52-57 in

UNIVERSAL PATIENT CARE PROTOCOL

Continuous CPR

PEDIATRIC AIRWAY PROTOCOL

Apply Cardiac Monitor

CAPNOGRAPHY PROCEDURE

Confirm Asystole / PEA

<u>Identify Possible Causes:</u>
Hypoxemia
Acidosis
Hypovolemia
Tension Pneumothorax
Hypothermia

IV / IO PROCEDURE

EPINEPHrine (ADRENALINE)
0.01 mg / kg IV / IO of
0.1 mg / ml (1:10,000) Solution
Repeat every 3 - 5 minutes
Max 1 mg per dose

Double Check EPI Concentration

AT ANY TIME

Return of Spontaneous Circulation (ROSC)

GO TO PEDICATRIC POST RESUSCITATION CARDIAC CARE PROTOCOL

NORMAL SALINE IV BOLUS
20 ml / kg
Repeat as needed

BLOOD GLUCOSE PROCEDURE

Glucose < 60

DEXTROSE 10%
5 ml / kg IV / IO

If DEXTROSE 10% Is unavailable, see medication section for DEXTROSE 25% or 50%

Continuous CPR

TRANSPORT to appropriate facility
CONTACT receiving facility
CONSULT Medical Direction where indicated
APPROPRIATE transfer of care

EMT Intervention | AEMT Intervention | PARAMEDIC Intervention | Online Medical Control

ASYSTOLE / PULSELESS ELECTRICAL ACTIVITY (PEA)

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
· Time of arrest · Medical history · Medications · Possibility of foreign body · Hypothermia	· Pulseless · Apneic or agonal Respirations · Cyanosis	· Ventricular fibrillation · Pulseless ventricular tachycardia

CONSIDER TREATABLE CAUSES	
· Hypovolemia	· Cardiac tamponade
· Tension pneumothorax	· Pulmonary embolism
· Myocardial infarction	· Tricyclic overdose
· Drug overdose	· Hypoxia
· Hypothermia	· Hypoglycemia
· Acidosis	· Hyperkalemia

Do Not Confuse EPINEPhrine 1 mg / ml (1:1000) and 0.1 mg / ml (1:10,000)

If Dextrose 25% Not Available, Waste 25 ml of Dextrose 50% and replace with 25 ml of normal saline

Fluid Resuscitate to systolic of 70 + 2 x age

KEY POINTS

- Exam: Mental Status
- Always confirm asystole in more than one lead.
- Cardiac arrest in children is primarily due to lack of an adequate airway, resulting in hypoxia.
- If the patient converts to another rhythm or has a return of circulation, refer to the appropriate protocol and treat accordingly.
- When assessing for a pulse, palpate the brachial or femoral arteries for infants and the carotid or femoral artery for children.
- Continue BLS procedures throughout the resuscitation.
- If the patient is intubated, be sure to routinely reassess tube placement.
- If the patient has an IO, routinely reassess for patency.
- Consider atropine when evidence of increase vagal stimulation is present.

PEDIATRIC PROTOCOL

BRADYCARDIA

3-5 kg	6-7 kg	8-9 kg	10-11 kg	12-14 kg	15-18 kg	19-23 kg	24-29 kg	30-36 kg
6-11 lbs	13-15 lbs	18-20 lbs	22-24 lbs	26-31 lbs	33-37 lbs	42-51 lbs	53-64 lbs	66-81 lbs
18-24 in	24-26 in	26-29 in	29-33 in	33-38 in	38-43 in	43-48 in	48-52 in	52-57 in

UNIVERSAL PATIENT CARE PROTOCOL

PEDIATRIC AIRWAY PROTOCOL

CAPNOGRAPHY PROCEDURE

IV / IO PROCEDURE

Poor perfusion?
Decreased B/P?
Respiratory Insufficiency?

Yes

Arrest Protocol
If Indicated

Heart Rate < 60

Start CPR

EPINEPHrine (ADRENALINE)
0.01 mg / kg IV / IO of
0.1 mg / ml (1:10,000) Solution
Repeat every 3 - 5 minutes
Max 1 mg per dose

STOP Double Check EPI Concentration

CONSIDER ATROPINE
0.02 mg / kg IV / IO
repeat every 3 - 5 minutes
Min dose 0.1 mg
Max dose 0.5 mg child
Max dose 1 mg Adolescent

Consider External
Transcutaneous Pacing

Monitor and Reassess
Other Protocols as Indicated

No

Monitor and Reassess
Other Protocols as Indicated

TRANSPORT to appropriate facility CONTACT receiving facility CONSULT Medical Direction where indicated APPROPRIATE transfer of care

EMT Intervention | AEMT Intervention | PARAMEDIC Intervention | Online Medical Control

BRADYCARDIA

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
• Past medical history • Foreign body exposure • Respiratory distress or arrest • Apnea • Possible toxic or poison exposure • Congenital disease • Medication (maternal or infant)	• Hypoxia • Decreased heart rate • Delayed capillary refill or cyanosis • Mottled, cool skin • Hypotension or arrest • Altered level of consciousness • Poor Perfusion • Shock • Short of breath • Pulmonary fluid	• Respiratory effort • Respiratory obstruction • Foreign body / secretions • Croup / epiglottis • Hypovolemia • Hypothermia • Infection / sepsis • Medication or toxin • Hypoglycemia • Trauma

Do Not Confuse EPINEPhrine 1 mg / ml (1:1000) and 0.1 mg / ml (1:10,000)

KEY POINTS
• Exam: Mental Status, HEENT, Skin, Heart, Lungs, Abdomen, Back, Extremities, Neuro • Heart Rate < 100 (Neonates) • Heart Rate < 80 (Infants) • Heart Rate <60 (Children > 2 years) • Infant = < 1 year of age • Most maternal medications pass through breast milk to the infant. • The majority of pediatric arrests are due to airway problems. • Hypoglycemia, severe dehydration and narcotic effects may produce bradycardia. • Pediatric patients requiring external transcutaneous pacing require the use of pads appropriate for pediatric patients per the manufacturers' guidelines. • Identify and treat possible causes for pediatric bradycardia: 1. Hypoxia 2. Hypothermia 3. Head injury 4. Heart block 5. Toxic ingestion / exposure • Refer to pediatric reference material when unsure about patient weight, age and / or drug dosage. • The minimum dose of Atropine that should be administered to a pediatric patient is 0.1 mg. • If the rhythm changes, follow the appropriate protocol. • Be sure of all medication doses, look it up in reference material.

Airway / Breathing

Circulation / Shock

Cardiac

Medical

Trauma

PEDIATRIC PROTOCOL

NARROW – COMPLEX TACHYCARDIA

3-5 kg	6-7 kg	8-9 kg	10-11 kg	12-14 kg	15-18 kg	19-23 kg	24-29 kg	30-36 kg
6-11 lbs	13-15 lbs	18-20 lbs	22-24 lbs	26-31 lbs	33-37 lbs	42-51 lbs	53-64 lbs	66-81 lbs
18-24 in	24-26 in	26-29 in	29-33 in	33-38 in	38-43 in	43-48 in	48-52 in	52-57 in

If rhythm changes, Go to Appropriate Protocol

UNIVERSAL PATIENT CARE PROTOCOL

Cardiac Monitor
Attempt to Identify Cause

CAPNOGRAPHY PROCEDURE

IV / IO PROCEDURE

Stable (Signs of Perfusion)
HR > 220 infant / HR >180 child

May attempt Vagal Maneuvers

ADENOSINE (ADENOCARD)
0.1 mg / kg IV / IO Rapid - Followed with flush
Max dose 6 mg
Upper extremity venous access

No response
1 –2 minutes

ADENOSINE (ADENOCARD)
0.2 mg / kg IV Rapid - Followed with flush
Max dose 12 mg

IV Normal Saline Bolus 20 ml / kg
If signs dehydration or hypoperfusion
Repeat as needed

Unstable (Signs of Hypoperfusion)
HR > 220 infant / HR >180 child

May go directly to Cardioversion

Consider Sedation
MIDAZOLAM (VERSED) 0.1 mg / kg IV / IO
Max Dose 2 mg IV / IO
MIDAZOLAM (VERSED) 0.2 mg / kg IN
Max Dose 5 mg IN
OR
LORazepam (ATIVAN) 0.05 mg / kg slow IV / IO / IN
Max Dose 2 mg

⚠ If Midazolam (Versed) or LORazepam (Ativan) Unavailable, See Medication Section for DiazePAM (Valium)

SYNCHRONIZED CARDIOVERSION
(0.5 – 1 J / kg)

No response
1 –2 minutes

Repeat SYNCHRONIZED CARDIOVERSION as Needed
(1 – 2 J / kg)

IV Normal Saline Bolus 20 ml / kg
If signs dehydration or hypoperfusion
Repeat as needed

TRANSPORT to appropriate facility CONTACT receiving facility CONSULT Medical Direction where indicated APPROPRIATE transfer of care

EMT Intervention | AEMT Intervention | PARAMEDIC Intervention | Online Medical Control

NARROW – COMPLEX TACHYCARDIA

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
• Past medical history • Medications or toxic ingestion (Aminophylline, diet pills, thyroid supplements, decongestants, digoxin) • Drugs (nicotine, cocaine) • Congenital heart disease • Respiratory distress • Syncope or near syncope	• HR: Child > 180/bpm Infant > 220/bpm • Pale or cyanosis • Diaphoresis • Tachypnea • Vomiting • Hypotension • Altered level of consciousness • Pulmonary congestion • Syncope	• Heart disease (congenital) • Hypo / hyperthermia • Hypovolemia or anemia • Electrolyte imbalance • Anxiety / pain / emotional stress • Fever / infection / sepsis • Hypoxia • Hypoglycemia • Medication / toxin / drugs (see HX) • Pulmonary embolus • Trauma • Tension pneumothorax

Fluid Resuscitate to systolic of 70 + 2 x age

KEY POINTS

- Exam: Mental Status, Skin, Neck, Lung, Heart, Abdomen, Back, Extremities, Neuro
- Carefully evaluate the rhythm to distinguish Sinus Tachycardia, Supraventricular Tachycardia, and Ventricular Tachycardia
- Separating the child from the caregiver may worsen the child's clinical condition.
- Pediatric pads should be used in children < 10 kg.
- Monitor for respiratory depression and hypotension associated if LORazepam (ATIVAN) or MIDAZOLAM (VERSED) is used.
- Continuous pulse oximetry is required for all SVT Patients if available.
- Document all rhythm changes with monitor strips and obtain monitor strips with each therapeutic intervention.
- Possible causes of tachycardia; hypoxia, hypovolemia, fear, and pain.
- A complete medical history must be obtained.
- Do not delay cardioversion to gain vascular access for the unstable patient.
- If you are unable to get the monitor to select a low enough joule setting, contact Online Medical Control.
- If the patient is stable, do not cardiovert.
- Record 3-Lead EKG strips during adenosine administration.
- Perform a 12-Lead EKG prior to and after Adenosine (Adenocard) conversion or cardioversion of SVT.
- If the rhythm changes, follow the appropriate protocol.

PEDIATRIC PROTOCOL

POST – RESUSCITATION CARDIAC CARE

3-5 kg	6-7 kg	8-9 kg	10-11 kg	12-14 kg	15-18 kg	19-23 kg	24-29 kg	30-36 kg
6-11 lbs	13-15 lbs	18-20 lbs	22-24 lbs	26-31 lbs	33-37 lbs	42-51 lbs	53-64 lbs	66-81 lbs
18-24 in	24-26 in	26-29 in	29-33 in	33-38 in	38-43 in	43-48 in	48-52 in	52-57 in

UNIVERSAL PATIENT CARE PROTOCOL

Continue Ventilatory Support with 100% OXYGEN

CAPNOGRAPHY PROCEDURE

IV / IO PROCEDURE

12 LEAD EKG PROCEDURE

Vital Signs

Bradycardia

Treat per BRADYCARDIA PROTOCOL

Hypotension

IV NORMAL SALINE BOLUS
20 ml / kg

Contact Medical Control for the use of vasopressors if failed fluid bolus
DOPamine (INTROPIN) Drip
5 - 20 mcg / kg / min IV / IO
OR
EPINEPHrine (Adrenaline)
Drip 0.1 – 0.5 mcg / kg / min
IV / IO
Titrate to effect

Electrical Conversion
(NO anti-arrhythmic already given during resuscitation)

Supportive Care Only
No anti-arrhythmic administered

Anti-Arrhythmic
Conversion with Continued Ventricular Ectopy

AMIODARONE (CORDARONE)
5 mg / kg IV / IO –
Max 150 mg / dose
mix in 100ml D5
Over 20-60 minutes
IF NOT ALREADY GIVEN (450 mg max during prehospital care)

⚠ If Amiodarone (Cordarone) Unavailable, See Medication Section for Lidocaine (Xylocaine)

If arrest reoccurs, revert to appropriate protocol and / or initial successful treatment

TRANSPORT to appropriate PEDIATRIC facility CONTACT receiving facility CONSULT Medical Direction where indicated APPROPRIATE transfer of care

EMT Intervention | AEMT Intervention | PARAMEDIC Intervention | Online Medical Control

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PEDIATRIC PROTOCOL

VENTRICULAR FIBRILLATION (V-FIB)
PULSELESS VENTRICULAR TACHYCARDIA (V-TACH)

3-5 kg	6-7 kg	8-9 kg	10-11 kg	12-14 kg	15-18 kg	19-23 kg	24-29 kg	30-36 kg
6-11 lbs	13-15 lbs	18-20 lbs	22-24 lbs	26-31 lbs	33-37 lbs	42-51 lbs	53-64 lbs	66-81 lbs
18-24 in	24-26 in	26-29 in	29-33 in	33-38 in	38-43 in	43-48 in	48-52 in	52-57 in

Initiate Prompt CPR

Apply Cardiac Monitor / AED

Defibrillate 2 J / kg not to exceed adult dose → Confirm V-Fib / Pulseless V-Tach

PEDIATRIC AIRWAY PROTOCOL

CAPNOGRAPHY PROCEDURE

CPR X 5 cycles / 2 minutes

IV / IO PROCEDURE

Defibrillate 4 J / kg not to exceed adult dose

EPINEPHrine (ADRENALINE)
0.01 mg / kg IV / IO
0.1 mg / ml (1:10,000) Solution
Repeat every 3 - 5 minutes
Max dose 1 mg per dose

STOP Double Check EPI Concentration

CPR X 5 cycles / 2 minutes

Defibrillate 4 J / kg not to exceed adult dose

AMIODARONE (CORDARONE)
5 mg / kg IV / IO - Max 300 mg

⚠ If Amiodarone (Cordarone) Unavailable, See Medication Section for Lidocaine (Xylocaine)

CPR X 5 cycles / 2 minutes

Defibrillate 4 J / kg not to exceed adult dose

TRANSPORT to appropriate facility
CONTACT receiving facility
CONSULT Medical Direction where indicated
APPROPRIATE transfer of care

Identify Possible Causes:
Hypoxemia
Acidosis
Hypovolemia
Tension
Pneumothorax
Hypothermia

AT ANY TIME

Return of Spontaneous Circulation (ROSC)

GO TO PEDICATRIC POST RESUSCITATION CARDIAC CARE PROTOCOL

EMT Intervention | AEMT Intervention | PARAMEDIC Intervention | Online Medical Control

VENTRICULAR FIBRILLATION (V-FIB)
PULSELESS VENTRICULAR TACHYCARDIA

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
· Time of arrest · Medical history · Medications · Possibility of foreign body · Hypothermia	· Unresponsive · Cardiac arrest	· Respiratory failure · Foreign body · Secretions · Infection (croup, epiglotitis) · Hypovolemia (dehydration) · Congenital heart disease · Trauma · Tension pneumothorax · Hypothermia · Toxin or medication · Hypoglycemia · Acidosis

Do Not Confuse EPINEPHrine 1 mg / ml (1:1000) and 0.1 mg / ml (1:10,000)

KEY POINTS
· Exam: Mental Status · Monophasic and Biphasic waveform defibrillators should use the same energy levels noted. · In order to be successful in pediatric arrests, a cause must be identified and corrected. · Airway is the most important intervention. This should be accomplished immediately. Patient survival is often dependent on airway management success. · If the patient converts to another rhythm, follow the appropriate protocol and treat accordingly. · If the patient converts back to ventricular fibrillation or pulseless ventricular tachycardia, defibrillate at the previously used setting. · Defibrillation is the definitive therapy for ventricular fibrillation and pulseless ventricular tachycardia. · Defibrillate 30 - 60 seconds after each medication administration. · The proper administration sequence is CPR (continuous), shock, drug, shock, drug.

PEDIATRIC PROTOCOL

WIDE – COMPLEX TACHYCARDIA

3-5 kg	6-7 kg	8-9 kg	10-11 kg	12-14 kg	15-18 kg	19-23 kg	24-29 kg	30-36 kg
6-11 lbs	13-15 lbs	18-20 lbs	22-24 lbs	26-31 lbs	33-37 lbs	42-51 lbs	53-64 lbs	66-81 lbs
18-24 in	24-26 in	26-29 in	29-33 in	33-38 in	38-43 in	43-48 in	48-52 in	52-57 in

UNIVERSAL PATIENT CARE PROTOCOL

Cardiac Monitor
Attempt to Identify Cause

→ If rhythm changes, Go to Appropriate Protocol

CAPNOGRAPHY PROCEDURE

IV / IO PROCEDURE

Stable (Signs of Perfusion)
HR > 220 infant / HR >180 child

May attempt Vagal Maneuvers

AMIODARONE (CORDARONE)
5 mg / kg IV / IO
Mix in 100 ml D5 - Over 20 – 60 min
Max dose 300 mg

⚠ If Amiodarone (Cordarone) Unavailable, See Medication Section for Lidocaine (Xylocaine)

No response
1 –2 minutes

IV Normal Saline Bolus 20 ml / kg
If signs dehydration / hypoperfusion
May Repeat up to 3 times as required

Unstable (Signs of Hypoperfusion)
HR > 220 infant / HR >180 child

May go directly to Synchronized CARDIOVERSION

Consider Sedation
MIDAZOLAM (VERSED) 0.1 mg / kg IV / IO
Max Dose 2 mg IV / IO
MIDAZOLAM (VERSED) 0.2 mg / kg IN
Max Dose 5 mg IN
OR
LORazepam (ATIVAN) 0.05 mg / kg slow IV / IO / IN
Max Dose 2 mg

⚠ If Midazolam (Versed) or LORazepam (Ativan) Unavailable, See Medication Section for DiazePAM (Valium)

SYNCHRONIZED CARDIOVERSION
(0.5 – 1 J / kg)

No response
1 –2 minutes

Repeat SYNCHRONIZED CARDIOVERSION as Needed
(1 – 2 J / kg)

IV Normal Saline Bolus 20 ml / kg
If signs dehydration / hypoperfusion
May Repeat up to 3 times as required

TRANSPORT to appropriate facility CONTACT receiving facility CONSULT Medical Direction where indicated APPROPRIATE transfer of care

EMT Intervention | AEMT Intervention | PARAMEDIC Intervention | Online Medical Control

WIDE – COMPLEX TACHYCARDIA

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
• Past medical history • Medications or toxic ingestion (Aminophylline, diet pills, thyroid supplements, decongestants, digoxin) • Drugs (nicotine, cocaine) • Congenital heart disease • Respiratory distress • Syncope or near syncope	• HR: Child > 180/bpm Infant > 220/bpm • Pale or cyanosis • Diaphoresis • Tachypnea • Vomiting • Hypotension • Altered level of consciousness • Pulmonary congestion • Syncope	• Heart disease (congenital) • Hypo / hyperthermia • Hypovolemia or anemia • Electrolyte imbalance • Anxiety / pain / emotional stress • Fever / infection / sepsis • Hypoxia • Hypoglycemia • Medication / toxin / drugs (see HX) • Pulmonary embolus • Trauma • Tension pneumothorax

Fluid Resuscitate to systolic of 70 + 2 x age

KEY POINTS
• Exam: Mental Status, Skin, Neck, Lung, Heart, Abdomen, Back, Extremities, Neuro • Carefully evaluate the rhythm to distinguish Sinus Tachycardia, Supraventricular Tachycardia, and Ventricular Tachycardia • Separating the child from the caregiver may worsen the child's clinical condition. • Pediatric paddles should be used in children < 10 kg. • Monitor for respiratory depression and hypotension associated if LORazepam (ATIVAN) or MIDAZOLAM (VERSED) is used. • Continuous pulse oximetry is required for all SVT Patients if available. • Document all rhythm changes with monitor strips and obtain monitor strips with each therapeutic intervention. • Possible causes of tachycardia; hypoxia, hypovolemia, fear, and pain. • A complete medical history must be obtained. • Do not delay cardioversion to gain vascular access for the unstable patient. • If you are unable to get the monitor to select a low enough joule setting, contact Online Medical Control. • If the patient is stable, do not cardiovert. • Record 3-Lead EKG strips during adenosine administration. • Perform a 12-Lead EKG prior to and after medication conversion or cardioversion of SVT. • If the rhythm changes, follow the appropriate protocol.

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SECTION 10 -PEDIATRIC MEDICAL EMERGENCIES PROTOCOLS

Pediatric Altered Level of Consciousness..... 2-10
Pediatric Anti-Emetic 4-10
Pediatric Diabetic Emergencies 6-10
Pediatric Hyperthermia / Heat Exposure 8-10
Pediatric Hypothermia / Frostbite 10-10
Pediatric Seizure..... 13-10
Pediatric Severe Pain Management..... 15-10
Pediatric Toxic Ingestion / Exposure / Overdose 17-10

PEDIATRIC PROTOCOL

ALTERED LEVEL OF CONSCIOUSNESS

3-5 kg	6-7 kg	8-9 kg	10-11 kg	12-14 kg	15-18 kg	19-23 kg	24-29 kg	30-36 kg
6-11 lbs	13-15 lbs	18-20 lbs	22-24 lbs	26-31 lbs	33-37 lbs	42-51 lbs	53-64 lbs	66-81 lbs
18-24 in	24-26 in	26-29 in	29-33 in	33-38 in	38-43 in	43-48 in	48-52 in	52-57 in

UNIVERSAL PATIENT CARE PROTOCOL

CONSIDER COMPLETE SPINAL IMOBILIZATION PROCEDURE

AIRWAY PROTOCOL

12 LEAD EKG PROCEDURE

1ST Contact to EKG and Transmission < 10 Min

OXYGEN / PULSE OXIMETRY PROCEDURE

CAPNOGRAPHY PROCEDURE

BLOOD GLUCOSE PROCEDURE

IV / IO PROCEDURE

Identify Treatable Causes
Treat Per Specific Protocol

- Seizure – Treat per Seizure Protocols
- Hypoxia – Treat per Airway / Breathing Protocols
- Anaphylaxis / Allergic Reaction Protocol
- Sepsis – Treat per Septic Shock Protocol
- Hypotension – Treat per Specific Shock Protocols
- Arrhythmia – Treat per Correct Arrhythmia Protocol
- Psychiatric – Treat per Behavioral Emergencies
- Hypo / Hyperglycemia – Treat per Diabetic Protocol
- Hypo / Hyperthermia – Treat per Specific Protocol
- Stroke CVA / TIA – Treat per Stroke Protocol
- Overdose – Treat per Toxic Ingestion Protocol
- Head Trauma – Treat per Head Trauma Protocol

EMT Intervention | AEMT Intervention | PARAMEDIC Intervention | Online Medical Control

ALTERED LEVEL OF CONSCIOUSNESS

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
• Known diabetic, medic alert tag • Drugs, drug paraphernalia • Report of illicit drug use or toxic ingestion • Past medical history • Medications • History of trauma	• Unresponsive • Decreased responsiveness • Inadequate respirations • Confusion • Agitation • Decreased mental status • Change in baseline mental status • Hypoglycemia (cool, diaphoretic skin)	• Head trauma • CNS (stroke, tumor, seizure, infection) • Infection • Shock (septic, metabolic, traumatic) • Diabetes (hyper / hypoglycemia) • Toxicologic • Acidosis / alkalosis • Environmental exposure • Pulmonary (Hypoxia) • Electrolyte abnormality • Psychiatric disorder

KEY POINTS

- Exam: Mental Status, HEENT, Skin, Heart, Lungs, Abdomen, Back, Extremities, Neuro
- Be aware of AMS as potential sign of an environmental toxin or Haz-Mat exposure and protect personal safety.
- It is safer to assume hypoglycemia than hyperglycemia if doubt exists.
- Do not let alcohol confuse the clinical picture.
- Consider restraints if necessary for patient's and / or personnel's protection per the restraint procedure.
- Protect the patient airway and support ABCs.
- Document the patient's Glasgow coma score pre and post treatment.
- Signs and symptoms of narcotic overdose include respiratory depression and altered mental status.
- Naloxone (Narcan) administration may cause the patient to go into acute opiate withdrawal, which includes vomiting, agitation, and / or combative behavior. Always be prepared for combative behavior.
  Naloxone (Narcan) may wear off in as little as 20 minutes causing the patient to become more sedate and possibly hypo ventilate. All A&O 4 patients having received Naloxone (Narcan) should be transported. If patient refuses transport, contact Online Medical Control before release.

ONLY A FEW CAUSES CAN BE TREATED IN THE FIELD. CARE SHOULD FOCUS ON MAINTAINING AIRWAY AND RAPID TRANSPORT

PEDIATRIC PROTOCOL

ANTI-EMETIC PROTOCOL >1 yr. OLD

3-5 kg	6-7 kg	8-9 kg	10-11 kg	12-14 kg	15-18 kg	19-23 kg	24-29 kg	30-36 kg
6-11 lbs	13-15 lbs	18-20 lbs	22-24 lbs	26-31 lbs	33-37 lbs	42-51 lbs	53-64 lbs	66-81 lbs
18-24 in	24-26 in	26-29 in	29-33 in	33-38 in	38-43 in	43-48 in	48-52 in	52-57 in

UNIVERSAL PATIENT CARE PROTOCOL

Administer Oxygen

IV PROCEDURE

Patient has Nausea / Vomiting

↓

ONDANSETRON (ZOFRAN)
0.15 mg / kg IM or IV
over 2 - 4 minutes > 1 Year
-or- 0.15 mg / kg Injectable Liquid PO > 1 Year
Max 4 mg

ONDANSETRON (ZOFRAN)
Oral Dissolving Tabs
4 mg Oral > 40 kg AND 12 years
Max 4 mg

↓

TRANSPORT to appropriate facility
CONTACT receiving facility
CONSULT Medical Direction where indicated
APPROPRIATE transfer of care

EMT Intervention | AEMT Intervention | PARAMEDIC Intervention | Online Medical Control

ANTI – EMETIC PROTOCOL

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
• Nausea • Vomiting • Medication(s) administration such as narcotic analgesics	• Complaints of nausea and / or vomiting	• Consider AMI / 12 lead EKG • Gastroenteritis • Toxic ingestion / food poisoning • Bowel obstruction • Appendicitis • Gastritis • Cholecystitis (gallbladder) • Hepatitis / cirrhosis • Headaches / migraine • Pregnancy • Hypertensive crisis • Electrolyte imbalances • DKA • Intracranial pressure • Sepsis / infections

KEY POINTS

- Position patient to protect airway as appropriate. (Recovery position, sitting up, etc.)
- Immediately position entire patient or their head to side if patient begins vomiting then retrieve suction.
- Patients with altered LOC and nausea / vomiting need to have airway maintenance prioritized before medication.
- Prepare and test suction prior to its need.
- Give Ondansetron (Zofran) over at least 2 minutes, slow IV. Follow up with second dose in if symptoms unresolved.
- Treat patients early, no need to wait for patient to begin vomiting to administer Ondansetron (Zofran).
- Patients receiving medications such as narcotic analgesics may require concurrent administration of Ondansetron (Zofran) to reduce nausea associated with such medications.

PEDIATRIC PROTOCOL

DIABETIC EMERGENCIES

3-5 kg	6-7 kg	8-9 kg	10-11 kg	12-14 kg	15-18 kg	19-23 kg	24-29 kg	30-36 kg
6-11 lbs	13-15 lbs	18-20 lbs	22-24 lbs	26-31 lbs	33-37 lbs	42-51 lbs	53-64 lbs	66-81 lbs
18-24 in	24-26 in	26-29 in	29-33 in	33-38 in	38-43 in	43-48 in	48-52 in	52-57 in

UNIVERSAL PATIENT CARE PROTOCOL

IV / IO PROCEDURE

BLOOD GLUCOSE PROCEDURE

Glucose < 60

ORAL GLUCOSE
5 - 10 g (1/2 Tube)
(If Alert with no IV Access and no airway compromise)

OR

DEXTROSE 10%
5 ml / kg IV / IO

⚠ If DEXTROSE 10% Is unavailable, see medication section for DEXTROSE 25% or 50%

OR

If no IV / IO Access
GLUCAGON (GLUCAGEN)
0.5 if < 20 kg
1 mg if > 20 kg
IM
Maximum 1 mg
May repeat if no change

Glucose > 250

Check for Hypotension, Tachycardia, Poor Cap Refill

NORMAL SALINE
20 ml / kg Bolus
Over 60 minutes
IF SIGNS OF DEHYDRATION

Recheck Blood Glucose

TRANSPORT to appropriate facility
CONTACT receiving facility
CONSULT Medical Direction where indicated
APPROPRIATE transfer of care

EMT Intervention | AEMT Intervention | PARAMEDIC Intervention | Online Medical Control

DIABETIC EMERGENCIES

HYPOGLYCEMIA

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
• Known diabetic, medic alert tag • Past medical history • Medications • Recent BGL	• Altered level of consciousness • Dizziness • Irritability • Diaphoresis • Convulsions • Hunger • Confusion	• ETOH • Toxic overdose • Trauma • Seizure • Syncope • CSN disorder • Stroke • Tumor • Pre-existing condition

HYPERGLYCEMIA

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
• Known diabetic, medic alert tag • Past medical history • Medications • Recent BGL	• Altered level of Consciousness / coma • Abdominal pain • Nausea / vomiting • Dehydration • Frequent thirst and urination • General weakness malaise • Hypovolemic shock • Hyperventilation • Deep / rapid respirations	• ETOH • Toxic overdose • Trauma • Seizure • Syncope • CSN disorder • Stroke • Diabetic ketoacidoss

If Dextrose 25% Not Available, Waste 25ml of Dextrose 50% and replace with 25ml normal saline

Fluid Resuscitate to systolic of 70 + 2 x age

KEY POINTS

Hyperglycemia:

- Diabetic Ketoacidosis (DKA) is a complication of diabetes mellitus. It can occur when insulin levels become inadequate to meet the metabolic demands of the body for a prolonged amount of time (onset can be within 12 - 24 hours). Without enough insulin the blood glucose increases, and cellular glucose depletes. The body removes excess blood glucose by dumping it into the urine. Pediatric patients in DKA should be treated as hyperglycemic under the Pediatric Diabetic Emergencies Protocol.
- Patients can have Hyperglycemia without having DKA.

Hypoglycemia:

- Always suspect Hypoglycemia in patients with an altered mental status.
- If a blood glucose analysis is not available, a patient with altered mental status and signs and symptoms consistent with hypoglycemia should receive Dextrose, or Glucagon (Glucagen).
    - Dextrose is used to elevate BGL but it will not maintain it. The patient will need to follow up with a meal, if not transported to a hospital.
- If the patient is alert and has the ability to swallow; consider administering oral glucose, have patient drink orange juice with sugar or a sugar containing beverage, or have the patient eat a candy bar or meal.
- Check the patient's BGL after the administration of Dextrose, Glucagon (Glucagen), or after any attempt to raise the patient's BGL.

Miscellaneous:

- If IV access is successful after Glucagon (Glucagen) IM and the patient is still symptomatic, Dextrose should be administered.

PEDIATRIC PROTOCOL

HYPERTHERMIA / HEAT EXPOSURE

3-5 kg	6-7 kg	8-9 kg	10-11 kg	12-14 kg	15-18 kg	19-23 kg	24-29 kg	30-36 kg
6-11 lbs	13-15 lbs	18-20 lbs	22-24 lbs	26-31 lbs	33-37 lbs	42-51 lbs	53-64 lbs	66-81 lbs
18-24 in	24-26 in	26-29 in	29-33 in	33-38 in	38-43 in	43-48 in	48-52 in	52-57 in

UNIVERSAL PATIENT CARE PROTOCOL

Document Patient Temperature

Remove Patient from Heat Source

Remove Patient Clothing

Apply Room Temperature Water to Patient Skin and Increase Air Flow Around Patient

CARDIAC MONITOR

CAPNOGRAPHY PROCEDURE

↓

IV / IO PROCEDURE
Fever: Normal Saline 20 ml / kg Bolus
Heat Exhaustion: Normal Saline 20 ml / kg Bolus
Heat Stroke: Normal Saline TKO

↓

Apply ICE PACKS to Patient (Groin, axilla, and posterior neck)

Monitor and Reassess

Appropriate Protocol Based on Patient Symptoms

↓

TRANSPORT to appropriate facility
CONTACT receiving facility
CONSULT Medical Direction where indicated
APPROPRIATE transfer of care

EMT Intervention | AEMT Intervention | PARAMEDIC Intervention | Online Medical Control

HYPERTHERMIA / HEAT EXPOSURE

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
• Age • Exposure to increased temperatures and humidity • Past medical history / medications • Extreme exertion • Time and length of exposure • Poor PO intake • Fatigue and / or muscle cramping	• Altered mental status or unconsciousness • Hot, dry or sweaty skin • Hypotension or shock • Seizures • Nausea	• Fever (infection) • Dehydration • Medications • Hyperthyroidism (storm) • Delirium tremens (DT's) • Heat cramps • Heat exhaustion • Heat stroke • CNS lesions or tumors

Heat Exhaustion: Dehydration	Heat Stroke: Cerebral Edema
• Muscular/abdominal cramping • General weakness • Diaphoresis • Febrile • Confusion • Dry mouth / thirsty • Tachycardia • BP normal or orthostatic hypotension	• Confusion • Bizarre behavior • Skin hot, dry, febrile • Tachycardia • Hypotensive • Seizure • Coma

Fluid Resuscitate to systolic of 70 + 2 x age

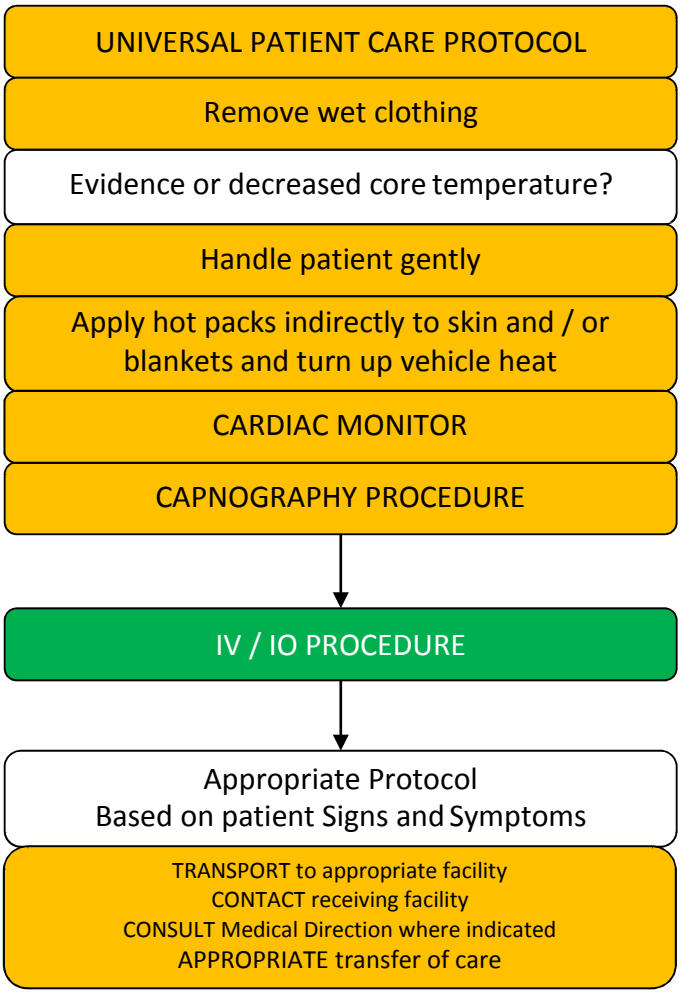
KEY POINTS

- Exam: Mental Status, Skin, HEENT, Heart, Lungs, Neuro
- Extremes of age are more prone to heat emergencies (i.e. young and old).
- Predisposed by use of: tricyclic antidepressants, phenothiazines, anticholinergic medications, and alcohol.
- Cocaine, Amphetamines, and Salicylates may elevate body temperatures.
- Sweating generally disappears as body temperature rises above 104° F (40° C).
- Intensive shivering may occur as patient is cooled.
- Heat Cramps consists of benign muscle cramping secondary to dehydration and is not associated with an elevated temperature.
- Heat Exhaustion consists of dehydration, salt depletion, dizziness, fever, mental status changes, headache, cramping, nausea and vomiting. Vital signs usually consist of tachycardia, hypotension, and an elevated temperature.
- Heat Stroke consists of dehydration, tachycardia, hypotension, temperature > 104° F (40° C), and altered mental status.
- Patients at risk for heat emergencies include neonates, infants, geriatric patients, and patients with mental illness. Other contributory factors may include heart medications, diuretics, cold medications and / or psychiatric medications.
- Heat exposure can occur either due to increased environmental temperatures or prolonged exercise or a combination of both. Environments with temperature > 90° F and humidity > 60% present the most risk.
- Heat stroke occurs when the cooling mechanism of the body (sweating) ceases due to temperature overload and / or electrolyte imbalances. Be alert for cardiac dysrhythmias for the patient with heat stroke.

PEDIATRIC PROTOCOL

HYPOTHERMIA / FROSTBITE

3-5 kg	6-7 kg	8-9 kg	10-11 kg	12-14 kg	15-18 kg	19-23 kg	24-29 kg	30-36 kg
6-11 lbs	13-15 lbs	18-20 lbs	22-24 lbs	26-31 lbs	33-37 lbs	42-51 lbs	53-64 lbs	66-81 lbs
18-24 in	24-26 in	26-29 in	29-33 in	33-38 in	38-43 in	43-48 in	48-52 in	52-57 in



EMT Intervention | AEMT Intervention | PARAMEDIC Intervention | Online Medical Control

HYPOTHERMIA / FROSTBITE

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
• Past medical history • Medications • Exposure to environment even in normal temperatures • Exposure to extreme cold • Extremes of age • Drug use: Alcohol, barbituates • Infections / sepsis • Length of exposure / wetness	• Cold, clammy • Shivering • Mental status changes • Extremity pain or sensory abnormality • Bradycardia • Hypotension or shock	• Sepsis • Environmental exposure • Hypoglycemia • CNS dysfunction • Stroke • Head injury • Spinal cord injury

KEY POINTS

- Exam: Mental Status, Heart, Lungs, Abdomen, Extremities, Neuro
- Hypothermic / drowning / near drowning patients that appear cold and dead are NOT dead until they are warm and dead, or have other signs of obvious death (putrification, traumatic injury unsustainable to life).
- Defined as core temperature < 95° F (35° C).
- Extremes of age are more susceptible (i.e. young and old).
- Patients with low core temperatures will not respond to ALS drug interventions. Maintain warming procedure and supportive care. Warming procedures includes removing wet clothing, limiting exposure, and covering the patient with warm blankets if available.
- Do not allow patients with frozen extremities to ambulate.
- Superficial frostbite can be treated by using the patient's own body heat.
- Do not attempt to rewarm deep frostbite unless there is an extreme delay in transport, and there is a no risk that the affected body part will be refrozen. Contact Medical Command prior to rewarming a deep frostbite injury.
- With temperature less than 88° F (31° C) ventricular fibrillation is common cause of death. Handling patients gently may prevent this. (rarely responds to defibrillation).
- If the temperature is unable to be measured, treat the patient based on the suspected temperature.
- Hypothermia may produce severe bradycardia.
- Shivering stops below 90° F (32° C).
- Hot packs can be activated and placed in the armpit and groin area if available.
- Care should be taken not to place the packs directly against the patient's skin.
- Consider withholding CPR if patient has organized rhythm. Discuss with Online Medical Control.
- All hypothermic patients should have resuscitation performed until care is transferred, or if there are other signs of obvious death (putrification, traumatic injury unsustainable to life).
- The most common mechanism of death in hypothermia is ventricular fibrillation. If the hypothermia victim is in ventricular fibrillation, CPR should be initiated. If V fib is not present, then all treatment and transport decisions should be tempered by the fact that V fib can be caused by rough handling, noxious stimuli or even minor mechanical disturbances, this means that respiratory support with 100% oxygen should be done gently, including intubation, avoiding hyperventilation.
- The heart is most likely to fibrillate between 85 - 88° F (29 - 31° C) Defibrillate VF / VT at 2 – 4 j / kg with effective CPR intervals.
- Do not allow patients with frozen extremities to ambulate.
- Superficial frostbite can be treated by using the patient's own body heat.
- Do not attempt to rewarm deep frostbite unless there is an extreme delay in transport, and there is a no risk that the affected body part will be refrozen. Contact Online Medical Control prior to rewarming a deep frostbite injury.

Airway / Breathing

Circulation / Shock

Cardiac

Medical

Trauma

PEDIATRIC PROTOCOL

SEIZURE

3-5 kg	6-7 kg	8-9 kg	10-11 kg	12-14 kg	15-18 kg	19-23 kg	24-29 kg	30-36 kg
6-11 lbs	13-15 lbs	18-20 lbs	22-24 lbs	26-31 lbs	33-37 lbs	42-51 lbs	53-64 lbs	66-81 lbs
18-24 in	24-26 in	26-29 in	29-33 in	33-38 in	38-43 in	43-48 in	48-52 in	52-57 in

UNIVERSAL PATIENT CARE PROTOCOL

PEDIATRIC AIRWAY PROTOCOL

CAPNOGRAPHY PROCEDURE

Position on side to prevent aspiration

Febrile?

Yes → COOLING MEASURES

No

BLOOD GLUCOSE PROCEDURE

IV PROCEDURE

Evidence of Shock or Trauma? → See Appropriate Protocol

Active Seizure?

Glucose < 60

Yes

ORAL GLUCOSE
5 - 10 g (1/2 Tube)
(If Alert with no IV Access)
If no airway compromise

OR

DEXTROSE 10%
5 ml / kg IV / IO

⚠ If DEXTROSE 10% Is unavailable, see medication section for DEXTROSE 25% or 50%

OR

GLUCAGON (GLUCAGEN)
0.5 if < 20 kg
1 mg if > 20 kg
IM / IN Atomized
(If no IV / IO Access)
Maximum 1 mg
May repeat if no change

MIDAZOLAM (VERSED)
0.1 mg / kg IV / IO
Max Dose 2 mg
or
0.2 mg / kg IM / IN
Max Dose 5 mg
or
LORazepam (ATIVAN) 0.05 – 0.1 mg / kg slow IV / IO / IN
Max Dose 2 mg

⚠ If Midazolam (Versed) or LORazepam (Ativan) Unavailable,
See Medication Section for DiazePAM (Valium)

TRANSPORT to appropriate facility
CONTACT receiving facility
CONSULT Medical Direction where indicated
APPROPRIATE transfer of care

EMT Intervention | AEMT Intervention | PARAMEDIC Intervention | Online Medical Control

SEIZURE

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL
• Fever • Prior history of seizures • Seizure medications • Reported seizure activity • History of recent head trauma • Congenital abnormality	• Observed seizure activity • Altered mental status • Hot, dry skin or elevated body temperature	• Fever • Infection • Head trauma • Medication or toxin • Hypoxia or respiratory failure • Hypoglycemia • Metabolic abnormality / acidosis • Tumor

Categories of Seizures

Complex = Unconscious	Focal = Partial, Localized
Simple = Conscious	Generalized = All Body

- Simple Focal
- Simple Generalized
- Complex Focal
- Complex Generalized

If Dextrose 25% Not Available, Waste 25ml of Dextrose 50% and replace with 25ml normal saline

KEY POINTS
• Exam: Mental Status, HEENT, Heart, Lungs, Extremities, Neuro • Status Epilepticus is defined as two or more successive seizures without a period of consciousness or recovery. This is a true emergency requiring rapid airway control, treatment, and transport. • Grand mal seizures (generalized) are associated with loss of consciousness, incontinence, and tongue trauma. • Focal seizures (petit mal) effect only a part of the body and are not usually associated with a loss of consciousness. • Jacksonian seizures are seizures, which start as a focal seizure and become generalized. • Be prepared to assist ventilations especially if a benzodiazepine such as LORAZEPAM (ATIVAN) or MIDAZOLAM (VERSED) is used. • If evidence or suspicion of trauma, spine should be immobilized. • If febrile, remove clothing and sponge with room temperature water. • In an infant, a seizure may be the only evidence of a closed head injury. • Older than 6 years and febrile, it's not considered a febrile seizure.

PEDIATRIC PROTOCOL

SEVERE PAIN MANAGMENT

3-5 kg	6-7 kg	8-9 kg	10-11 kg	12-14 kg	15-18 kg	19-23 kg	24-29 kg	30-36 kg
6-11 lbs	13-15 lbs	18-20 lbs	22-24 lbs	26-31 lbs	33-37 lbs	42-51 lbs	53-64 lbs	66-81 lbs
18-24 in	24-26 in	26-29 in	29-33 in	33-38 in	38-43 in	43-48 in	48-52 in	52-57 in

PATIENT HAS:

- Burns
- Intractable Flank Pain
- Intractable Back Pain
- Musculoskeletal and / or Fracture Pain
- Sickle Cell Pain Crisis (Use Supplemental O2)
- Unremitting Abdominal Pain

CARDIAC MONITOR

CAPNOGRAPHY PROCEDURE

fentaNYL (SUBLIMAZE)
1 mcg / kg IV / IO/ IN / IM up to 50 mcg / dose
REPEAT If no Improvement in 10 – 15 Mins
Up to Max 100 mcg total

⚠ If fentaNYL (Sublimaze) is unavailable, see medication section for Morphine Sulfate

Monitor Airway, Breathing, Vitals

TRANSPORT to appropriate facility
CONTACT receiving facility
CONSULT Medical Direction where indicated
APPROPRIATE transfer of care

Pain Other Than Listed
Contact Online Medical Control

NOT FOR
Altered Mentation,
Traumatic Abdominal Pain, Head Trauma, Hypovolemia, Multiple Trauma

CAPNOGRAPHY REQUIRED
If Administering Analgesics to Trauma Patients Not Listed Above

EMT Intervention | AEMT Intervention | PARAMEDIC Intervention | Online Medical Control

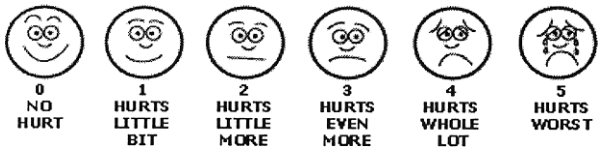
SEVERE PAIN MANAGEMENT

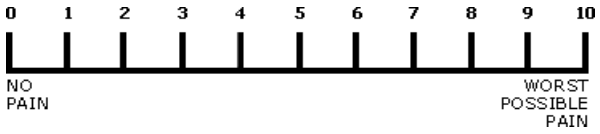
HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
· Age / onset · Location · Duration · Severity (0 - 10) · Past medical history · Medications · Drug allergies	· Severity (pain scale) · Quality (sharp, dull, etc.) · Radiation · Relation to movement, respiration · Increased with palpation of area	· Per the specific protocol · Musculoskeletal · Visceral (abdominal) · Cardiac · Pleuritic (respiratory) · Neurogenic · Renal (colic)

PAIN SCALE

The Wong-Baker Faces Pain Rating Scale

Designed for children aged 3 years and older, the Wong-Baker Faces Pain Rating Scale is also helpful for elderly patients who may be cognitively impaired. If offers a visual description for those who don't have the verbal skills to explain how their symptoms make them feel.





To use this scale, your doctor should explain that each face shows how a person in pain is feeling. That is, a person may feel happy because he or she has no pain (hurt), or a person may feel sad because he or she has some or a lot of pain.

A Numerical Pain Scale

A numerical pain scale allows you to describe the intensity of your discomfort in numbers ranging from 0 to 10 (or greater, depending on the scale). Rating the intensity of sensation is one way of helping your doctor determine treatment. Numerical pain scales may include words or descriptions to better label your symptoms, from feeling no pain to experiencing excruciating pain. Some researchers believe that this type of combination scale may be most sensitive to gender and ethnic differences in describing pain.

KEY POINTS

- Exam: Mental Status, Area of Pain, Neuro
- Pain is an unpleasant sensory and emotional experience associated with actual or potential tissue damage.
- Pain is subjective (whatever the patient says it is).
- Pain severity (0-10) is a vital sign to be recorded pre and post medication delivery and at disposition.
- Vital signs should be obtained pre, 10 minutes post, and at disposition with all pain medications.
- Contraindications to morphine use include hypotension, head injury, and respiratory distress.
- All patients should have drug allergies documented prior to administering pain medications.
- All patients who receive pain medications must be observed 15 minutes for drug reaction.
- All patients who receive medication for pain must have continuous ECG monitoring, pulse oximetry, and oxygen administration.
- The patient's vital signs must be routinely reassessed.
- Routine assessments and reassessments must be documented on the run report.
- Have Naloxone (Narcan) on hand if the patient has respiratory depression or hypotension after fentanyl (SUBLIMAZE) administration.
- *NOT FOR* Altered Mentation, Traumatic Abdominal Pain, Head Trauma, Hypovolemia, Multiple Trauma

Airway / Breathing | Circulation / Shock | Cardiac | Medical | Trauma

PEDIATRIC PROTOCOL

TOXIC INGESTION / EXPOSURE / OVERDOSE

3-5 kg	6-7 kg	8-9 kg	10-11 kg	12-14 kg	15-18 kg	19-23 kg	24-29 kg	30-36 kg
6-11 lbs	13-15 lbs	18-20 lbs	22-24 lbs	26-31 lbs	33-37 lbs	42-51 lbs	53-64 lbs	66-81 lbs
18-24 in	24-26 in	26-29 in	29-33 in	33-38 in	38-43 in	43-48 in	48-52 in	52-57 in

UNIVERSAL PATIENT CARE PROTOCOL

AIRWAY PROTOCOL
Monitor Lung Sounds for Fluid Overload

OXYGEN

IV / IO PROCEDURE

Apply Cardiac Monitor and Assess Vitals

CAPNOGRAPHY PROCEDURE

Decontaminate and remove clothes if patient is exposed to any dangerous or noxious substances

Narcotic Overdose AMS / Respiratory Depression

TAKE PPE PRECAUTIONS
GLOVES / MASK minimum
Contact / aerosol risk with fentanyl-based substances

ASSURE BLS VENTILATION WITH BVM

Support Hemodynamically
Utilize Shock Protocol

NALOXONE (NARCAN)
1 mg IN Atomized
SUMMON ALS IF NO REPSONSE TO IN DOSE

NALOXONE (NARCAN)
0.1 mg / kg
IV / IM / IN / IO

May repeat every 2 min as necessary if obvious or suspected opiate OD until respiratory improvement or 12 mg Max

If patient is unresponsive to Naloxone (Narcan), supply is exhausted, or the medication is unavailable, consider Advanced Airway and Support Hemodynamically

Tricyclic Anti – Depressants / Sodium Channel Blocker

Patient on any TRICYCLIC listed below or otherwise with QRS > 0.12

Adapin	Doxepin
Anafranil	Clomipramine
Elavil	Amitriptyline
Endep	Maprotine
Ludiomil	Desipramine
Norpramin	Doxepin
Pamelor	Nortryptyline
Pertofran	Trimipramine
Sinequa	Imipramine

SODIUM BICARBONATE
1 mEq / kg
Until QRS narrows / condition improves
Max dose 50 mEq / dose

Beta Blocker / Calcium Channel Blocker

TRANSCUTANEOUS PACING PROCEDURE

IV NORMAL SALINE BOLUS
20 ml / kg
May Repeat up to 3 times as required

Contact Medical Control for the use of vasopressors if failed fluid bolus
DOPamine (INTROPIN)
Drip
5 - 20 mcg / kg / min IV / IO
OR
EPINEPHrine (Adrenaline)
Drip 0.1 – 0.5 mcg / kg / min IV / IO
Titrate to effect

Treat with specific antidote

Calcium Channel Blockers OD
CALCIUM GLUCONATE
60 mg / kg max
3 grams
Over 10 min
or
CALCIUM CHLORIDE
20 mg / kg IV / IO
Max 1 gram

Organophosphates / Carbamates

ATROPINE
0.05 mg kg – max 1 mg per dose - IV / IO
Repeat every 3 – 5 Minutes or as needed to control secretions

⚠ Given to dry secretions
⚠ No max dose
⚠ Large doses likely necessary

TRANSPORT to appropriate facility CONTACT receiving facility CONSULT Medical Direction where indicated APPROPRIATE transfer of care

EMT Intervention | AEMT Intervention | PARAMEDIC Intervention | MED CONTROL Consult

TOXIC INGESTION / EXPOSURE /OVERDOSE

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
• Ingestion or suspected ingestion of a potentially toxic substance • Substance ingested, route, quantity • Time of ingestion • Reason (suicidal, accidental, criminal) • Available medications in home • Past medical history, medications	• Mental status changes • Hypo / hypertension • Decreased respiratory rate • Tachycardia, dysrhythmias • Seizures	• Tricyclic antidepressants (TCAs) • Acetaminophen (Tylenol) • Depressants • Stimulants • Anticholinergic • Cardiac medications • Solvents, alcohols, Cleaning agents • Insecticides (organophosphates) • Respiratory depression • Carbamates

COMMON BETA BLOCKERS			
Acebutolol	Carvedilol	Labetolol	Propranolol
Atenolol	Coreg	Levatol	Sectral
Betapace	Corgard	Lopressor	Sotalol
Betoxolol	Esmolol	Metoprolol	Tenormin
Bisoprolol	Inderal	Nadolol	Timolol
Brevibloc	Innopran XL	Nebivolol	Trandate
Bystolic	Kerlone	Pindolol	Zebeta
COMMON CALICUM CHANNEL BLOCKERS			
	Cardene	Lacidipine	Nitrepin
Adalat	Cardifen	Lacipil	Nivadil
Amlodipine	Cardizem	Landel	Norvasc
Aranidipine	Cilnidipine	Lercanidipine	Plendil
Atelec	Cinalong	Madipine	Pranidipine
Azelnidipine	Clevidipine	Manidipine	Procardia
Barnidipine	Cleviprex	Motens	Procorum
Baylotensin	Coniel	Nicardipine	Sapresta
Baymycard	Diltiazem	Nifedipine	
Benidipine	Efonidipine	Nilvadipine	Sular
Calan	Felodipine	Nimodipine	Syscor
Calblock	Gallopamil	Nimotop	Verapamil
Calslot	HypoCa	Nisoldipine	Zanidip
Carden SR	Isoptin	Nitrendipine	

POISON CONTROL 1-800-222-1222

KEY POINTS

- Exam: Mental Status, Skin, HEENT, Heart, Lungs, Abdomen, Extremities, Neuro
- Do not rely on patient history of ingestion, especially in suicide attempts.
- Bring bottles, contents, and emesis to ED.
- Tricyclic: 4 major areas of toxicity: seizures, dysrhythmias, hypotension, decreased mental status or coma; rapid progression from alert mental status to death.
- Acetaminophen: initially normal or nausea / vomiting. If not detected and treated, causes irreversible liver failure.
- Depressants: decreased HR, decreased BP, decreased temperature, decreased respirations, non-specific pupils.
- Stimulants: increased HR, increased BP, increased temperature, dilated pupils, and seizures.
- Anticholinergics: increased HR, increased temperature, dilated pupils, and mental status changes.
- Cardiac Medications: dysrhythmias and mental status changes.
- Solvents: nausea, vomiting, and mental status changes.
- Insecticides: increased or decreased HR, increased secretions, nausea, vomiting, diarrhea, pinpoint pupils.
- Consider restraints if necessary for patient's and / or personnel's protection per the Restraint Procedure.
- If it can be done safely, take whatever container the substance came from to the hospital along with readily obtainable samples of medication unless this results in an unreasonable delay of transport.
- If applicable, DO NOT transport a patient to the hospital until properly decontaminated.
- Medical Direction may order antidotes for specific ingestions.
- DO NOT use syrup of ipecac.
- Be aware of AMS as potential sign of an environmental toxin or Haz-Mat exposure and protect personal safety.
- It is safer to assume hypoglycemia than hyperglycemia if doubt exists.
- Do not let alcohol confuse the clinical picture. Alcoholics frequently develop hypoglycemia and need Thiamine before glucose.
- Low glucose (< 60), normal glucose (60 - 120), high glucose (> 250).
- Protect the patient airway and support ABCs.
- Document the patient's Glasgow coma score pre and post treatment.
- Signs and symptoms of narcotic overdose include respiratory depression and altered mental status.
- Naloxone (Narcan) administration may cause the patient to go into acute opiate withdrawal, which includes vomiting, agitation, and / or combative behavior. Always be prepared for combative behavior.
- Naloxone (Narcan) may wear off in as little as 20 minutes causing the patient to become more sedate and possibly hypoventilate. All A&O 4 patients having received Naloxone (Narcan) should be transported. If patient refuses transport, contact Online Medical Control before release.

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SECTION 11 - PEDIATRIC TRAUMA PROTOCOLS

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TRAUMA EMERGENCIES

The Golden Period

GUIDELINES FOR LOAD AND GO TRAUMA TRANSPORTS

INDICATIONS

- Uncorrectable airway obstruction
- Tension pneumothorax
- Pericardial tamponade
- Penetrating chest wounds with signs of shock
- Hemothorax with signs of shock
- Head trauma with unilaterally dilated pupils
- Head trauma with rapidly deteriorating condition
- Unconsciousness

KEY POINTS
• A trauma victim is a pediatric patient if they are less than 16 years old. • Once the patient is determined to be an actual or potential major trauma / multiple system patient, personnel on scene and / or medical control must quickly determine the appropriate course of action including: 1. Requesting aeromedical evacuation from scene. See AEROMEDICAL TRANSPORT PROCEDURE. 2. Ground transportation directly to an appropriate facility. • Major trauma patients are to be transported to the closest Trauma Center. • Contact the receiving hospital for all major trauma or critical patients. • Cover open wounds, burns, and eviscerations. • Except for airway control, initiate ALS enroute when transporting major trauma patients. • If the EMT is unable to access patient airway and ventilate, transport to the closest facility for airway stabilization. • The on-scene time for major trauma patients should not exceed 10 minutes without a documented, acceptable reason for the delay. • All major trauma patients should receive oxygen administration, an IV(s), and cardiac monitoring. • Provide a documented reason if an intervention could not be performed. Mass Casualty Incidents (MCI) • Upon arrival at an MCI, the first arriving unit should notify their dispatch of the need to implement the mass casualty plan, call for additional resources, establish a safe staging area, and estimate the total number of victims. • Each EMS service has a pre-defined coordinating hospital based on their county's mass casualty plan. It is the responsibility of the responding jurisdiction to notify their appropriate coordinating hospital as soon as possible, giving a brief description of the incident and the estimated number of victims. The coordinating hospital will then notify the receiving hospitals of the MCI. The transportation officer should maintain a constant contact with the coordinating hospital until the scene has been cleared of salvageable victims.

THE GOLDEN PERIOD FOR THE PATIENT BEGINS WHEN THE TRAUMA HAPPENS
DO NOT WASTE VALUABLE TIME ON SCENE

TRAUMA GUIDELINES

Emergency medical service personnel shall use the following criteria, consistent with their certification, to evaluate whether an injured person qualifies as an adult trauma victim or pediatric trauma victim, in conjunction with the definition of trauma according to the State of Ohio Trauma Triage Guidelines.

A Pediatric Trauma Victim is a person < 16 years of age exhibiting one or more of the following physiologic or anatomic conditions

Physiologic conditions	Anatomic conditions
▪ Glasgow Coma Scale < 13; ▪ Loss of consciousness > 5 minutes; ▪ Deterioration in level of consciousness at the scene or during transport; ▪ Failure to localize to pain; ▪ Evidence of poor perfusion, or evidence of respiratory distress or failure.	▪ Penetrating trauma to the head, neck, or torso; ▪ Significant, penetrating trauma to extremities proximal to the knee or elbow with evidence of neurovascular compromise; ▪ Injuries to the head, neck, or torso where the following physical findings are present; ▪ Visible crush injury; ▪ Abdominal tenderness, distention, or seatbelt sign; ○ Pelvic fracture; ○ Flail chest; ▪ Injuries to the extremities where the following physical findings are present: ○ Amputations proximal to the wrist or ankle; ○ Visible crush injury: ○ Fractures of two or more proximal long bones; ○ Evidence of neurovascular compromise. ▪ Signs or symptoms of spinal cord injury; ▪ 2nd or 3rd Degree burns > 10% total BSA, or other significant burns involving the face, feet, hands, genitalia, or airway.

Field Trauma Triage Criteria: Mechanism of Injury (MOI) & Special Considerations

Co-Morbid Diseases and Special Considerations	Mechanisms of Injury (MOI)
▪ Age < 5 or > 55 ▪ Cardiac disease ▪ Respiratory disease ▪ Diabetes ▪ Immunosuppression ▪ Morbid obesity ▪ Pregnancy ▪ Substance abuse / intoxication ▪ Liver disease ▪ Renal disease ▪ Bleeding disorder / anticoagulation	▪ High speed MVC ▪ Ejection from vehicle ▪ Vehicle rollover ▪ Death in same passenger compartment ▪ Extrication time > 20 minutes ▪ Falls greater than 20 feet ▪ Vehicle versus bicycle / pedestrian ▪ Pedestrian struck, thrown or run over ▪ Motorcycle crash > 20 mph with separation of rider from bike ▪ Fall from any height, including standing, with signs of traumatic brain injury

KEY POINTS

Exceptions to Mandatory Transport to a Trauma Center:

- Emergency Medical Service personnel shall transport a trauma victim directly to an adult or pediatric trauma center that is qualified to provide appropriate adult or pediatric care, unless one or more of the following exceptions apply:

  1. It is medically necessary to transport the victim to another hospital for initial assessment and stabilization before transfer to an adult or pediatric trauma center;
  2. It is unsafe or medically inappropriate to transport the victim directly to an adult or pediatric trauma center due to adverse weather or ground conditions or excessive transport time;
  3. Transporting the victim to an adult or pediatric trauma center would cause a shortage of local emergency medical service resources;
  4. No appropriate adult or pediatric trauma center can receive and provide adult or pediatric trauma care to the trauma victim without undue delay;
  5. Before transport of a patient begins, the patient requests to be taken to a hospital that is not a trauma center or, if the patient is less than eighteen years of age or is not able to communicate, such a request is made by an adult member of the patient's family or a legal representative of the patient.

Glasgow Coma Scale

INFANT		ADULT
Birth to age 4	Eye Opening	*Age 4 to Adult*
4 Spontaneously		Spontaneously 4
3 To speech		To command 3
2 To pain		To pain 2
1 No response		No Response 1
	Best Verbal Response	
5 Coos, babbles		Oriented 5
4 Irritable cries		Confused 4
3 Cries to pain		Inappropriate words 3
2 Moans, grunts		Incomprehensible 2
1 No response		No response 1
	Best Motor Response	
6 Spontaneous		Obeys commands 6
5 Localizes pain		Localizes pain 5
4 Withdraws from pain		Withdraws from pain 4
3 Flexion (decorticate)		Flexion (decorticate) 3
2 Extension (decerebrate)		Extension (decerebrate) 2
1 No response		No response 1
___ = TOTAL		TOTAL = ___

NOTS PEDIATRIC TRAUMA FIELD TRIAGE

Step 1- Measure vital signs and level of consciousness of patient with a traumatic mechanism

- Glasgow Coma Scale < 13 with traumatic mechanism
- Age specific hypotension and/or
- Requiring airway/ventilator support

Step 2- Assess anatomy of injury

- Significant penetrating injuries to the head, neck, torso or extremities proximal the elbow or knee
- Two or more proximal long-bone fractures
- Crushed, degloved, threatened, pulseless or mangled extremity
- Amputation proximal to wrist or ankle
- Pelvic fractures
- Open or depressed skull fracture
- Paralysis

NOTS Transfer Line:
1-216-778-7850

Scene Referrals

Level I Pediatric Trauma Center:
Rainbow Babies and Children's Hospital- 1-877-842-3822

Level II Pediatric Trauma Center:
MetroHealth Medical Center- 1-800-233-5433

Red/Priority 1
Take to a Pediatric Trauma Center. If transport to a Pediatric Trauma center will add greater than 15 minutes, transport to the nearest trauma center.

Step 3- Assess mechanism of injury and evidence of high-energy impact

- Falls
  - 10 ft. or 2-3 times the height of the child
- High-risk auto crash
  - Intrusion: Including roof: > 12 in. occupant site, >18 in. any site
  - Extrication time over 20 minutes
  - Ejection (partial or complete) from automobile
  - Death in same passenger compartment
  - Vehicle telemetry data consistent with high risk of injury
- Auto vs. Pedestrian/Bicyclist thrown, run over or with significant (> 20 mph) impact
- Motorcycle crash > 20 mph
- Other motorized equipment crashes where the patient has the potential of significant injury
- Signs of/suspicion of abuse

Step 4-Assess special patient or system considerations of trauma patients

- Anticoagulant and bleeding disorders on prescription blood thinners
- Significant burns (+/- trauma mechanism) or inhalation injury, chemical injury electrical injury or frostbite triage to burn center.
- Open fractures regardless
- Pregnancy > 20 weeks gestation
- EMS Provider Judgment- When in doubt transfer to a trauma center

Yellow/Priority 2
Transport patient to nearest trauma center within trauma system, need not be the highest level of trauma center

Step 5- Patients not meeting above criteria

Green/Priority 3
Transport to the closest appropriate emergency department

ABDOMINAL TRAUMA

3-5 kg	6-7 kg	8-9 kg	10-11 kg	12-14 kg	15-18 kg	19-23 kg	24-29 kg	30-36 kg
6-11 lbs	13-15 lbs	18-20 lbs	22-24 lbs	26-31 lbs	33-37 lbs	42-51 lbs	53-64 lbs	66-81 lbs
18-24 in	24-26 in	26-29 in	29-33 in	33-38 in	38-43 in	43-48 in	48-52 in	52-57 in

Pediatric Multiple Trauma Protocol if criteria

UNIVERSAL PATIENT CARE PROTOCOL

PEDIATRIC AIRWAY PROTOCOL

CONSIDER SPINAL MOTION RESTRICTION PROCEDURE

Determine if Load & Go

Control Hemorrhage / Dress Wounds

CAPNOGRAPHY PROCEDURE

Evisceration: Cover, clean saline dressing to loosely stabilize

Penetrating Object: Cover, clean saline dressing – Immobilize object. If too large to transport – attempt to cut with care not to further injure tissue

Penetrating Wounds: Cover, clean saline dressing. Look for exitwound

Blunt Trauma: Assess for change – distention. Note mechanism

IV / IO PROCEDURE
Normal Saline Bolus to maintain SBP

Monitor and Reassess

TRANSPORT to appropriate facility
CONTACT receiving facility
CONSULT Medical Direction where indicated
APPROPRIATE transfer of care

ABDOMINAL TRAUMA

MECHANISM	SIGNS & SYMPTOMS
• Blunt	• Altered mental status • Shock • Distention • Swelling • Bulging • Nausea and vomiting
• Penetrating	• Altered mental status • Bleeding • Tenderness • Pain • Distention • Eviseration • Discoloration • Entrance / exit wounds • Nausea & vomiting

Fluid Resuscitate to systolic of 70 + 2 x age

KEY POINTS
Trauma to the abdomen is either Blunt or Penetrating. Blunt injuries are harder to detect and diagnose, and have a death rate twice that of penetrating wounds. Key signs and symptoms of blunt trauma include a patient in shock with no obvious injuries. Distention of the abdomen is an indication of internal hemorrhage. Pain may not be a significant factor. Many abdominal trauma injuries are Load & Go cases. • Look for both an entrance and exit wound for all penetrating trauma, and treat accordingly. • For all major trauma patients, the on scene time should be less than ten minutes.

Airway / Breathing

Circulation / Shock

Cardiac

Medical

Trauma

PEDIATRIC PROTOCOL

BURNS

3-5 kg	6-7 kg	8-9 kg	10-11 kg	12-14 kg	15-18 kg	19-23 kg	24-29 kg	30-36 kg
6-11 lbs	13-15 lbs	18-20 lbs	22-24 lbs	26-31 lbs	33-37 lbs	42-51 lbs	53-64 lbs	66-81 lbs
18-24 in	24-26 in	26-29 in	29-33 in	33-38 in	38-43 in	43-48 in	48-52 in	52-57 in

UNIVERSAL PATIENT CARE PROTOCOL

CONSIDER SPINAL MOTION RESTRICTION PROCEDURE

PEDIATRIC AIRWAY PROTOCOL

CAPNOGRAPHY PROCEDURE

If Chest, Neck, Face, Airway Involvement – Prepare for Invasive Airway Procedures
Perform Early Intubation

Remove rings, bracelets, and other constricting items

Thermal

If burn < 10% body surface area (using rule of nines)
Cool down wound with NORMAL SALINE and dressings

Cover burn with dry sterile sheet or dressings

IV / IO PROCEDURE
Only if Burns ≥ 15% (KVO Otherwise)
AGE 0 - 5 - Then 20 drops / min (Macrodrip set)
AGE 6 - 13 – Then 40 drops / min (Macrodrip set)
AGE 13 + - Then 60 drops / min (Macrodrip set)

PEDIATRIC SEVERE PAIN PROTOCOL

Chemical

Eye Injury
Continuous flushing with Normal Saline

Remove clothing and / or expose area

Flush area with NORMAL SALINE for 10 – 15 minutes

IV / IO PROCEDURE

PEDIATRIC SEVERE PAIN PROTOCOL

INITATE TRAUMA ALERT

TRANSPORT to appropriate facility
CONTACT receiving facility
CONSULT Medical Direction where indicated
APPROPRIATE transfer of care

EMT Intervention | AEMT Intervention | PARAMEDIC Intervention | Online Medical Control

BURNS

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
· Type of exposure (heat, gas, chemical) · Inhalation injury · Time of injury · Past medical history · Medications · Other trauma · Loss of consciousness · Tetanus / immunization status	· Burns, pain, swelling · Dizziness · Loss of consciousness · Hypotension / shock · Airway compromise / distress · Singed facial or nasal hair · Hoarseness / wheezing	· Superficial (1°) red and painful · Partial thickness (2°) superficial partial thickness, deep partial thickness, blistering · Full thickness (3°) painless and charred or leathery skin · Chemical · Thermal · Electrical · Radiation

KEY POINTS

- Exam: Mental Status, HEENT, Neck, Heart, Lungs, Abdomen, Extremities, Back, Neuro
- Early intubation is required in significant inhalation injuries with airway compromise.
- Critical Burns: >25% body surface area (BSA); full thickness burns >10% BSA; partial thickness superficial partial thickness, deep partial thickness, and full thickness burns to face, eyes, hand or feet; electrical burns; respiratory burns; deep chemical burns; burns with extremes of age or chronic disease; and burns with associated major traumatic injury. These burns may require hospital admission or transfer to a burn center.
- Potential CO exposure should be treated with 100% oxygen.
- Circumferential burns to extremities are dangerous due to potential vascular compromise partial thickness to soft tissue swelling.
- Burn patients are prone to hypothermia – Never apply ice or cool burns that involve >10% body surface area.
- Do not overlook the possibility of multiple system trauma.
- Do not overlook the possibility of child abuse with children and burn injuries.
- See appendix for rule of nines.

1. Thermal (dry and moist):
   a. Stop burning process: i.e. remove patient from heat source, cool skin, remove clothing
   b. If patient starts to shiver or skin is cool, stop cooling process.
   c. Estimate extent (%) and depth of burn (see chart). Determine seriousness (see chart) of burn, contact Medical Control and transport accordingly. Cover burn areas with sterile dressing.
2. Radiation Burns:
   a. Treat as thermal burns except when burn is contaminated with radioactive source, then treat as chemical burn.
   b. Wear appropriate protective clothing when dealing with contamination.
   c. Contact HAZ MAT TEAM for assistance in contamination cases.
3. Chemical Burns:
   a. Wear appropriate protective clothing and respirators.
   b. Remove patient from contaminated area to decontamination site (NOT SQUAD).
   c. Determine chemicals involved; contact appropriate agency for chemical information.
   d. Remove patient's clothing and flush skin.
   e. Leave contaminated clothes at scene. Cover patient over and under before loading into squad.
   f. Patient should be transported by personnel not involved in decontamination process.
   g. Determine severity (see chart), contact Medical Control and transport accordingly.
   h. Relay type of substance involved to Medical Control.
4. Electrical Burns:
   a. Shut down electrical source; do not attempt to remove patient until electricity is CONFIRMED to be shut off.
   b. Assess for visible entrance and exit wounds and treat as thermal burns.
   c. Assess for internal injury, i.e., vascular damage, tissue damage, fractures, and treat accordingly.
   d. Determine severity of burn, contact Online Medical Control and transport accordingly.
5. Inhalation Burns:
   a. Always suspect inhalation burns when the patient is found in closed smoky environment and / or exhibits any of the following: burns to face / neck, singed nasal hairs, cough and / or stridor, soot in sputum.
   b. Provide oxygen therapy, contact Online Medical Control and transport.

- Handle patients gently to avoid further damage of the patient's skin.
- If the patient is exposed to a chemical, whenever possible, get the name of the chemical, and document it on the patient run report. DO NOT transport any hazardous materials with the patient.
- Look for signs of dehydration and shock.
- Initiate early intubation for symptomatic patients with inhalation burns.
- Patients with major burns should be transported to a Regional Burn Center.
- Patients with unstable airway or who are rapidly deteriorating should be transported to the closest appropriate facility.
- Patients with large surface burns lose the ability to regulate their body temperature. Avoid heat loss by covering the patient.

PEDIATRIC PROTOCOL

CHEST TRAUMA

3-5 kg	6-7 kg	8-9 kg	10-11 kg	12-14 kg	15-18 kg	19-23 kg	24-29 kg	30-36 kg
6-11 lbs	13-15 lbs	18-20 lbs	22-24 lbs	26-31 lbs	33-37 lbs	42-51 lbs	53-64 lbs	66-81 lbs
18-24 in	24-26 in	26-29 in	29-33 in	33-38 in	38-43 in	43-48 in	48-52 in	52-57 in

UNIVERSAL PATIENT CARE PROTOCOL

SPINAL MOTION RESTRICTION PROCEDURE

AIRWAY PROTOCOL

HIGH FLOW OXYGEN

CAPNOGRAPHY PROCEDURE

If S&S of Tension Pneumothorax
(No lung sounds on affected side, Hypotension, JVD)
NEEDLE CHEST DECOMPRESSION PROCEDURE

IV / IO PROCEDURE
Normal Saline Bolus to maintain SBP / Radial Pulses

APPLY CARDIAC MONITOR

↓

Cardiac Tamponade: Assess for + Beck's Triad (Hypotension, + JVD and muffled heart sounds). Paradoxical Pulse (no radial pulse when breathing in) is likely. LOAD AND GO

Massive Hemothorax: Shock, then difficulty breathing. No JVD, decreased breath sounds, dull to percussion. LOAD AND GO

Open Pneumothorax / Sucking Chest Wound: Occlusive dressing secured on three sides or Commercial Chest Seal, allowing air escape. Prepare for tension pneumothorax. LOAD AND GO

Flail Chest: Stabilize flail segment with manual pressure then apply bulky dressing and tape. LOAD AND GO

Suspected: Traumatic Aortic Rupture, Tracheal or Bronchial Tree Injury, Myocardial Contusion, Diaphragmatic Tears, Esophageal Injury, Pulmonary Contusion:
Ensure an Airway, Administer Oxygen, LOAD AND GO

↓

INITATE TRAUMA ALERT

TRANSPORT to appropriate facility
CONTACT receiving facility
CONSULT Medical Direction where indicated
APPROPRIATE transfer of care

EMT Intervention | AEMT Intervention | PARAMEDIC Intervention | Online Medical Control

CHEST TRAUMA

SIGNS AND SYMPTOMS

SIMPLE PNEUMOTHORAX	OPEN PNEUMOTHORAX	TENSION PNEUMOTHORAX	HEMOTHORAX
• Shortness of breath • Dyspnea • Tachypnea • Cyanosis • Chest pain • Absent diminished Lung sounds on the affected side	• Shortness of breath • Dyspnea • Cyanosis • Sucking chest wound • Shock • Absent / diminished Lung sounds on affected side	• Shortness of breath • Cyanosis • Shock • Absent / diminished Lung sounds • Tracheal deviation • Hypotension • JVD • Tachycardia • Dyspnea (late sign)	• Shortness of breath • Dyspnea • Cyanosis • Dullness to Percussion sounds • Flat neck veins • Hypotension • Shock • Absent / diminished breath sounds • Tachycardia

CARDIAC TAMPONADE	TRAUMATIC ASPHYXIA	FLAIL CHEST
• Hypotension • Decreasing pulse pressure • Elevated neck veins • Muffled heart tones • Bruising over the sternum • Tachycardia	• Bloodshot, bulging eyes • Blue, bulging tongue • JVD • Cyanotic upper body	• Paradoxical chest wall movement • Asymmetric chest movement Upon inspiration • Dyspnea • Unstable chest segment • Significant chest wall pain

Fluid Resuscitate to systolic of 70 + 2 x age

KEY POINTS

Thoracic injuries have been called the deadly dozen. The first six are obvious at the primary assessment.

1. Airway obstruction
2. Flail chest
3. Cardiac tamponade
4. Massive hemothorax
5. Open pneumothorax
6. Tension pneumothorax

The second six injuries may be subtler and not easily found in the field:

7. Traumatic aortic rupture
8. Esophageal injury
9. Myocardial contusion
10. Diaphragmatic tears
11. Tracheal / bronchial tree injury
12. Pulmonary contusion

- A sucking chest wound is when the thorax is open to the outside. The occlusive dressing may be anything such as petroleum gauze, plastic, or a defibrillator pad. Tape only 3 sides down so that excess intrathoracic pressure can escape, preventing a tension pneumothorax. May help respirations to place patient on the injured side, allowing unaffected lung to expand easier.
- A flail chest is when there are extensive rib fractures present, causing a loose segment of the chest wall resulting in paradoxical and ineffective air movement. This movement must be stopped by applying a bulky pad to inhibit the outward excursion of the segment. Positive pressure breathing via BVM will help push the segment and the normal chest wall out with inhalation and to move inward together with exhalation, getting them working together again. Do not use too much pressure to prevent additional damage or pneumothorax.
- A penetrating object must be immobilized by any means possible. If it is very large, cutting may be possible, with care taken not to move it about when making the cut. Place an occlusive and bulky dressing over the entry wound.
- A tension pneumothorax is life threatening, look for *HYPOTENSION*, unequal breath sounds, JVD, increasing respiratory distress, and decreasing mental status. The pleura must be decompressed with a needle to provide relief. Decompress between the 2nd and 3rd ribs, midclavicular placing the catheter over the 3rd rib. Once the catheter is placed, watch closely for re-occlusion. Repeat if needed to prevent re-occlusion. Use appropriately sized catheter for age.

PEDIATRIC PROTOCOL

DROWNING / NEAR DROWNING

3-5 kg	6-7 kg	8-9 kg	10-11 kg	12-14 kg	15-18 kg	19-23 kg	24-29 kg	30-36 kg
6-11 lbs	13-15 lbs	18-20 lbs	22-24 lbs	26-31 lbs	33-37 lbs	42-51 lbs	53-64 lbs	66-81 lbs
18-24 in	24-26 in	26-29 in	29-33 in	33-38 in	38-43 in	43-48 in	48-52 in	52-57 in

UNIVERSAL PATIENT CARE PROTOCOL

CONSIDER SPINAL MOTION RESTRICTION PROCEDURE

PEDIATRIC AIRWAY PROTOCOL
Initiate ventilation while patient is still in water if not breathing.
Provide high flow oxygen ASAP.

CAPNOGRAPHY PROCEDURE

IF DECOMPRESSION SICKNESS
Give oxygen – no positive pressure ventilation unless NOT breathing.

↓

Apply Cardiac Monitor

IF HYPOTHERMIC
Treat per Hypothermia Protocol

IV / IO PROCEDURE
Normal Saline TKO

Monitor and Reassess

TRANSPORT to appropriate facility
CONTACT receiving facility
CONSULT Medical Direction where indicated
APPROPRIATE transfer of care

DROWNING / NEAR DROWNING

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
• Submersion in water regardless of depth • Possible trauma i.e.; fall, diving board • Duration of immersion • Temperature of water • Salt vs. fresh water	• Period of unconsciousness • Unresponsive • Mental status changes • Decreased or absent vital signs • Vomiting • Coughing	• Trauma • Pre-existing medical problem • Barotrauma (diving) • Decompression sickness

KEY POINTS

- Exam: Trauma Survey, Head, Neck, Chest, Abdomen, Pelvis, Back, Extremities, Skin, Neuro
- Drowning due to suffocation from submersion in water.
- 2 causes – breath holding which leads to aspiration of water; & laryngospasm which closes the glottis.
- Both causes lead to profound hypoxia and death.
- Fresh water drowning ventricular fibrillation may be likely.
- Salt water drowning may cause pulmonary edema in time.
- Pulmonary edema can develop within 24 - 48 hours after submersion.
- All victims should be transported for evaluation due to potential for worsening over the next several hours.
- Drowning is a leading cause of death among would-be rescuers.
- Allow appropriately trained and certified rescuers to remove victims from areas of danger.
- With pressure injuries (decompression / barotrauma), consider transport for availability of a hyperbaric chamber.
- All hypothermic / drowning patients should have resuscitation performed until care is transferred, or if there are other signs of obvious death (putrification, traumatic injury unsustainable to life).
- A drowning patient is in cardiac arrest after the submersion.
- Consider SPINAL MOTION RESTRICTION in all drowning cases. Always immobilize a drowning patient.
- Patients with low core temperatures will not respond to ALS drug interventions. Maintain warming procedures and supportive care.
- DO NOT perform the Heimlich maneuver to remove water from the lungs prior to resuscitation.

PEDIATRIC PROTOCOL

EXTEMITY TRAUMA / AMPUTATION

3-5 kg	6-7 kg	8-9 kg	10-11 kg	12-14 kg	15-18 kg	19-23 kg	24-29 kg	30-36 kg
6-11 lbs	13-15 lbs	18-20 lbs	22-24 lbs	26-31 lbs	33-37 lbs	42-51 lbs	53-64 lbs	66-81 lbs
18-24 in	24-26 in	26-29 in	29-33 in	33-38 in	38-43 in	43-48 in	48-52 in	52-57 in

UNIVESAL PATIENT CARE PROTOCOL

BLEEDING / HEMORRHAGE CONTROL PROCEDURE

Risk of Exsanguination?
Internally or Externally
Uppper Extremities Apply Tourniquet
Lower Extremities 2 Tourniquets if needed

Consider Pediatric Multiple Trauma Protocol

OXYGEN

IV / IO PROCEDURE

PEDIATRIC SEVERE PAIN MANAGEMENT PROTOCOL

Amputation?
Clean amputated part with normal saline irrigation
Wrap part in sterile dressing and place in plastic bag if able
Place on ice if available – no direct contact to tissue

TRANSPORT to appropriate facility
CONTACT receiving facility
CONSULT Medical Direction where indicated
APPROPRIATE transfer of care

EMT Intervention | AEMT Intervention | PARAMEDIC Intervention | Online Medical Control

EXTREMITY TRAUMA / AMPUTATION

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
• Type of injury • Mechanism: crush / penetrating / amputation • Time of injury • Open vs. closed wound / fracture • Wound contamination • Medical history • Medications	• Pain, swelling • Deformity • Altered sensation / motor function • Diminished pulse / capillary refill • Decreased extremity temperature	• Abrasion • Contusion • Laceration • Sprain • Dislocation • Fracture • Amputation

KEY POINTS

- Exam: Mental Status, Extremity, Neuro
- In amputations, time is critical. Transport and notify medical control immediately, so that the appropriate destination can be determined.
- Hip dislocations and knee and elbow fracture / dislocations have a high incidence of vascular compromise.
- Urgently transport any injury with vascular compromise.
- Blood loss may be concealed or not apparent with extremity injuries.
- Lacerations must be evaluated for repair within 6 hours from the time of injury.

Extremity Trauma

- DO NOT take the time to splint injured extremities in major trauma patients unless it does not delay the scene time or prevents you from performing more pertinent patient care.
- Splint the extremity if the patient has signs and symptoms of a fracture or dislocation.
- Treat all suspected sprains or strains as fractures until proven otherwise.
- Splint the joint above and below for all suspected fractures.
- Splint the bone above and below for all suspected joint injuries.
- Check and document the patient's MSP's before and after splinting.
- A traction splint with a backboard is the preferred splint to use for femur fractures.

Traumatic Amputation

- Care of the amputated extremity include:
  - Cleanse an amputated extremity with normal saline or sterile water.
  - DO NOT place any amputated tissue directly on ice or cold pack. Instead, place the amputated limb into a plastic bag. Put the bag into a container of cool water with a few ice cubes (if available).
- Contact the receiving hospital with the patient information and include the status of the amputated limb.
- Focus on patient care and not on the amputated extremity.
- Tourniquets should be applied early if there is a risk of exsanguination (bleeding out) from extremity injury.
- Remember to calm and reassure the patient. Do not give the patient or their family member's false hope of re-attachment of the affected limb. A medical team at the receiving hospital makes this decision.
- Delegate someone to do an on-scene search for the amputated part when it cannot be readily found and continue with patient care.
- Use only commercially available tourniquets.

PEDIATRIC PROTOCOL

HEAD TRAUMA

3-5 kg	6-7 kg	8-9 kg	10-11 kg	12-14 kg	15-18 kg	19-23 kg	24-29 kg	30-36 kg
6-11 lbs	13-15 lbs	18-20 lbs	22-24 lbs	26-31 lbs	33-37 lbs	42-51 lbs	53-64 lbs	66-81 lbs
18-24 in	24-26 in	26-29 in	29-33 in	33-38 in	38-43 in	43-48 in	48-52 in	52-57 in

UNIVERSAL PATIENT CARE PROTOCOL
Oxygen for all head trauma

CONSIDER SPINAL MOTION RESTRICTION PROCEDURE

Control Bleeding, Apply Dressing

Determine and Trend GCS

Consider Other Protocols
Multiple Trauma Protocol
(if Not Isolated Head Trauma)
Altered Mental Status Protocol
Seizure Protocol (if Seizure Activity)

Isolated Uncomplicated Head Trauma?

PEDIATRIC AIRWAY PROTOCOL
Do Not Hyperventilate

IV / IO PROCEDURE
Limit IV fluids due to cerebral edema
Maintain SBP

Evidence of, or Suspect
Traumatic Brain Injury (TBI)?

PEDIATRIC AIRWAY PROTOCOL

Do *NOT* Allow Patient to Become Hypoxic During
ANY Airway Management
Maintain SpO_2 > 94% At All Times!
Apply Capnography If Advanced Airway Used

Ventilate to Maintain
CO_2 35
Child 25 Breaths / Min
Infant 35 Breaths / Min

IV / IO PROCEDURE
Normal Saline Bolus to maintain SBP

Do NOT allow patient to become hypotensive

Monitor and Reassess

INITATE TRAUMA ALERT

TRANSPORT to appropriate facility CONTACT receiving facility CONSULT Medical Direction where indicated APPROPRIATE transfer of care

EMT Intervention | AEMT Intervention | PARAMEDIC Intervention | Online Medical Control

HEAD TRAUMA

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
• Time of injury • Mechanism (blunt vs. penetrating) • Loss of consciousness • Bleeding • Past medical history • Medications • Evidence for multi-trauma	• Pain, swelling, bleeding • Altered mental status • Unconscious • Respiratory distress / failure • Vomiting • Major traumatic mechanism of injury • Seizure	• Skull fracture • Brain injury (concussion, contusion, hemorrhage or laceration) • Epidural hematoma • Subdural hematoma • Subarachnoid hemorrhage • Spinal injury • Abuse

Fluid Resuscitate to systolic of 70 + 2 x age

How Can I Spot a Possible Concussion?

Children and teens who show or report one or more of the signs and symptoms listed below—or simply say they just "don't feel right" after a bump, blow, or jolt to the head or body—may have a concussion or other serious brain injury.

Signs Observed by Parents or Coaches

- Appears dazed or stunned.
- Forgets an instruction, is confused about an assignment or position, or is unsure of the game, score, or opponent.
- Moves clumsily.
- Answers questions slowly.
- Loses consciousness *(even briefly)*.
- Shows mood, behavior, or personality changes.
- Can't recall events *prior to* or *after* a hit or fall.

Symptoms Reported by Children and Teens

- Headache or "pressure" in head.
- Nausea or vomiting.
- Balance problems or dizziness, or double or blurry vision.
- Bothered by light or noise.
- Feeling sluggish, hazy, foggy, or groggy.
- Confusion, or concentration or memory problems.
- Just not "feeling right," or "feeling down."

KEY POINTS
• Exam: Mental Status, HEENT, Heart, Lungs, Abdomen, Extremities, Back, Neuro • If GCS < 12 consider air / rapid transport and if GCS < 8 intubation should be anticipated. • Increased intracranial pressure (ICP) may cause hypertension and bradycardia (Cushing's Response). • Hypotension usually indicates injury or shock unrelated to the head injury. • The most important item to monitor and document is a change in the level of consciousness. • Concussions are periods of confusion or LOC associated with trauma, which may have resolved by the time EMS arrives. A physician should evaluate any prolonged confusion or mental status abnormality, which does not return to normal within 15 minutes or any documented loss of consciousness.

PEDIATRIC PROTOCOL

MAXILLOFACIAL / EYE TRAUMA

3-5 kg	6-7 kg	8-9 kg	10-11 kg	12-14 kg	15-18 kg	19-23 kg	24-29 kg	30-36 kg
6-11 lbs	13-15 lbs	18-20 lbs	22-24 lbs	26-31 lbs	33-37 lbs	42-51 lbs	53-64 lbs	66-81 lbs
18-24 in	24-26 in	26-29 in	29-33 in	33-38 in	38-43 in	43-48 in	48-52 in	52-57 in

UNIVERSAL PATIENT CARE PROTOCOL

Determine type of injury

Eye

- Remove contact Lenses (If applicable)
- If burn or foreign body, determine substance. Flush with copious Amounts of normal saline
- If penetrating trauma, secure object (Do not remove)
- Eye out; Cover with sterile 4 x 4, normal saline and stabilize
- If Non-Penetrating Trauma or Chemical Burns CONSIDER TOPICAL PAIN CONTROL TETRACAINE (PONTOCAINE) 1 - 2 drops to affected eye
- ⚠ If Tetracaine (Pontocaine) is used, patient must be evaluated at hospital

Tongue

- Have suction on and immediately available to maintain airway
- Attempt to control bleeding with direct pressure / gauze if able and will not cause airway obstruction

Nose

- Have suction on and immediately available to maintain airway
- Sit patient upright and forward. Pinch nostrils. Consider external applied cold pack to bridge of nose

Ear

- If foreign body, determine substance
- Attempt to control bleeding with direct pressure / gauze

Tooth

- If tooth out attempt preservation as soon as possible in; Commercially available tooth preservation kit (if available) or whole milk (if available). Handle by enamel only, do not touch roots

TRANSPORT to appropriate facility CONTACT receiving facility CONSULT Medical Direction where indicated APPROPRIATE transfer of care

EMT Intervention | AEMT Intervention | PARAMEDIC Intervention | Online Medical Control

MAXILLOFACIAL / EYE TRAUMA

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
• Trauma of any type that results in injury to one or both eyes.	• Irritation to eye • Visual disturbances • Obvious penetrating injury • Burn (chemical, thermal) • Loss of vision • Dizziness • Loss of consciousness • Nausea	• Hypertension • Contact lens problem

KEY POINTS

- If unsure if something can be flushed with water, contact Medical Command.
- A garden hose can be used to help flush the patient's eye(s) if available. DO NOT use a high-pressure hose or at a high force. If needed, irrigate the patient's eyes for approximately 5 -15 minutes.
- Begin irrigating immediately, because irreversible damage can occur in a few minutes.

TRAUMA

- Do not allow eye injury to distract you from the basics of trauma care.
- Do not remove any foreign body imbedded in the eye or orbit. Stabilize any large protruding foreign bodies.
- With blunt trauma to the eye, if time permits, examine the globe briefly for gross laceration as the lid may be swollen tightly shut later. Sclera rupture may lie beneath an intact conjunctiva.
- Covering both eyes when only one eye is injured may help to minimize trauma to the injured eye, but in some cases the patient is too anxious to tolerate this.
- Transport patient supine unless other life threats prohibit this from being done. (This is based on physics, the goal of not letting the fluid within the eye drain out of the eye)

CHEMICAL BURNS

- When possible determine type of chemical involved first. The eye should be irrigated with copious amounts of water or saline, using IV tubing wide open for a minimum of 15 minutes started as soon as possible. Any delay may result in serious damage to the eye.
- Always obtain name and, if possible, a sample of the contaminant or ask that they be brought to the hospital as soon as possible.

CONTACT LENSES

- If possible, contact lenses should be removed from the eye; be sure to transport them to the hospital with the patient. If the lenses cannot be removed, notify the ED personnel as soon as possible.
- If the patient is conscious and alert, it is much safer and easier to have the patient remove their lenses.

ACUTE, UNILATERAL VISION LOSS

- When a patient suddenly loses vision in one eye with no pain, there may be a central retinal artery occlusion. Urgent transport and treatment is necessary.
- Patient should be transported flat.

PEDIATRIC PROTOCOL

MULTIPLE TRAUMA

3-5 kg	6-7 kg	8-9 kg	10-11 kg	12-14 kg	15-18 kg	19-23 kg	24-29 kg	30-36 kg
6-11 lbs	13-15 lbs	18-20 lbs	22-24 lbs	26-31 lbs	33-37 lbs	42-51 lbs	53-64 lbs	66-81 lbs
18-24 in	24-26 in	26-29 in	29-33 in	33-38 in	38-43 in	43-48 in	48-52 in	52-57 in

Consider
Air transport if
delay due to extrication

UNIVERSAL PATIENT CARE PROTOCOL

CONSIDER SPINAL MOTION RESTRICTION PROCEDURE

PEDIATRIC AIRWAY PROTOCOL

Rapid Trauma Assessment

CAPNOGRAPHY PROCEDURE

Attach Cardiac Monitor

IV / IO PROCEDURE

Assess Vital Signs / Perfusion

Abnormal

Reassess Airway
Ventilate Appropriately

NORMAL SALINE BOLUS
20 ml / kg - Repeat as Needed

Monitor and Reassess

Continued Hypotension?
Trauma Arrest?
Consider
NEEDLE DECOMPRESSION

Normal

Ongoing Assessment

Monitor and Reassess

Treat per Appropriate Protocol

INITATE TRAUMA ALERT

TRANSPORT to appropriate facility
CONTACT receiving facility
CONSULT Medical Direction where indicated
APPROPRIATE transfer of care

EMT Intervention | AEMT Intervention | PARAMEDIC Intervention | Online Medical Control

MULTIPLE TRAUMA

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
• Time and mechanism of injury • Damage to structure or vehicle • Location in structure or vehicle • Others injured or dead • Speed and details of MVC • Restraints / protective equipment • Car seat • Helmet • Pads • Ejection • Past medical history • Medications	• Pain, swelling • Deformity, lesions, bleeding • Altered mental status • Unconscious • Hypotension or shock • Arrest	Life Threatening: • Chest Tension pneumothorax • Flail chest • Pericardial tamponade • Open chest wound • Hemothorax • Intra-abdominal bleeding • Pelvis / femur fracture • Spine fracture / cord injury • Head injury (see Head trauma) • Extremity fracture / dislocation • HEENT (airway obstruction) • Hypothermia

A Pediatric Trauma Victim is a person < 16 years of age exhibiting one or more of the following physiologic or anatomic conditions

Physiologic conditions	Anatomic conditions

• Glasgow Coma Scale < 13;
• Loss of consciousness > 5 minutes;
• Deterioration in level of consciousness at the scene or during transport;
• Failure to localize to pain;
• Evidence of poor perfusion, or evidence of respiratory distress or failure.
	• Penetrating trauma to the head, neck, or torso;
	• Significant, penetrating trauma to extremities proximal to the knee or elbow with evidence of neurovascular compromise;
	• Injuries to the head, neck, or torso where the following physical findings are present;
	• Visible crush injury;
	• Abdominal tenderness, distention, or seatbelt sign;
	  ○ Pelvic fracture;
	  ○ Flail chest;
	• Injuries to the extremities where the following physical findings are present:
	  ○ Amputations proximal to the wrist or ankle;
	  ○ Visible crush injury:
	  ○ Fractures of two or more proximal long bones;
	  ○ Evidence of neurovascular compromise.
	• Signs or symptoms of spinal cord injury;
	• 2nd or 3rd Degree burns > 10% total BSA, or other significant burns involving the face, feet, hands, genitalia, or airway.

Fluid Resuscitate to systolic of 70 + 2 x age

KEY POINTS
• Exam: Mental Status, Skin, HEENT, Heart, Lung, Abdomen, Extremities, Back, Neuro • Mechanism is the most reliable indicator of serious injury. Examine all restraints / protective equipment for damage. • In prolonged extrications or serious trauma consider air transportation for transport times and the ability to give blood. • Do not overlook the possibility for child abuse. • A trauma victim is a pediatric patient if they are < 16 years old. • Major trauma patients are to be transported to the closest pediatric trauma center. • Contact the receiving hospital for all major trauma or critical patients. • The Proper size equipment is very important to resuscitation care. Refer to length-based drug treatment guide (e.g. BROSELOW PEDIATRIC EMERGENCY TAPE OR SIMILAR GUIDE) when unsure about patient weight, age and / or drug dosage and when choosing equipment size. • Cover open wounds, burns, eviscerations. • Except for airway control, initiate ALS enroute when transporting major trauma patients. • If unable to access patient airway and ventilate, then transport to the closest facility for airway stabilization. • The on-scene time for major trauma patients should not exceed 10 minutes without documented, acceptable reason for the delay. • When initiating an IV and drawing blood, collect a red top blood tube to assist the receiving hospital with determining the patient's blood type. • All major trauma patients should receive oxygen administration, an IV(s), and cardiac monitoring. • Provide a documented reason if an intervention could not be performed. • Transport to a Pediatric Trauma center when able

PEDIATRIC PROTOCOL

TRAUMA ARREST

3-5 kg	6-7 kg	8-9 kg	10-11 kg	12-14 kg	15-18 kg	19-23 kg	24-29 kg	30-36 kg
6-11 lbs	13-15 lbs	18-20 lbs	22-24 lbs	26-31 lbs	33-37 lbs	42-51 lbs	53-64 lbs	66-81 lbs
18-24 in	24-26 in	26-29 in	29-33 in	33-38 in	38-43 in	43-48 in	48-52 in	52-57 in

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
• Time of injury • Mechanism: blunt / penetrating • Loss of consciousness • Bleeding • Medications • Evidence of multi-trauma	• Excessive bleeding • Unresponsive; not breathing • Cardiac arrest • Significant mechanism of injury	• Obvious DOA • Death

UNIVERSAL PATIENT CARE PROTOCOL

BEGIN RESUCIATION

CONSIDER SPINAL MOTION RESTRICTION PROCEDURE

PEDIATRIC AIRWAY PROTOCOL

CAPNOGRAPHY PROCEDURE

BILATERAL NEEDLE DECOMPRESSION

IV / IO PROCEDURE

Apply Cardiac Monitor

Appropriate Protocol based on Signs and Symptoms

INITATE TRAUMA ALERT

TRANSPORT to appropriate facility
CONTACT receiving facility
CONSULT Medical Direction where indicated
APPROPRIATE transfer of care

Consider
DOA / Termination of Efforts

KEY POINTS

- Immediately transport traumatic cardiac arrest patients.
- With the exception of airway management, traumatic cardiac arrests are “load and go” situations.
- Resuscitation should not be attempted in cardiac arrest patients with spinal transection, decapitation, or total body burns, nor in patients with obvious, severe blunt trauma that are without vital signs, pupillary response, or an organized or shockable cardiac rhythm at the scene. Patients in cardiac arrest with deep penetrating cranial injuries and patients with penetrating cranial or truncal wounds associated with asystole and a transport time of more than 15 minutes to a definitive care facility are unlikely to benefit from resuscitative efforts.
- Extensive, time-consuming care of trauma victims in the field is usually not warranted. Unless the patient is trapped, they should be enroute to a medical facility within 10 minutes after arrival of the ambulance on the scene.

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GLASGOW COMA SCALE

EYE OPENING	Spontaneous	Spontaneous	4
	To voice	To voice	3
	To pain	To pain	2
	None	None	1
VERBAL RESPONSE			
	Oriented	Coos, babbles	5
	Confused	Irritable cry, inconsolable	4
	Inappropriate	Cries to pain,	3
	Garbled speech	Moans to pain	2
	None	None	1
MOTOR RESPONSE			
	Obeys commands	Normal movements	6
	Localizes pain	Withdraws to touch	5
	Withdraws to pain	Withdraws to pain	4
	Flexion	Flexion	3
	Extension	Extension	2
	Flaccid	Flaccid	1

* NOTE: MOTOR RESPONSE IS MOST INDICATIVE OF LEVEL OF INJURY

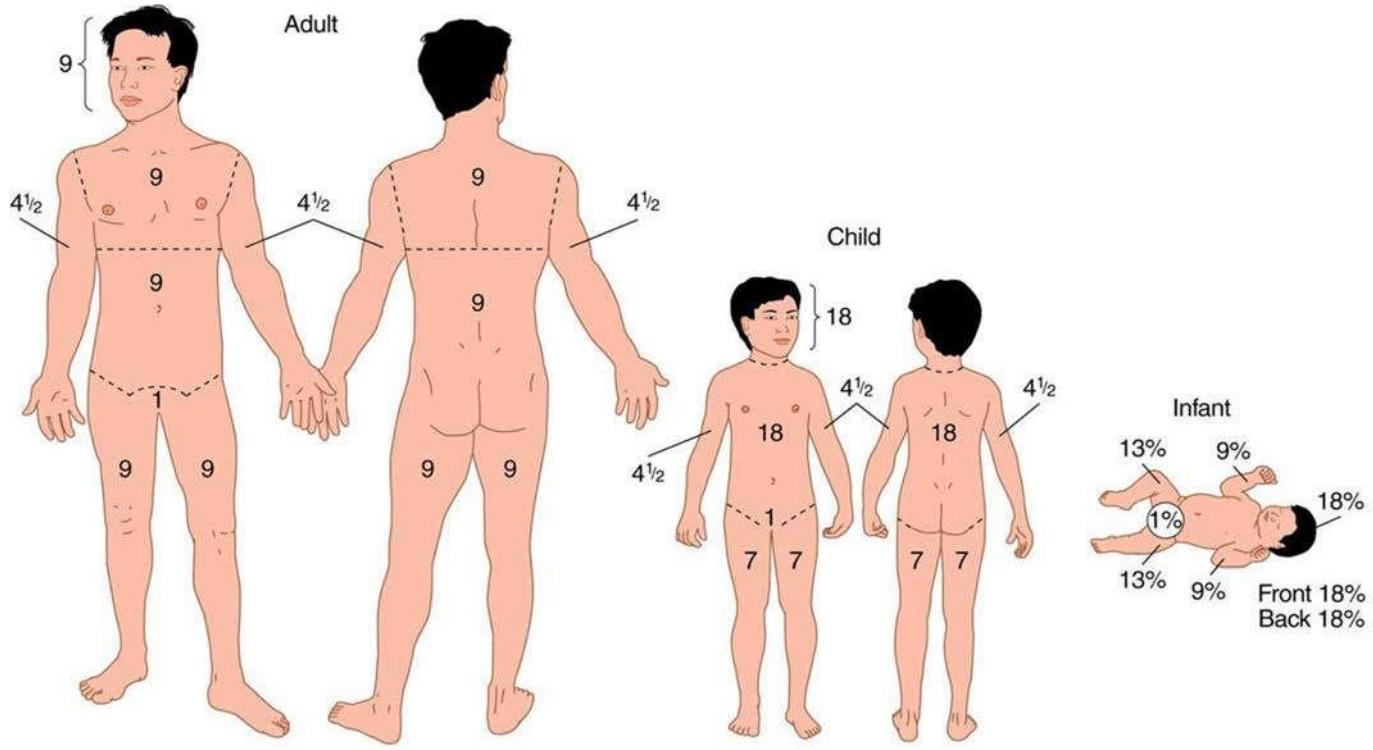
PEDIATRIC PROTOCOL

NORMAL VITAL SIGNS

AGE	HEART RATE	RESPIRATIONS	SYSTOLIC BLOOD PRESSURE
Preterm, 1 kg	120-160	30-60	36-58
Preterm 1 kg	120-160	30-60	42-66
Preterm 2 kg	120-160	30-60	50-72
Newborn	126-160	30-60	60-70
Up to 1 yo	100-140	30-60	70-80
1-3 yo	100-140	20-40	76-90
4-6 yo	80-120	20-30	80-100
7-9 yo	80-120	16-24	84-110
10-12 yo	60-100	16-20	90-120
13-14 yo	60-90	16-20	90-120
15 + yo	60-90	14-20	90-130

Blood pressure is a late and unreliable indicator of shock in children

RULE OF NINES



1% is equal to the surface of the palm of the patient's hand. If unsure of %, describe injured area.

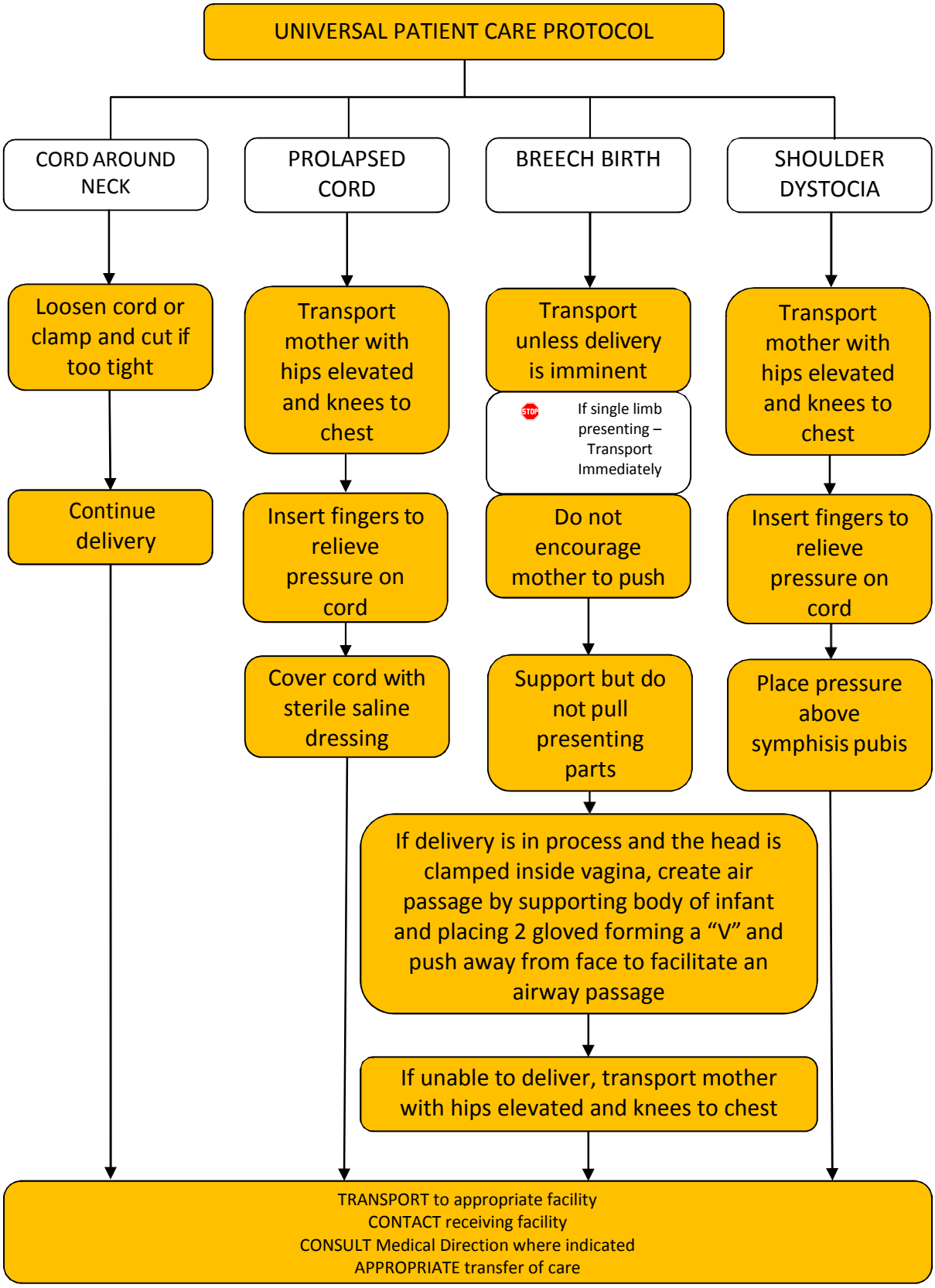
MAJOR BURN CRITERIA

- 2° and 3° burns > 10% surface area
- Burns of the face, hands feet genitalia
- Electrical shock with burn injury
- Burn with inhalation injury any burn with potential functional or cosmetic impairment

SECTION 12 - OBSTETRICS PROTOCOLS

Abnormal Birth Emergencies 2-12
Obstetrical Emergencies 4-12
Uncomplicated / Imminent Delivery 6-12
Neonatal Resuscitation 8-12

ABNORMAL BIRTH EMERGENCIES



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ABNORMAL BIRTH EMERGENCIES

CONTACT RECEIVING FACILITY IMMEDIATLEY WHEN ANY ABNORMAL BIRTH PRESENTATION IS DISCOVERED

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
• Past medical history • Hypertension meds • Prenatal care • Prior pregnancies / births • Gravida / para • Ultrasound findings in prenatal care	• Frank breech (buttocks presents first) • Footling breech (one foot or both feet presenting) • Transverse lie (fetus is on his / her side with possible arm or leg presenting) • Face first presentation • Prolapsed cord (umbilical cord presents first)	• Miscarriage • Stillbirth

KEY POINTS

General Information

- DO NOT pull on any presenting body parts.
- These patients will most likely require a c-section, so immediate transport is needed.
- Prolonged, non-progressive labor distresses the fetus and mother. Be sure to reassess mother's vital signs continuously.
- Transport to an appropriate OB facility if the patient is pregnant.

Cord Around Baby's Neck:

- As baby's head passes out the vaginal opening, feel for the cord. Initially try to slip cord over baby's head; if too tight, clamp cord in two places and cut between clamps.

Breech Delivery:

- Footling breech, which is one or both feet delivered first
- Frank breech, which is the buttocks first presentation
  - When the feet or buttocks first become visible, there is normally time to transport patient to nearest facility.
  - If upper thighs or the buttock have come out of the vagina, delivery is imminent.
  - If the child's body has delivered and the head appears caught in the vagina, the EMT must support the child's body and insert two fingers into the vagina along the child's neck until the chin is located. At this point, the two fingers should be placed between the chin and the vaginal canal and then advanced past the mouth and nose.
  - After achieving this position a passage for air must be created by pushing the vaginal canal away from the child's face. This air passage must be maintained until the child is completely delivered.

Excessive Bleeding Pre-Delivery:

- If bleeding is excessive during this time and delivery is imminent, in addition to normal delivery procedures, the EMT should use the HYPOVOLEMIC SHOCK PROTOCOL.
- If delivery is not imminent, patient should be transported on her left side and shock protocol followed.

Excessive Bleeding Post-Delivery:

- If bleeding appears to be excessive, start IV of saline.
- If placenta has been delivered, massage uterus and put baby to mother's breast.
- Follow HYPOVOLEMIC SHOCK PROTOCOL.

Prolapsed Cord:

- When the umbilical cord passes through the vagina and is exposed, the EMT should check cord for a pulse.
- The patient should be transported with hips elevated or in the knee chest position and a moist dressing around cord.
- If umbilical cord is seen or felt in the vagina, insert two fingers to elevate presenting part away from cord, distribute pressure evenly when occiput presents.
- DO NOT attempt to push the cord back. High flow oxygen and transport IMMEDIATELY.

Shoulder Dystocia:

- Following delivery of the head the shoulder(s) become "stuck" behind the symphisis pubis or sacrum of the mother.
- Occurs in approximately 1% of births.

OBSTETRICAL EMERGENCIES

Pre or Post-Partum

OBSTETRICAL

UNIVERSAL PATIENT CARE PROTOCOL

IV / IO PROCEDURE

Eclampsia
Patent Actively Seizing

MAGNESIUM SULFATE
4 – 6 grams
IV / IO over 2 - 4 minutes

ONLY IF MAGNESIUM FAILS AND ALL IS USED

MIDAZOLAM (VERSED)
2.5 mg IV / IO or 5 mg IM / IN
OR
LORazepam (ATIVAN)
1 – 2 mg IV / IO / IM / IN

⚠ If Midazolam (Versed) or LORazepam (Ativan) Unavailable, See Medication Section for diazePAM (Valium)

If SBP is > 160 and / or DBP 110 *also give*
LABETALOL (TRANDATE)
20 mg slow IV
If no improvement in 5 min then
40 mg slow IV

Mild Pre-Eclampsia or Post-partum hypertension < 6 weeks
SBP 140 and / or DBP 90 with Edema, Headache, Visual Disturbances, or Epigastric Discomfort

MAGNESIUM SULFATE
4 – 6 grams
IV / IO over 20 - 60 minutes

Reassess BP

If SBP is > 160 and / or DBP 110 *also give*
LABETALOL (TRANDATE)
20 mg slow IV
If no improvement in 5 min then
40 mg slow IV

Bleeding
1st Trimester – Miscarriage, Ectopic Pregnancy
2nd & 3rd Trimester – Placenta Previa / Abruptio Placenta

Pad bleeding, save and bring with patient

NORMAL SALINE BOLUS
To Maintain MAP > 70
or SBP 90 / Radial Pulses if NIBP Unavailable

QUIET ***RAPID*** TRANSPORT to appropriate facility CONTACT receiving facility CONSULT Medical Direction where indicated APPROPRIATE transfer of care
Transport to Hospital with OB CAPABILITIES

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OBSTETRICAL EMERGENCIES

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
• Past medical history • Hypertension meds • Prenatal care • Prior pregnancies / births • Gravida (preganicies) / para (live births)	• Vaginal bleeding • Abdominal pain • Seizures • Hypertension • Severe headache • Visual changes • Edema of hands and face	• Pre-eclampsia / eclampsia • Placenta previa • Placenta abruptio • Spontaneous abortion

KEY POINTS

- Exam: Mental Status, Abdomen, Heart, Lungs, Neuro

General Information

- Any woman of child bearing age with syncope should be considered an ectopic pregnancy until proven otherwise.
- May place patient in a left lateral position to minimize risk of supine hypotensive syndrome.
- Ask patient to quantify bleeding - number of pads used per hour.
- Any pregnant patient involved in a MVC should be seen immediately by a physician for evaluation and fetal monitoring.
- DO NOT apply packing into the vagina.
- Be alert for fluid overload when administering fluids.
- Consider starting a second IV if the patient is experiencing excessive vaginal bleeding or hypotension maintain BP 90 systolic,
- Transport to an appropriate OB facility if the patient is pregnant,

Abortion / Miscarriage

- The patient may be complaining of cramping, nausea, and vomiting.
- Be sure to gather any expelled tissue and transport it to the receiving facility.
- Signs of infection may not be present if the abortion/miscarriage was recent.
- An abortion is any pregnancy that fails to survive over 20 weeks. When it occurs naturally, it is commonly called a "miscarriage".

Abruptio Placenta

- Usually occurs after 20 weeks.
- Dark red vaginal bleeding.
- May only experience internal bleeding.
- May complain of a "tearing" abdominal pain.

Ectopic Pregnancy

- The patient may have missed a menstrual period or had a positive pregnancy test.
- Acute unilateral lower abdominal pain that may radiate to the shoulder.
- Any female of childbearing age complaining of abdominal pain is considered to have an ectopic pregnancy until proven otherwise.

Pelvic Inflammatory Disease

- Be tactful when questioning the patient to prevent embarrassment.
- Diffuse back pain.
- Possibly lower abdominal pain.
- Pain during intercourse.
- Nausea, vomiting, or fever.
- Vaginal discharge.
- May walk with an altered gait do to abdominal pain.

Placenta Previa

- Usually occurs during the last trimester.
- Painless.
- Bright red vaginal bleeding.

Post Partum Hemorrhage

- Post partum blood loss greater than 300 - 500 ml.
- Bright red vaginal bleeding.
- Be alert for shock and hypotension.

Uterine Inversion

- The uterine tissue presents from the vaginal canal. Cover with sterile saline dressing.
- Be alert for vaginal bleeding and shock.

Pre-Eclampsia / Eclampsia

- Severe headache, vision changes, or RUQ pain may indicate pre-eclampsia.
- In the setting of pregnancy, hypertension is defined as a BP greater than 140 systolic and greater than 90 diastolic, or a relative increase of 30 systolic and 20 diastolic from the patient's normal (pre-pregnancy) blood pressure.

Uterine Rupture

- Often caused by prolonged, obstructed, or non-progressive labor.
- Severe abdominal pain.

Vaginal Bleeding

- If the patient is experiencing vaginal bleeding, DO NOT pack the vagina, pad on outside only.

UNCOMPLICATED DELIVERY

Contact Receiving Facility to Notify of Delivery

Observed Head Crowning

UNIVERSAL PATIENT CARE PROTOCOL

Prepare Patient for Delivery
Set-Up Equipment

IV PROCEDURE (if time) Not in AC
Normal Saline at KVO

Delivery of Head
Firm, gentle pressure with flat of hand to slow expulsion
Allow head to rotate normally, check for cord around neck, wipe face free of debris
Suction mouth and nose with bulb syringe

Delivery of Body
Place one palm over each ear with next contraction gently move downward until upper shoulder appears
Then lift up gently to ease out lower shoulder
Support the head and neck with one hand and buttocks with other

Newborn and Cord
Keep newborn at level of vaginal opening
Keep warm and dry
After 10 seconds, clamp cord in two places with sterile equipment at least 6 - 8" from newborn
Cut between clamps

Allow placenta to deliver itself but do not delay transport while waiting
Take placenta to hospital with patient
DO NOT PULL ON CORD TO DELIVERY PLACENTA!
Perform APGAR Score 1 min and 5 min post delivery

TRANSPORT to appropriate facility
CONTACT receiving facility
CONSULT Medical Direction where indicated
APPROPRIATE transfer of care
Transport to Hospital with OB Facilities

EMT Intervention | AEMT Intervention | PARAMEDIC Intervention | Online Medical Control

UNCOMPLICATED DELIVERY

CONTACT RECEIVING FACILITY IMMEDIATLEY WHEN DELIVERY IS IMMINENT

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
• Due date • Time contractions started / how often • Rupture of membranes • Time / amount of any vaginal bleeding • Sensation of fetal activity • Past medical and delivery history • Medications	• Spasmotic pain • Vaginal discharge or bleeding • Crowning or urge to push • Meconium • Left lateral position • Inspect perineum (No digital vaginal exam)	• Abnormal presentation • Buttock • Foot • Hand • Prolapsed cord • Placenta previa • Abruptio placenta

APGAR SCORING

SIGN	0	1	2
COLOR	Blue / Pale	Pink Body, Blue Extremities	Completely Pink
HEART RATE	Absent	Below 100	Above 100
IRRITABILITY (Response to Stimulation)	No Response	Grimace	Cries
MUSCLE TONE	Limp	Flexion of Extremities	Active Motion
RESPIRATORY EFFORT	Absent	Slow and Regular	Strong Cry

KEY POINTS
• Exam (of Mother): Mental Status, Heart, Lungs, Abdomen, Neuro • Document all times (delivery, contraction frequency, and length). • If maternal seizures occur, refer to the OBSTETRICAL EMERGENCIES PROTOCOL. • After delivery, massaging the uterus (lower abdomen) will promote uterine contraction and help to control post-partum bleeding. • Some bleeding is normal with any childbirth. Large quantities of blood or free bleeding are abnormal. • Prepare to deliver on scene (protecting the patient's privacy). If delivery becomes imminent while enroute, stop the squad and prepare for delivery. • Newborns are very slippery, so be careful not to drop the baby. • There is no need to wait on scene to deliver the placenta. • If possible, transport between deliveries if the mother is expecting twins. • Allow the placenta to deliver, but DO NOT delay transport while waiting. • DO NOT PULL ON THE UMBILICAL CORD WHILE PLACENTA IS DELIVERING.

NEONATAL RESUSCITATION

3-5 kg	6-7 kg	8-9 kg	10-11 kg	12-14 kg	15-18 kg	19-23 kg	24-29 kg	30-36 kg
6-11 lbs	13-15 lbs	18-20 lbs	22-24 lbs	26-31 lbs	33-37 lbs	42-51 lbs	53-64 lbs	66-81 lbs
18-24 in	24-26 in	26-29 in	29-33 in	33-38 in	38-43 in	43-48 in	48-52 in	52-57 in

Maintain body heat of infant during and post resuscitation

UNIVERSAL PATIENT CARE PROTOCOL (For Mother)

Dry Infant and Keep Warm
Bulb syringe suction mouth then nose
No deep suctioning

BVM 30 seconds at 40 – 60 Breaths per minute with ROOM AIR IF NOT BREATHING

Stimulate infant and note APGAR Score at 1 Min

Respirations Present?

No

Yes

Assess Heart Rate

HR < 100

BVM 30 seconds at 40 – 60 Breaths per minute with ROOM AIR

HR > 100

Reassess Heart Rate and APGAR Score at 5 Min

Newborn Oxygen Saturation

Time	Saturation
1 Min	60-65%
2 Min	65-70%
3 Min	70-75%
4 Min	75-80%
5 Min	80-85%
10 Min	85-95%

Attempt to maintain these

HR < 60

EFFECTIVE VENTILATIONS PEDIATRIC AIRWAY PROTOCOL

Begin CPR 3:1 Ratio

IV / IO PROCEDURE
Weight based sized device

Appropriate Dysrhythmia Protocol

CONSIDER
NORMAL SALINE BOLUS
10 ml / kg
DEXTROSE 10%
2 ml / kg IV / IO
If Glucose < 45

HR 60 - 100

EFFECTIVE VENTILATIONS PEDIATRIC AIRWAY PROTOCOL

< 80

Reassess Heart Rate

HR 80 - 100

IV / IO PROCEDURE
Weight based sized device

HR > 100

Monitor and Reassess

HR > 100

OXYGEN
Blow - By

TRANSPORT to appropriate facility
CONTACT receiving facility
CONSULT Medical Direction where indicated
APPROPRIATE transfer of care

EMT Intervention | AEMT Intervention | PARAMEDIC Intervention | Online Medical Control

NEONATAL RESUSCITATION

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
• Due date and gestational age • Multiple gestation (twins etc.) • Meconium • Delivery difficulties • Congenital disease • Medications (maternal) • Maternal risk factors substance abuse smoking	• Respiratory distress • Peripheral cyanosis or mottling (normal) • Central cyanosis (abnormal) • Altered level of responsiveness • Bradycardia	• Airway failure • Secretions • Respiratory drive • Infection • Maternal medication effect • Hypovolemia • Hypoglycemia • Congenital heart disease • Hypothermia

If Dextrose 10% not available, Waste 40 ml of Dextrose 50% and draw up 40 ml of Normal Saline to create Dextrose 10%

KEY POINTS
• Exam: Mental Status, Skin, HEENT, Neck, Chest, Heart, Abdomen, Extremities, Neuro • Newborn arrest is not a cardiac arrest, it is a respiratory arrest. • Effective ventilation is key to successful resuscitation. • Effective ventilation can be determined by; Chest rise, Bilateral breath sounds, and Increasing heart rate. • Term baby resuscitation should begin with room air. • If preterm baby, resuscitate with oxygen, but reservoir removed from BVM. • Hypothermia is a common complication of home and field deliveries. Keep the baby warm and dry. • Consider hypoglycemia in infant. If the BGL is less than 45 mg / dl then administer Dextrose 10%. • Document 1 and 5-minute APGAR scores, but do not use it to guide your resuscitation steps. • If the patient is in distress, consider causes such as; hypovolemia. Administer a 10 ml / kg fluid bolus of normal saline. • If drying and suction has not provided enough stimulation, try rubbing the infant's back or flicking their feet. If the infant still has poor respiratory effort, poor tone, or central cyanosis, consider them to be distressed, most distressed infants will respond quickly to BVM. • Use caution not to allow newborns to slip from grasp.

APGAR SCORING

SIGN	0	1	2
COLOR	Blue / Pale	Pink Body, Blue Extremities	Completely Pink
HEART RATE	Absent	Below 100	Above 100
IRRITABILITY (Response to Stimulation)	No Response	Grimace	Cries
MUSCLE TONE	Limp	Flexion of Extremities	Active Motion
RESPIRATORY EFFORT	Absent	Slow and Regular	Strong Cry

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APPENDIX #1: MEDICATIONS

Medication Reference

Medication Availability Statement 2-13
Pharmacology Review 3-13
Pregnancy Classes 5-13

Standard Use Medications

Adenosine (Adenocard) 6-13
Albuterol (Proventil / Ventolin) 7-13
Albuterol and Ipratropium (DuoNeb) 8-13
Amiodarone (Cordarone) 9-13
Aspirin 10-13
Atropine Sulfate 11-13
Calcium Chloride / Gluconate 12-13
Dextrose (All Concentrations) 13-13
DiazePAM (Valium) 14-13
DiphenhydrAMINE (Benadryl) 15-13
DOPamine (Intropin) 16-13
EPINEPHrine (Adrenalin) 17-13
FentaNYL (Sublimaze) 18-13
Glucagon (Glucagen) 19-13
Haloperidol (Haldol) 20-13
Heparin 21-13
HYDROmorphone (Dilaudid) 22-13
Ipratropium (Atrovent) 23-13
Ketamine (Ketalar) 24-13
Ketoralc (Torodol) 25-13
Labetalol (Trandate) 26-13
Lidocaine (Xylocaine) 27-13
LORazepam (Ativan) 28-13
Magnesium Sulfate 29-13
MethylPREDNISolone (SOLU-medrol) 30-13
Midazolam (Versed) 31-13
Morphine Sulfate 32-13
Naloxone (Narcan) 33-13
Nitroglycerin (Nitro-Stat) 34-13
OLANZapine (ZyPREXA) 35-13
Ondansetron (Zofran) 36-13
Oral Glucose (Instant Glucose) 37-13
Oxygen (O2) 38-13
Promethazine (Phenergan) 39-13
Racemic Epinephine 40-13
Sodium Bicarbonate 41-13
Tetracaine (Pontocaine) 42-13
Thiamine 43-13
Ticagrelor (Brilinta) 44-13
Tranexamic Acid (TXA) 45-13

Special Use Medications

Ciprofloxacin (Cipro) 46-13
Clopidogril (Plavix) 47-13
Doxycycline (Vibramycin) 48-13
DuoDote (Atropine and Pralidoxime) and Valium NERVE AGENT KIT 49-13
Etomidate (Amidate) 50-13
Hydroxocobalamin (Cyanokit) 51-13
Nitrous Oxide / Oxygen 52-13
Succinylcholine (Anectine) 53-13
Tenecteplase (TNKase). 54-13

Pediatric Weight Based Dosing

Pediatric Drug Administration Charts ..... 55-13 thru 59-13

Prescription Drug Reference

Prescription Drug Reference Charts ..... 60-13 thru 115-13

Medication Supply / Availability

Medical Director / EMS agency rights:
These medications represent the medications approved by the protocol advisory board for inclusion in the EMS protocol. Each individual Medical Director reserves the right to choose not to supply or use medication included in the protocol at his / her discretion. The Medical Director also reserves the right to decide which (or all) agent to supply if multiple medications are listed for an application.

In situations where medications are not provided by the EMS agency or Medical Director, the EMS provider is NOT IN VIOLATION of protocol if they cannot provide a listed medication.

Medication Availability:
Medication shortages are an ongoing reality. Although, where available, this document lists available alternate medications, the alternate medications are not necessarily intended to be carried routinely. These agents are intended to be added to the drug box in the event of a shortage of the primary listed agent.

It is the individual Medical Directors and the individual agencies responsibility to communicate shortages and substitutions with the staff. It is the individual providers responsibility to review the protocols and dosing for substituted medications.

PHARMACOLOGY REVIEW

I. ACTIONS OF MEDICATIONS
1. Local effects
2. Systemic effects

II. EFFECTS DEPENDS UPON
1. Age of patient
2. Condition of patient
3. Dosage
4. Route of administration

III. ROUTE OF ADMINISTRATION
1. Intravenous (IV)
   - Most rapidly effective
   - Most dangerous
   - Give SLOWLY through an established IV line (FOR MOST MEDICATIONS)
2. Intramuscular (IM)
   - Takes longer to act
   - Longer duration of action (Oil vs. water-based medications duration varies)
   - Deltoid or gluteus maximus site
   - Absorption VERY dependent on blood flow
3. Subcutaneous (SQ)
   - Slower and more prolonged absorption
   - Under skin of upper arms, thigh, abdomen
4. Inhalation
   - Bronchodilators
   - Steroids (Patients may be prescribed)
5. Endotracheal (Only administer through ET as a last resort with no better options)
   - EPINEPHrine (Adrenaline), Atropine, Lidocaine (Xylocaine), Naloxone (Narcan)
   - Medication dose must be twice the IV dose
6. Sublingual (SL)
   - Rapid absorption
   - Patient must be well hydrated for good absorption
7. Oral
   - Slow rate of absorption
8. Rectal (PR)
   - Rapid but unpredictable absorption
9. Intranasal (IN)
   - Must use specific device to aerosolize medication
10. Used with approved medications only
11. Intraossesous (IO)
   - IO is only to be used only if IV is unobtainable in an unconscious patient
   - Nearly as fast as IV route

IV. RATES OF ABSORPTION
1. "Directly related to route of administration"
   - IV (Fastest)
   - IO (Intraossesous)
   - Inhalation
   - ET (Endotracheal)
   - IM (Intramuscular)
   - SL (Sublingual)
   - IN (intranasal)
   - PR (Rectal)
   - SQ (Subcutaneous)
   - Oral (Slowest)

V. ELIMINATION
1. Many methods
2. Usually metabolized by the liver
3. Eliminated by the kidneys, lungs, skin

VI. TERMS

1. Indications – Conditions medications are used for
2. Contraindications – Conditions which make medication use improper
3. Depressants - Lessens / decreases activity
4. Stimulants - Increases activity
5. Physiologic action - Action from therapeutic concentrations of a medication
6. Therapeutic action - Beneficial action expected from a desired concentration of a medication
7. Untoward reaction - Unwanted side effect
8. Irritation - Damage to tissue
9. Antagonism - Opposition between physiologic action
10. Cumulative action - Increased action after repeated administration of medications
11. Tolerance - Decreased effects after repeated doses
12. Synergism - Combined effects greater than sum of individual effects
13. Potentiation - Enhancement of one medication by another
14. Habituation – Becoming abnormally tolerant to and dependent on something that is habit-forming
15. Idiosyncrasy - Abnormal response to a medication
16. Hypersensitivity - Exaggerated response or allergy to a specific agent

VII. AUTONOMIC NERVOUS SYSTEM

1. Parasympathetic - Controls vegetative functions “rest and digest”
2. Sympathetic - "flight or fight"

VIII. PARASYMPATHETIC NERVOUS SYSTEM

1. Mainly mediated by vagus nerve
2. Acetylcholine is transmitter (cholinergic)
3. Atropine is an acetylcholine blocker

IX. SYMPATHETIC NERVOUS SYSTEM

1. Mediated by Nerves from Sympathetic Chain
2. Norepinephrine and EPINEPHrine are the transmitters

X. SYMPATHETIC RECEPTORS

Alpha (a)
Beta (b)

XI. COMMON SYMPATHETIC AGENTS

Isoproterenol (Isuprel) - pure BETA
Epinephrine (Adrenalin) – ALPHA and BETA
Dobutamine (Dobutrex) - predominately BETA
Norepinephrine (Levophed) - predominately ALPHA
DOPAmine (Intropin) - BETA at low dose range, ALPHA at high dose range
Phenylephrine (Neo-Synephrine) - pure ALPHA

XII. SYMPATHETIC BLOCKERS

Propranolol (Inderal) - BETA blocker

XIII. MEDICATION ADMINISTRATION

Appropriate:

1. Medication selection based on protocol
2. Visually examine medication for particulates or discoloration and that the medication has not expired
3. Contraindications are reviewed prior to administration
4. Route is determined by protocol
5. Dose selection based on protocol
6. Dilution is per protocol
7. Rate is per protocol

PREGANCY CLASSES

Category A

Controlled studies in women do not demonstrate a risk to the fetus. The possibility of fetal harm appears remote.

Category B

Either animal studies have not demonstrated a fetal risk but there are no controlled studies in pregnant women, or animal studies have shown an adverse effect that was not confirmed in controlled studies in women.

Category C

Either studies in animals have revealed adverse effects on the fetus and there are no controlled studies in women, or studies in women and animals are not available. Drugs in category C should only be taken if the benefit justifies the fetal risk.

Category D

There is positive evidence of human fetal risk (birth defects, etc.), but the benefits from use in pregnant women may be acceptable despite the risk.

Category X

Studies in animals or human beings have demonstrated fetal abnormalities or there is evidence of fetal risk based on human experience, and the risk of the use of the drug in pregnant women clearly outweighs any possible benefit. Drugs in category x should not be taken by pregnant women for any reason.

Category N

Not classified

MEDICATIONS

ADENOSINE (Adenocard)

PREGNANCY CLASS	C
ACTIONS	1. Slows conduction time and can interrupt re-entrant pathways through the AV node 2. Slows the sinus rate
INDICATIONS	1. Supra ventricular tachycardia (SVT) 2. Monomorphic, regular wide complex arrhythmias
CONTRAINDICATIONS	1. Atrial fibrillation 2. Atrial flutter 3. Polymorphic, irregular, or unstable ventricular tachycardia 4. Heart blocks 5. Known WPW
PRECAUTIONS	Inform the patient of likely side effects prior to medication administration
SIDE EFFECTS	1. Facial flushing 2. Shortness of breath / dyspnea 3. Chest discomfort 4. Brief period of sinus arrest 5. Headache 6. Dizziness 7. Hypotension
USUALLY SUPPLIED	6 mg / 2ml VERIFY ACTUAL CONCENTRATION ON HAND BEFORE ADMINISTRATION
ADULT DOSAGE	SVT Initial Dose: 6 mg rapid IV PUSH (over 1-3 sec.) immediately followed with a 20 ml normal saline flush
	SVT Repeat Dose: (If no response is observed after 1 minute) 12 mg rapid IV PUSH (over 1-3 sec.) immediately followed with a 20 ml normal saline flush.
	Wide Complex Regular Initial Dose: 6 mg rapid IV PUSH (over 1-3 sec.) immediately followed with a 20 ml normal saline flush
	Wide Complex Repeat Dose: (If no response is observed after 1 minute) 12 mg rapid IV PUSH (over 1-3 sec.) immediately followed with a 20 ml normal saline flush.
PEDIATRIC DOSAGE	SVT Initial Dose: 0.1 mg / kg rapid IV PUSH followed with a 10 ml normal saline flush (Max single dose 6 mg)
	SVT Repeat Dose: If no response is observed after 1 - 2 min., administer 0.2 mg / kg rapid IV PUSH followed with a 10 ml normal saline flush (Max single dose 12 mg)
	See PEDIATRIC DRUG ADMINISTRATION CHART for weight-based administration

3-5 kg	6-7 kg	8-9 kg	10-11 kg	12-14 kg	15-18 kg	19-23 kg	24-29 kg	30-36 kg
6-11 lbs	13-15 lbs	18-20 lbs	22-24 lbs	26-31 lbs	33-37 lbs	42-51 lbs	53-64 lbs	66-81 lbs
18-24 in	24-26 in	26-29 in	29-33 in	33-38 in	38-43 in	43-48 in	48-52 in	52-57 in

KEY POINTS	• Adenosine has a short half-life, and should be administered rapidly followed by a rapid IV flush • Reassess after each medication administration and refer to the appropriate protocol and treat accordingly • Perform a 12 Lead EKG prior to the administration of adenosine and after the rhythm converts • Record EKG during administration

MEDICATIONS
ALBUTEROL (Proventil / Ventolin)

PREGNANCY CLASS	C
ACTIONS	1. Relax bronchial smooth muscles 2. Reduces airway resistance 3. Relieves bronchospasm
INDICATIONS	1. Asthma exacerbation 2. COPD exacerbation 3. Pulmonary edema with wheezing 4. Hyperkalemia
CONTRAINDICATIONS	Known hypersensitivity
PRECAUTIONS	1. Use caution when administering to pregnant women 2. Patients with cardiac history 3. Patients with seizure disorders
SIDE EFFECTS	1. Headache 2. Drowsiness 3. Dizziness 4. Restlessness 5. Nausea / Vomiting 6. Tachycardia 7. Palpitations 8. Hyper / hypotension 9. Tremors 10. PVCs
SUPPLIED	Single unit dose 2.5 mg in 3 ml of nebulizer solution
ADULT DOSAGE	Respiratory Distress / Asthma / COPD: (As part of DuoNeb) 2.5 mg in 3 ml unit dose via nebulizer and 6 - 8 lpm oxygen
	Congestive Heart Failure with wheezing: (As part of DuoNeb) 2.5 mg in 3 ml unit dose via nebulizer and 6 - 8 lpm oxygen
	Anaphylaxis: (As part of DuoNeb) 2.5 mg in 3 ml unit dose via nebulizer and 6 - 8 lpm oxygen
	STOP EMT MUST CONTACT ONLINE MEDICAL CONTROL
	Dialysis Patient / Peaked T waves: 2.5 mg in 3 ml unit dose via nebulizer and 6 - 8 lpm oxygen Repeat to keep running throughout prehospital care
PEDIATRIC DOSAGE	Respiratory Distress Lower Airway: Mild - 2.5 mg in 3 ml unit dose via nebulizer and 6 – 8 lpm oxygen first Dose – Add Ipratropium (Atrovent) with subsequent doses Moderate / Distress Severe Distress - 2.5 mg in 3 ml unit dose via nebulizer and 6 – 8 lpm oxygen – Add Ipratropium (Atrovent)
	Anaphylaxis: 2.5 mg in 3 ml unit dose via nebulizer and 6 - 8 lpm oxygen
	STOP EMT MUST CONTACT ONLINE MEDICAL CONTROL
KEY POINTS	• May repeat treatments as required

MEDICATIONS

ALBUTEROL and IPRATROPIUM (DuoNeb)

PREGNANCY CLASS	C
ACTIONS	1. Relax bronchial smooth muscles 2. Reduces airway resistance 3. Relieves bronchospasm 4. Dries bronchial secretions
INDICATIONS	1. Asthma exacerbation 2. COPD exacerbation 3. Pulmonary edema with wheezing
CONTRAINDICATIONS	Known hypersensitivity
PRECAUTIONS	1. Use caution when administering to pregnant women 2. Patients with cardiac history 3. Patients with seizure disorders 4. Not intended for use with hyperkalemia, use albuterol alone.
SIDE EFFECTS	1. Headache 2. Drowsiness 3. Dizziness 4. Restlessness 5. Nausea / Vomiting 6. Tachycardia 7. Palpitations 8. Hyper / hypotension 9. Tremors 10. PVCs 11. Dry nose, Mouth
SUPPLIED	2.5 mg Albuterol and 0.5 mg Ipratropium in single unit dose
ADULT DOSAGE	Respiratory Distress / Asthma / COPD: Single unit dose via nebulizer and 6 - 8 lpm oxygen
	Congestive Heart Failure with wheezing: Single unit dose via nebulizer and 6 - 8 lpm oxygen
	Anaphylaxis: Single unit dose via nebulizer and 6 - 8 lpm oxygen
	STOP EMT MUST CONTACT ONLINE MEDICAL CONTROL
PEDIATRIC DOSAGE	Respiratory Distress Lower Airway: Mild Distress - Second and third doses use Albuterol / Ipratropium (DuoNeb) Unit dose via nebulizer and 6 – 8 lpm oxygen. First Dose – Use Albuterol Only Moderate / Severe Distress - Albuterol/Ipratropium (DuoNeb) Unit dose via nebulizer and 6 – 8 lpm oxygen.
	STOP EMT MUST CONTACT ONLINE MEDICAL CONTROL
KEY POINTS	▪ May repeat treatments as required

MEDICATIONS

AMIODARONE (Cordarone)

PREGNANCY CLASS	X
ACTIONS	Prolongs the refractory period and action potential duration
INDICATIONS	1. Ventricular fibrillation 2. Pulseless ventricular tachycardia 3. Wide complex tachycardia with a pulse (with consultation)
CONTRAINDICATIONS	1. Known hypersensitivity 2. If lidocaine was previously used, Do Not use amiodarone 3. Second / third degree AV blocks
SIDE EFFECTS	1. Hypotension 2. Prolonged QT interval
SUPPLIED	150 mg / 3 ml vial VERIFY ACTUAL CONCENTRATION ON HAND BEFORE ADMINISTRATION
ADULT DOSAGE	PULSELESS - Ventricular Fibrillation / Ventricular Tachycardia: 300 mg IV Push (May be repeated one time at 150 mg IV push in 3-5 minutes if no change)
	Post Arrest: 150 mg diluted in 100 ml of D5 over 10 minutes
	PULSE PRODUCING - Wide Complex Tachycardia: 150 mg diluted in 100 ml of D5 over 10 minutes
PEDIATRIC DOSAGE	PULSELESS - Ventricular Fibrillation / Ventricular Tachycardia: 5 mg / kg IV / IO Push If the rhythm converts to a perfusing rhythm, then administer 2.5 mg / kg IV / IO mixed in 100 ml D5 over 20 - 60 minutes Max 300 mg
	Post Arrest: 5 mg / kg IV / IO mixed in 100ml D5 over 20 -60 minutes Max 150 mg
	PULSE PRODUCING - Wide Complex Tachycardia: 2.5 mg / kg mixed in 100 ml D5 IV / IO over 20 - 60 minutes Max 150 mg
	See PEDIATRIC DRUG ADMINISTRATION CHART for weight-based administration

3-5 kg	6-7 kg	8-9 kg	10-11 kg	12-14 kg	15-18 kg	19-23 kg	24-29 kg	30-36 kg
6-11 lbs	13-15 lbs	18-20 lbs	22-24 lbs	26-31 lbs	33-37 lbs	42-51 lbs	53-64 lbs	66-81 lbs
18-24 in	24-26 in	26-29 in	29-33 in	33-38 in	38-43 in	43-48 in	48-52 in	52-57 in

KEY POINTS	· Amiodarone is the preferred antiarrhythmic medication to treat life threating PULSELESS ventricular arrhythmias · Avoid excessive movement and shaking of the medication · Do not administer concurrently with other medicationsthat prolong QT interval · Ideally mixed in 100 ml bag of D5 for administration to patients with perfusing rhythms.

MEDICATIONS
ASPIRIN

PREGNANCY CLASS	D
ACTIONS	Blocks platelet aggregation
INDICATIONS	1. Chest pain suggestive of a MI 2. 12-Lead EKG indicating a possible MI 3. Patients with Acute coronary symptoms
CONTRAINDICATIONS	1. Known hypersensitivity 2. Active ulcer disease 3. Signs of stroke
PRECAUTIONS	1. GI bleeds
SIDE EFFECTS	1. Heartburn 2. Nausea and vomiting
SUPPLIED	81 mg chewable tablet
ADULT DOSAGE	Acute Coronary Symptoms: 324 mg (4 tablets)
PEDIATRIC DOSAGE	Not recommended in the pre-hospital setting
KEY POINTS	▪ If patient has already taken ASA in the last 24 hours, give ASA to equal 324 mg total

MEDICATIONS

ATROPINE SULFATE

PREGNANCY CLASS	C
ACTIONS	1. Blocks acetylcholine (parasympathetic nervous system) 2. Increases conduction through the SA node by blocking vagal activity
INDICATIONS	1. Symptomatic sinus bradycardia 2. Organophosphate poisoning 3. Nerve agent exposure
CONTRAINDICATIONS	1. Known hypersensitivity 2. Second degree AV Blocks (Mobitz type II) 3. Third degree AV Blocks
PRECAUTIONS	1. Avoid use in atrial flutter or atrial fibrillation with a rapid ventricular response 2. May increase myocardial oxygen demand – use caution if possible acute MI 3. May trigger tachydysrhythmias 4. Avoid in hypothermic bradycardia
SIDE EFFECTS	1. Dry mouth 2. Blurred vision 3. Flushed skin 4. Headache 5. Tachycardia 6. Pupillary dilation
SUPPLIED	1 mg / 10 ml
ADULT DOSAGE	Bradycardia: 0.5 mg IV / IO every 3 - 5 minutes (max dose 3 mg)
	Organophosphate Poisoning: 1 mg IV repeat every 3 - 5 minutes until resolution of symptoms *No max dose. Extremely large doses will likely be required*
PEDIATRIC DOSAGE	Bradycardia: 0.02 mg / kg IV / IO repeated in 5 minutes one time Minimum dose is 0.1 mg Max dose 0.5 mg
	Useful in pediatrics only if evidence of vagal stimulation, use EPINEPHrine first in pediatric bradycardia
	Organophosphate Poisoning: 0.05 mg / kg IV Max 1 mg per dose Repeat every 3 - 5 minutes until resolution of symptoms. *No max dose. Extremely large doses will likely be required.*
	See PEDIATRIC DRUG ADMINISTRATION CHART for weight-based administration

3-5 kg	6-7 kg	8-9 kg	10-11 kg	12-14 kg	15-18 kg	19-23 kg	24-29 kg	30-36 kg
6-11 lbs	13-15 lbs	18-20 lbs	22-24 lbs	26-31 lbs	33-37 lbs	42-51 lbs	53-64 lbs	66-81 lbs
18-24 in	24-26 in	26-29 in	29-33 in	33-38 in	38-43 in	43-48 in	48-52 in	52-57 in

MEDICATIONS

CALCIUM CHLORIDE / CALCIUM GLUCONATE

PREGNANCY CLASS	C
ACTIONS	Raises serum calcium levels, increases cardiac contractility
INDICATIONS	1. Calcium channel blocker OD 2. Dialysis patient in cardiac arrest 3. Hypocalcemia 4. Hyperkalemia 5. Hypermagnesemia
CONTRAINDICATIONS	1. Patient taking digitalis
PRECAUTIONS	1. Do not infuse with SODIUM BICARBONATE – will cause precipitates – FLUSH LINES BEFORE ADMIN 2. PUSH SLOW 2 minutes 3. Extravasation may cause tissue necrosis
SIDE EFFECTS	1. Hypotension 2. Nausea 3. Tissue necrosis at injection site 4. Flushing / Hot flashes 5. Arrhythmias
SUPPLIED	100 mg / ml – Both Calcium Chloride and Calcium Gluconate
ADULT DOSAGE	Dialysis Patients in Cardiac Arrest: 1-3 Grams Calcium Gluconate IV / IO Slow -or- 1 Gram IV / IO Slow Calcium Chloride Calcium Channel Blocker OD: 1-3 Grams Calcium Gluconate IV / IO Slow -or- 1 Gram IV / IO Slow Calcium Chloride Hyperkalemia / Peaked T Waves / Sine Wave EKG: 1-3 Grams Calcium Gluconate IV / IO Slow -or- 1 Gram IV / IO Slow Calcium Chloride
PEDIATRIC DOSAGE	Calcium Channel Blocker OD: 20 mg / kg IV / IO Calcium Chloride over 10 min – May repeat in 20 min Max dose 1 Gram 60 mg / kg IV / IO Calcium Gluconate over 10 min – May repeat in 20 min Max dose 3 Grams

See PEDIATRIC DRUG ADMINISTRATION CHART for weight-based administration

3-5 kg	6-7 kg	8-9 kg	10-11 kg	12-14 kg	15-18 kg	19-23 kg	24-29 kg	30-36 kg
6-11 lbs	13-15 lbs	18-20 lbs	22-24 lbs	26-31 lbs	33-37 lbs	42-51 lbs	53-64 lbs	66-81 lbs
18-24 in	24-26 in	26-29 in	29-33 in	33-38 in	38-43 in	43-48 in	48-52 in	52-57 in

MEDICATIONS

DEXTROSE 5%, 10%, 25%, AND 50%

PREGNANCY CLASS	C
ACTIONS	Restores blood sugar
INDICATIONS	1. Treatment of altered mental status due to hypoglycemia 2. Adult BGL less than 70 mg / dl or signs and symptoms of hypoglycemia 3. Coma with associated hypoglycemia 4. Delirium tremens with associated hypoglycemia 5. Seizure or status epilepticus with associated hypoglycemia 6. Cardiac arrest with associated hypoglycemia
CONTRAINDICATIONS	1. Known hyperglycemia 2. Intracranial / intraspinal hemorrhage
PRECAUTIONS	1. Use with caution with stroke or head injury patients 2. A blood glucose level should be determined prior to and post dextrose administration
SIDE EFFECTS	1. Extravasation of Dextrose may cause necrosis 2. Hyperglycemia
SUPPLIED	5% IV bags 5 grams / 100 ml FOR MIXING DRIP MEDICAIONS ONLY 10% IV bags 10 grams / 100 ml (250 ml = 25 g of dextrose) 50% Prefilled syringes or vials containing 50 ml of Dextrose 50% (50 ml = 25 g of dextrose)
ADULT DOSAGE	Diabetic Emergencies / Hypoglycemia: If glucose < 40 / 25 g (250 ml of 10% or 50 ml of 50%) IV / IO - may repeat as required If glucose 40 – 70 / 12.5 g (125 ml of 10% or 25 ml of 50%) IV / IO - may repeat as required
PEDIATRIC DOSAGE	Diabetic Emergencies / Hypoglycemia: PEDIATRICS Dextrose 10% (D10) 5 ml / kg IV / IO - may repeat as required PEDIATRICS MAKE Dextrose 25% (D25) Waste 25ml of D50 and replace with 25ml normal saline to create Dextrose 25% (D25) 2 ml / kg IV / IO - may repeat as required NEONATE Dextrose 10% (D10) Dextrose 10% (D10) 2 ml / kg IV / IO – may repeat as required NEONATE MAKE Dextrose 10% (D10) from 50% Waste 40 ml of D50 and replace with 40ml normal saline to make Dextrose 10% (D10) 2 ml / kg IV / IO – may repeat as required
	See PEDIATRIC DRUG ADMINISTRATION CHART for weight-based administration

3-5 kg	6-7 kg	8-9 kg	10-11 kg	12-14 kg	15-18 kg	19-23 kg	24-29 kg	30-36 kg
6-11 lbs	13-15 lbs	18-20 lbs	22-24 lbs	26-31 lbs	33-37 lbs	42-51 lbs	53-64 lbs	66-81 lbs
18-24 in	24-26 in	26-29 in	29-33 in	33-38 in	38-43 in	43-48 in	48-52 in	52-57 in

KEY POINTS	· 5% Dextrose is used as a base solution for mixing specific drips in the field · Dextrose should not be routinely given through IO, use other methods first. Use as a last resort in peri-arrest arrest patients only. · Extravasation of Dextrose can cause tissue necrosis · Attempt to use a large vein to administer Dextrose · Precede Dextrose with Thiamine 100 mg IV / IM if the patient is suspected of chronic alcoholism or malnourishment (Adult patients)

MEDICATIONS

diazePAM (Valium)

PREGNANCY CLASS	D
ACTIONS	1. Sedative 2. Anticonvulsant 3. Amnestic (induces amnesia)
INDICATIONS	1. Status epilepticus 2. Sedation prior to transcutaneous pacing, synchronized cardioversion, and painful procedures in the conscious patient 3. Cocaine induced acute coronary syndromes 4. Agitated or combative patients
CONTRAINDICATIONS	1. Known hypersensitivity 2. Altered mental status of unknown origin 3. Head injury 4. Respiratory insufficiency
PRECAUTIONS	1. May cause respiratory depression, respiratory effort must be continuously monitored with Capnography 2. Should be used with caution with hypotensive patients and patients with altered mental status 3. diazePAM (VALIUM) potentiates alcohol or other CNS depressants
SIDE EFFECTS	1. Respiratory depression 2. Hypotension 3. Lightheadedness 4. Confusion 5. Slurred speech 6. Amnesia
SUPPLIED	5 mg / ml
ADULT DOSAGE	Status Epilepticus: 2.5 - 5 mg IV / IO may repeat to max dose 10 mg
	Procedural Sedation (Transcutaneous Pacing and Cardioversion): 2.5 - 5 mg IV / IO
	Cocaine Induced ACS: 2.5 - 5 mg IV / IO
	Airway Management: 2.5 - 5 mg IV / IO
	Combative Psych Patient: 2.5 - 5 mg IV / IO
PEDIATRIC DOSAGE	Status Epilepticus: 0.2 mg / kg slow IV / IO max dose of 5mg 0.5 mg / kg rectal max dose of 10mg
	Procedural Sedation (Transcutaneous Pacing and Cardioversion): 0.1 mg / kg slow IV / IO max dose of 5mg 0.5 mg / kg rectal max dose of 10mg
	See PEDIATRIC DRUG ADMINISTRATION CHART for weight-based administration

3-5 kg	6-7 kg	8-9 kg	10-11 kg	12-14 kg	15-18 kg	19-23 kg	24-29 kg	30-36 kg
6-11 lbs	13-15 lbs	18-20 lbs	22-24 lbs	26-31 lbs	33-37 lbs	42-51 lbs	53-64 lbs	66-81 lbs
18-24 in	24-26 in	26-29 in	29-33 in	33-38 in	38-43 in	43-48 in	48-52 in	52-57 in

MEDICATIONS

diphenhydrAMINE (Benadryl)

PREGNANCY CLASS	B
ACTIONS	Antihistamine
INDICATIONS	1. Allergic reactions 2. Adjunctive treatment to EPINEPHrine in anaphylaxis 3. Medication induced extrapyramidal symptoms (EPS)
CONTRAINDICATIONS	1. Known hypersensitivity 2. Acute asthma
PRECAUTIONS	1. Carefully monitor patient while waiting for medication to take effect (effect of medication begins 15 minutes after administration) 2. May cause CNS depression 3. Use caution in patients with history of asthma 4. Use caution in patients with history or cardiovascular disease
SIDE EFFECTS	1. Sedation 2. Dries secretions 3. May exacerbate asthma 4. Blurred vision 5. Headache 6. Hypotension 7. Tachycardia 8. Thickening of bronchial secretions
SUPPLIED	50mg / 1ml
ADULT DOSAGE	Allergic Reaction or Anaphylactic Shock: Mild reaction - 25 mg slow IV / IO or IM Moderate / Severe Reaction or Shock - 50 mg slow IV / IO or IM Extrapyramidal Symptoms: 25 mg – 50 mg IV / IM DO NOT mix in the same syringe as Haloperidol (Haldol)
PEDIATRIC DOSAGE	Allergic Reaction or Anaphylactic Shock: 1 mg/kg slow IV / IO or IM Max dose 50 mg See PEDIATRIC DRUG ADMINISTRATION CHART for weight-based administration

3-5 kg	6-7 kg	8-9 kg	10-11 kg	12-14 kg	15-18 kg	19-23 kg	24-29 kg	30-36 kg
6-11 lbs	13-15 lbs	18-20 lbs	22-24 lbs	26-31 lbs	33-37 lbs	42-51 lbs	53-64 lbs	66-81 lbs
18-24 in	24-26 in	26-29 in	29-33 in	33-38 in	38-43 in	43-48 in	48-52 in	52-57 in

KEY POINTS	• Use in anaphylaxis only after EPINEPHrine (Adrenaline) and stabilization of cardiorespiratory symptoms

MEDICATIONS

DOPamine (Intropin)

PREGNANCY CLASS	C
ACTIONS	1. Alpha and beta-adrenergic agonist 2. Increased blood pressure 3. Vasoconstriction 4. Increased peripheral arterial resistance 5. Increase cardiac output and heart rate 6. Increased myocardial contractility and stroke volume
INDICATIONS	1. Cardiogenic shock 2. Bradycardia 3. Septic shock refractory to volume replacement 4. Neurogenic shock refractory to volume replacement
CONTRAINDICATIONS	1. Known hypersensitivity 2. Hypovolemia without fluid replacement therapy 3. Pheochromocytoma (adrenal tumor)
PRECAUTIONS	1. Extravasation may cause tissue necrosis 2. Correct hypovolemia with volume replacement prior to starting DOPAmine 3. May cause tachyarrhythmia's or excessive vasoconstriction 4. Do not mix with sodium bicarbonate 5. Use caution in patients with cardiovascular disease
SIDE EFFECTS	1. Ectopic beats (slow infusion use caution) 2. Nausea / Vomiting 3. Tachycardia 4. Palpitations 5. Dyspnea 6. Headache 7. Angina
SUPPLIED	Premixed bag of 400 mg / 250 ml (1600 mcg / ml) for IV drip only VERIFY ACTUAL CONCENTRATION ON HAND BEFORE ADMINISTRATION
ADULT DOSAGE	Cardiogenic / Septic / Neurogenic Shock: 5 - 20 micrograms / kg / minute IV infusion titrated to MAP 70 / SBP 90
	Post Cardiac Arrest 5 - 20 micrograms / kg / minute IV infusion titrated to MAP 70 / SBP 90
	Toxic Inhalation / Ingestion – Cyanide 5 - 20 micrograms / kg / minute IV infusion titrated to MAP 70 / SBP 90
	Bradycardia: 5 - 20 micrograms / kg / minute IV infusion titrated to MAP 70 / SBP 90
PEDIATRIC DOSAGE	Cardiogenic / Septic / Neurogenic Shock: Post Cardiac Arrest: 5 - 20 micrograms / kg / minute IV infusion titrated to effect

IF DOPAMINE UNAVIALBLE SEE EPINEPHRINE (ADRENILIN) FOR DRIP INFORMATION

DOPAMINE DRIP CHART 1600 mcg/ml ONLY

	DOSE (mcg/kg/min)			
WEIGHT(KG)	5	10	15	20
40	8	15	23	30
50	10	19	28	38
60	12	23	34	45
70	14	26	39	56
80	15	30	45	60
90	17	34	51	68
100	19	38	56	75
110	21	42	62	82
120	23	46	68	90
130	25	48	74	98
140	27	52	78	112

USE 60 GTT SET ONLY - TITRATE TO LEVEL OF CONSCIOUSNESS AND BP

MEDICATIONS

EPINEPHrine (Adrenaline)

PREGNANCY CLASS	C
ACTIONS	1. Alpha and beta-adrenergic agonist 2. Bronchodilation 3. Increase heart rate and automaticity 4. Increases cardiac contractility 5. Increases myocardial conduction velocity 6. Increases blood pressure
INDICATIONS	1. Cardiac arrest 2. Anaphylactic reaction 3. Anaphylactic shock 4. Respiratory distress
CONTRAINDICATIONS	Known hypersensitivity
PRECAUTIONS	Blood pressure, pulse, and ECG must be routinely monitored for all patients receiving EPINEPHrine
SIDE EFFECTS	1. Palpitations 2. Anxiety 3. Headache 4. Trembling 5. Nausea / vomiting
SUPPLIED	1 mg / 10 ml – 0.1 mg / ml (1:10,000) 1 mg / 1ml (1:1000) Autoinjector Adult 0.3 mg EPINEPHrine >30kg (66 lbs) Autoinjector Jr. Peds 0.15 mg EPINEPHrine 15-30kg lbs (33-66)
ADULT DOSAGE	Cardiac Arrest: 1 mg of EPINEPHrine 0.1 mg / ml (1:10,000) IV / IO every 3 - 5 minutes
	Anaphylactic Reaction / Shock: 0.3 - 0.5 mg of EPINEPHrine 1mg / ml (1:1000) IM EMT MUST USE EPINEPHRINE AUTO-INJECTOR (0.3 mg) >30kg (66 lbs).
	Respiratory Distress – Stridor: 5 mg of EPINEPHrine 1 mg / ml (1:1000) Nebulized Undiluted Dose
	Respiratory Distress: (Unresponsive to aerosols) 0.3 - 0.5 mg of EPINEPHrine 1mg / ml (1:1000) IM
	Anaphylactic Shock: (Impending Arrest) 0.1 ml per minute of EPINEPHrine 0.1 mg / ml (1:10,000) IV / IO until resolution of blood pressure. Max dose 0.5 mg
PEDIATRIC DOSAGE	Cardiac Arrest: 0.01 mg / kg of EPINEPHrine 0.1 mg / ml (1:10,000) - IV / IO every 3 - 5 minutes. Max 1mg per dose
	Anaphylactic Reaction / Shock: 0.01 mg / kg of EPINEPHrine 1mg / ml (1:1000) IM - Max dose 0.5 mg EMT MUST USE EPINEPHRINE AUTO-INJECTOR JR (0.15 mg) 33 – 66 lbs.
	Croup: (If Racemic EPINEPHrine Not Available) <10 kg 3 ml of EPINEPHrine 1 mg / ml (1:1000) nebulized >10 kg 5 ml of EPINEPHrine 1 mg / ml (1:1000) nebulized
	Respiratory Distress: (Unresponsive to Aerosols) 0.01 mg / kg of EPINEPHrine 1mg / ml (1:1000) IM - Max dose 0.5 mg
	Anaphylactic Shock: (Impending Arrest) 0.01 mg / kg of 0.1 mg / ml (1:10,000) IV / IO until resolution of blood pressure – Max dose 0.5 mg
	See PEDIATRIC DRUG ADMINISTRATION CHART for weight-based administration

3-5 kg	6-7 kg	8-9 kg	10-11 kg	12-14 kg	15-18 kg	19-23 kg	24-29 kg	30-36 kg
6-11 lbs	13-15 lbs	18-20 lbs	22-24 lbs	26-31 lbs	33-37 lbs	42-51 lbs	53-64 lbs	66-81 lbs
18-24 in	24-26 in	26-29 in	29-33 in	33-38 in	38-43 in	43-48 in	48-52 in	52-57 in

KEY POINTS	Do Not Confuse Epi 1 mg / ml (1:1000) IM and 0.1 mg / ml (1:10,000) IV
EPI DRIP	Backup for DOPAmine if Unavailable
	MIX 1 mg EPINEPHrine (Any available concentration, with preference to 1mg / ml (1:1000) if possible) into D5 or Saline Utilize small volumes of base solution Ex. 100ml bag or 250ml bag wherever possible. If larger bags are only size available; Remove volume to make 100ml or 250ml base solution volume (Last Resort, no other options.)
	Cardiogenic, Neurogenic, Septic Shock, Post Resuscitation – Adult or Peds 0.1 - 0.5 micrograms / kg / minute IV infusion titrated to MAP 70 / SBP 90 (Adult)

If mixed in 100 ml = 10 mcg / ml Use macro drip set Needed dose x weight (kg) x drip set / 10 Example: 0.1 mcg / kg / min x 100 kg x 10 gtt set / 10 = 10 drops per min	If mixed in 250 ml = 4 mcg / ml Use macro drip set Needed dose x Weight (kg) x drip set / Example: 0.1 mcg / kg / min x 100 kg x 10 / 4 = 25 drops per min	If mixed in 500 ml = 2 mcg / ml Use macro drip set Needed dose x Weight (kg) x drip set / Example: 0.1 mcg / kg / min x 100 kg x 10 / 2 = 50 drops per min

MEDICATIONS
fentaNYL (Sublimaze)

PREGNANCY CLASS	C
ACTIONS	Inhibits pain pathways altering perception and response to pain
INDICATIONS	1. Severe pain management 2. ACS / STEMI 3. Abdominal Pain 4. Isolated trauma
CONTRAINDICATIONS	1. Hypersensitivity 2. Uncontrolled hemorrhage 3. Shock
PRECAUTIONS	
SIDE EFFECTS	1. Respiratory depression 2. Bradycardia 3. Muscle rigidity
SUPPLIED	100 mcg / 2 ml VERIFY ACTUAL CONCENTRATION ON HAND BEFORE ADMINISTRATION
ADULT DOSAGE	Acute Coronary Symptoms: 25 – 100 mcg IV / IO / IM / IN May repeat q5 min – Max 100 mcg
	Severe Pain Management: 25 – 100 mcg IV / IO / IM / IN May repeat q5 min – Max 100 mcg
	Abdominal Pain: 25 – 100 mcg IV / IO / IM / IN May repeat q5 min – Max 100 mcg
PEDIATRIC DOSAGE	Severe Pain Management: 1 mcg / kg IV / IO / IM / IN may repeat in 10 – 15 mins Max 50 mcg IV / IO / IM – 100 mcg IN
	See PEDIATRIC DRUG ADMINISTRATION CHART for weight-based administration

3-5 kg	6-7 kg	8-9 kg	10-11 kg	12-14 kg	15-18 kg	19-23 kg	24-29 kg	30-36 kg
6-11 lbs	13-15 lbs	18-20 lbs	22-24 lbs	26-31 lbs	33-37 lbs	42-51 lbs	53-64 lbs	66-81 lbs
18-24 in	24-26 in	26-29 in	29-33 in	33-38 in	38-43 in	43-48 in	48-52 in	52-57 in

KEY POINTS	• Likelihood of side effects increases with rapid administration • Narcotic naive patients may need lower dosing regiment • Preferred analgesic for trauma / ACS • Must be given slowly IV

MEDICATIONS
GLUCAGON (Glucagen)

PREGNANCY CLASS	B
ACTIONS	1. Causes breakdown of glycogen to glucose increasing blood glucose level
INDICATIONS	1. Correction of hypoglycemia when vascular access is not able to be established and oral glucose is contraindicated
CONTRAINDICATIONS	Known hypersensitivity
PRECAUTIONS	1. Glucagon is only effective in patients with sufficient stores of glycogen (glycogen stored in liver) 2. Glucagon can be administered on scene, but do not wait for it to take affect
SIDE EFFECTS	1. Nausea and vomiting 2. Hyperglycemia
SUPPLIED	Vials of 1mg Glucagon with 1ml of diluting solution
ADULT DOSAGE	Hypoglycemia without Vascular Access: 1 mg IM
PEDIATRIC DOSAGE	Hypoglycemia Without Vascular Access: 0.5 mg IM < 20kg 1 mg IM > 20kg
KEY POINTS	· Response is usually noticed in 5 - 20 minutes. If response is delayed, dose may be repeated · If IV is established after Glucagon (Glucagen) is given and patient is still hypoglycemic, administer Dextrose

MEDICATIONS
HALOPERIDOL (Haldol)

PREGNANCY CLASS	C
ACTIONS	Chemical restraint of acute psychosis or agitation patients
INDICATIONS	Aggressive, violent, or severely agitated patients in the setting of psychosis or alcohol intoxication
CONTRAINDICATIONS	1. *Not for use in combative or violent reactions resulting from treatable medical emergencies Such as Hypoxemia, Sepsis, Seizure, Encephalitis, Hypoglycemia or Stroke.* 2. Dementia related psychosis 3. Known hypersensitivity 4. Parkinson's disease 5. CNS depression 6. Severe cardiac disease 7. Hepatic disease
PRECAUTIONS	1. Elderly patients 2. Prolonged QT interval on EKG 3. Renal patients 4. Respiratory diseases 5. Seizure disorders
SIDE EFFECTS	1. Sedation 2. Extrapyramidal symptoms (EPS) / dystonic reactions 3. Orthostatic Hypotension
SUPPLIED	5 mg / 1 ml
ADULT DOSAGE	Combative Psych Patient: 5 mg IM ONLY Over age 65; 2.5 mg IM ONLY
	Alcohol Related Emergencies 5 mg IM ONLY Over age 65; 2.5 mg IM ONLY
PEDIATRIC DOSAGE	Not Indicated in the pre-hospital setting
KEY POINTS	• If administration causes extrapyramidal symptoms (EPS) give diphenhydrAMINE (Benadryl) 25 mg – 50 mg IV / IM • EPS symptoms are: Involuntary purposeless movements of body, usually of the face such as grimacing, tongue protrusion, lip smacking, lip puckering, or eye blinking. • DO NOT mix Haloperidol (Haldol) and diphenhydrAMINE (Benadryl) in the same syringe.

MEDICATIONS
HEPARIN

PREGNANCY CLASS	C
ACTIONS	Anticoagulant
INDICATIONS	1. STEMI
CONTRAINDICATIONS	1. Hypersensitivity 2. Active bleeding 3. Trauma 4. Hypertension 5. Aortic dissection 6. Pregnancy 7. Surgery within last 14 days 8. Symptoms of CVA
PRECAUTIONS	
SIDE EFFECTS	1. Bleeding
SUPPLIED	5000 U / 5 ml VERIFY ACTUAL CONCENTRATION ON HAND BEFORE ADMINISTRATION
ADULT DOSAGE	Confirmed STEMI: 60 units / kg IV / IO Max dose 4000 units
	Greater than 76 kg or 147 lbs. = 4000 U dose
PEDIATRIC DOSAGE	Not recommended in the pre-hospital setting

MEDICATIONS
HYDROmorphone (Dilaudid)

PREGNANCY CLASS	C
ACTIONS	Inhibits pain pathways altering perception and response to pain
INDICATIONS	1. Moderate to severe pain management 2. Burns 3. Intractable flank pain 4. Intractable back pain 5. Musculoskeletal and / or fracture pain 6. Sickle cell pain crisis (USE SUPPLEMENTAL O2) 7. Unremitting abdominal pain (NOT OF OB ORIGIN) 8. Chest Pain
CONTRAINDICATIONS	1. Known hypersensitivity 2. Head injury or head trauma 3. Hypotension 4. Respiratory depression 5. Acute or severe asthma or COPD 6. Labor pain 7. Shock
PRECAUTIONS	1. Liver failure, renal failure, or patients in excess of 65 years should receive half dose, titrated to their pain tolerance 2. If the patient responds with respiratory depression administer Naloxone (Narcan) to reverse the effects 3. All patients must have supplemental oxygen administration and oxygen saturation monitoring 4. HYDROmorphone (Dilaudid) will mask pain, so conduct a complete assessment prior to administration 5. Use caution if patient is hypersensitive to sulfites 6. Use caution if patient is hypersensitive to latex 7. May cause CNS depression 8. Use caution in patients with hypersensitivity to other narcotics 9. Push over 2 mins
SIDE EFFECTS	1. Respiratory depression 2. Altered LOC 3. Bradycardia 4. Nausea and vomiting 5. Constricted pupils
SUPPLIED	1 mg / 1 ml VERIFY ACTUAL CONCENTRATION ON HAND BEFORE ADMINISTRATION
ADULT DOSAGE	Severe Pain Management: 0.5 mg – 1 mg IV / IM Over 65 years, liver failure, renal failure or debilitated patients: Titrated to pain tolerance, up to 0.5 mg IV / IM May repeat if needed
	Abdominal Pain: 0.5 mg – 1 mg IV / IM Over 65 years, liver failure, renal failure or debilitated patients: Titrated to pain tolerance, up to 0.5 mg IV / IM May repeat if needed
PEDIATRIC DOSAGE	Not recommended in the pre-hospital setting
KEYPOINTS	· Likelihood of side effects increases with rapid administration · Narcotic naive patients may need lower dosing regiment · Preferred analgesic for intractable / unremitting pain

MEDICATIONS
IPRATROPIUM (Atrovent)

PREGNANCY CLASS	B
ACTIONS	1. Blocks action of acetylcholine at receptor sites on bronchial smooth muscle 2. Dries bronchial secretions
INDICATIONS	Treatment of bronchospasm in patients with COPD as an adjunct to albuterol
CONTRAINDICATIONS	Known hypersensitivity
SIDE EFFECTS	1. Dry nose, mouth 2. Paradoxical bronchospasm 3. Nausea 4. Chest pain 5. Palpitations 6. Headache 7. Dizziness
SUPPLIED	Single unit dose 0.5 mg in 2.5 ml of nebulizer solution
ADULT DOSAGE	Respiratory Distress / Asthma / COPD: (As Part of DuoNeb) Single unit dose via nebulizer and 6 - 8 lpm oxygen
	Congestive Heart Failure with wheezing: (As Part of DuoNeb) Single unit dose via nebulizer and 6 - 8 lpm oxygen
	Anaphylaxis: (As Part of DuoNeb) Single unit dose via nebulizer and 6 - 8 lpm oxygen
	STOP EMT MUST CONTACT ONLINE MEDICAL CONTROL
PEDIATRIC DOSAGE	Respiratory Distress Lower Airway: Mild Moderate Distress - Second and third doses use Albuterol/Ipratropium (DuoNeb) Unit dose via nebulizer and 6 – 8 lpm oxygen, First Dose – Use Albuterol Only Severe Distress - Albuterol/Ipratropium (DuoNeb) Unit dose via nebulizer and 6 – 8 lpm oxygen
	STOP EMT MUST CONTACT ONLINE MEDICAL CONTROL
KEY POINTS	· Mix with Albuterol (Proventil) for administration · Used with Albuterol when Albuterol/Ipratropium (Duoneb) unavailable or not supplied

MEDICATIONS

KETAMINE (Ketalar)

PREGNANCY CLASS	B
ACTIONS	Sedation, analgesia, and anesthesia
INDICATIONS	1. Induction of anesthesia for RSI 2. Medication assisted airway maintenance 3. Tranquilization of the violent patient 4. Pain Management
CONTRAINDICATIONS	1. Uncontrolled Hypertension 2. Known Hypersensitivity
PRECAUTIONS	1. May interact with other medications and alcohol, bradypnea or apnea can result 2. Use in setting with providers capable of intubation
SIDE EFFECTS	1. Hallucinations / Vivid dreams 2. Hypertension 3. Tachycardia 4. Increased Cardiac Output 5. Salivation 6. Tonic-clonic Movements 7. Increased Cardiac Output 8. Myocardial Depression
SUPPLIED	500 mg / 5 ml (100 mg / ml) or 100 mg / 10ml (10mg / ml) VERIFY ACTUAL CONCENTRATION ON HAND BEFORE ADMINISTRATION Creation of 10 mg / ml concentration from 100 mg / ml concentration - Use 10 ml syringe with 9 ml of saline and then draw 1 ml of 100 mg / ml and mix in syringe - Yield is 10 mg / ml
ADULT DOSAGE	Adult Advanced Airway Placement: 1 - 2 mg / kg IV / IO
	Induction for RSI (For Departments Who Provide RSI) 1 - 2 mg / kg IV / IO
	Violent Psych / Excited Delirium / Acute Psychosis 250 mg IM of the 100mg/ml concentration (2.5 ml), May repeat 250 IM in 2 mins if no response
	Pain Management – MUST USE 10 mg / ml Concentration – See Above 0.1-0.3 mg / kg IV / IO / IM / IN May repeat q5 min – max 30 mg
PEDIATRIC DOSAGE	Not recommended in the pre-hospital setting
KEY POINTS	· To prevent emergence reactions (Confusion, excitement, irrational behavior, hallucinations) after administration of Ketamine (Ketalar), administer a Benzodiazepine such as LORazepam (Ativan) or Midazolam (Versed) · If dissociative doses (any dosing other than pain dosing) of Ketamine (Ketalar) given, make sure verbal hand off is with the receiving *Physician* and includes this information so patient presentation is not confused with other medical etiology. · Blood pressure may elevate after injection but usually returns to pre-administration values within 15 mins.

MEDICATIONS
KETOROLAC (Toradol)

PREGNANCY CLASS	C
ACTIONS	1. Non-Steroidal Anti-Inflammatory Analgesic 2. Antipyretic
INDICATIONS	1. Kidney stones / Flank pain 2. Moderate pain
CONTRAINDICATIONS	1. Known hypersensitivity to NSAIDS / Aspirin 2. >65 years old 3. Bleeding (GI, Cerebrovascular) 4. Obvious pregnancy / nursing mothers 5. Asthma
SIDE EFFECTS	1. Edema 2. Hypertension 3. Rash 4. Nausea 5. Dizziness
SUPPLIED	30 mg / 1 ml
ADULT DOSAGE	Moderate Pain / Kidney Stones: 15 mg IV / IO 30 mg IM
PEDIATRIC DOSAGE	Not recommended in the pre-hospital setting

MEDICATIONS
LABETALOL (Trandate)

PREGNANCY CLASS	C
ACTIONS	Reduces blood pressure by decreasing peripheral vascular resistance
INDICATIONS	1. Correction of hypertension associated with stroke 2. Correction of blood pressure associated with OB emergencies
CONTRAINDICATIONS	1. Known hypersensitivity to Labetolol (Trandate) or beta blockers 2. Bradycardia 3. Heart blocks 4. Shock 5. Sick sinus syndrome 6. Heart failure
PRECAUTIONS	1. Asthma / bronchospastic diseases 2. Impaired liver functions 3. Elderly 4. Thyroid disorders 5. Hypotension may occur 6. Conduction disturbances in cardiac conduction may occur
SIDE EFFECTS	1. Hypotension 2. Bradycardia 3. Dizziness 4. Fatigue 5. Arrhythmias
SUPPLIED	20 mg / 4 ml vial or Carpuject or 100 mg / 20ml - vial
ADULT DOSAGE	Pre-Eclampsia, Eclampsia, or Post-partum Hypertension If SBP >160 and / or DBP 110 with symptoms 20 mg IV slow – if no improvement in 5 min then; 40 mg IV slow
	Stroke with hypertension – WHERE PARTICPATING If SBP > 220 or DBP > 120 verified by 2 readings, in 2 locations, 1 manual 10 mg IV slow – if no improvement in 10 min then; 20 mg IV slow
PEDIATRIC DOSAGE	Not Indicated in the pre-hospital setting
KEY POINTS	▪ Check blood pressures in both arms, with at least one BP being a manual BP ▪ Monitor cardiac and pulmonary status during administration

MEDICATIONS

LIDOCAINE (Xylocaine)

PREGNANCY CLASS	B
ACTIONS	1. Anesthetizes the intraosseous space during fluid administration to increase pain tolerance 2. Supresses ventricular ectopy
INDICATIONS	1. Anesthetization of intraosseous space prior to or during IO administration of fluids 2. Antiarrythimic for ventricular arrythmias in the absence of Amiodarone (Cordarone)
CONTRAINDICATIONS	1. Known hypersensitivity to Lidocaine (Xylocaine) or caine family 2. AV blocks 3. Idioventricular escape rhythms 4. Accelerated idioventricular rhythm 5. Sinus bradycardia or arrest or block 6. Hypotension 7. Shock
SIDE EFFECTS	1. Dizziness 2. Numbness 3. Drowsiness 4. Confusion 5. Seizure 6. Respiratory depression
PRECAUTIONS	1. Do NOT use Lidocaine (Xylocaine) if Amioadrone (Cordarone) already used 2. Use half dose if patient is over 70 years old or has a history of liver failure or CHF
SUPPLIED	100 mg / 5 ml
ADULT DOSAGE	Anesthetization of Intraosseous Space: Up to 40 mg IO push - slow to allow Anesthetization of the IO space
	Ventricular Fibrillation or Ventricular Tachycardia without a Pulse 1 - 1.5 mg / kg IV / IO First Dose 0.5 – 0.75 mg / kg IV / IO Second Dose if needed (max dose 3 mg / kg) If Conversion to a non-bradycardic perfusing rhythm occurs, then start Lidocaine (Xylocaine) drip at 2 – 4 mg / min
	Wide Complex Tachycardia with a Pulse 1 - 1.5 mg / kg IV / IO First Dose 0.5 – 0.75 mg / kg IV / IO Second Dose if needed (max dose 3 mg / kg) If Conversion to a non-bradycardic perfusing rhythm occurs, then use Lidocaine (Xylocaine) give 0.5 mg / kg IV / IO every 10 mins to maintain x 2.
PEDIATRIC DOSAGE	Anesthetization of Intraosseous Space: 0.5 mg / kg IO push - slow to allow Anesthetization of the IO space Max 40 mg
	Ventricular Fibrillation or Ventricular Tachycardia without a Pulse 1 mg / kg IV / IO First Dose 0.5 mg / kg IV / IO Second Dose if needed (max dose 3 mg / kg) If Conversion to a non-bradycardic perfusing rhythm occurs, then start Lidocaine (Xylocaine) drip at 2 – 4 mg / min
	Ventricular Fibrillation or Ventricular Tachycardia without a Pulse 1 mg / kg IV / IO First Dose 0.5 mg / kg IV / IO Second Dose if needed (max dose 3 mg / kg) If Conversion to a non-bradycardic perfusing rhythm occurs, then use Lidocaine (Xylocaine) give 0.5 mg / kg IV / IO every 10 mins to maintain x 2.
	See PEDIATRIC DRUG ADMINISTRATION CHART for weight-based administration

3-5 kg	6-7 kg	8-9 kg	10-11 kg	12-14 kg	15-18 kg	19-23 kg	24-29 kg	30-36 kg
6-11 lbs	13-15 lbs	18-20 lbs	22-24 lbs	26-31 lbs	33-37 lbs	42-51 lbs	53-64 lbs	66-81 lbs
18-24 in	24-26 in	26-29 in	29-33 in	33-38 in	38-43 in	43-48 in	48-52 in	52-57 in

MEDICATIONS

LORazepam (Ativan)

PREGNANCY CLASS	D
ACTIONS	4. Sedative 5. Anticonvulsant 6. Amnestic (induces amnesia)
INDICATIONS	5. Status epilepticus 6. Sedation prior to transcutaneous pacing, synchronized cardioversion, and painful procedures in the conscious patient 7. Cocaine induced acute coronary syndromes 8. Agitated or combative patients
CONTRAINDICATIONS	5. Known hypersensitivity 6. Altered mental status of unknown origin 7. Head injury 8. Respiratory insufficiency
PRECAUTIONS	4. May cause respiratory depression, respiratory effort must be continuously monitored with Capnography 5. Should be used with caution with hypotensive patients and patients with altered mental status 6. LORazepam (Ativan) potentiates alcohol or other CNS depressants
SIDE EFFECTS	7. Respiratory depression 8. Hypotension 9. Lightheadedness 10. Confusion 11. Slurred speech 12. Amnesia
SUPPLIED	2 mg / 1 ml
ADULT DOSAGE	Status Epilepticus: 1 – 2 mg IM / IV / IO / IN per dose (max dose 4 mg) Half dose > 65 / Liver disease May repeat in 5 - 10 minutes, if seizure persists and patient SBP is > 90 mmHg
	Procedural Sedation (Transcutaneous Pacing and Cardioversion): 1 – 2 mg IM / IV / IO / IN (max dose 2 mg)
	Cocaine Induced ACS: 1 – 2 mg IM / IV / IO / IN (max dose 2 mg)
	Airway Management: 1 – 2 mg IM / IV / IO / IN (max dose 2 mg)
	Combative Psych Patient: 1 – 2 mg IM / IV / IO / IN (max dose 2 mg)
	Alcohol Related Emergencies – Combative / Withdrawal: 1 – 2 mg IM / IV / IO / IN (max dose 2 mg)
PEDIATRIC DOSAGE	Status Epilepticus: 0.05 – 0.1 mg / kg slow IV / IO / IN (max dose 2 mg)
	Procedural Sedation (Transcutaneous Pacing and Cardioversion): 0.05 mg / kg slow IV / IO / IN (max dose 2 mg)
	See PEDIATRIC DRUG ADMINISTRATION CHART for weight-based administration

3-5 kg	6-7 kg	8-9 kg	10-11 kg	12-14 kg	15-18 kg	19-23 kg	24-29 kg	30-36 kg
6-11 lbs	13-15 lbs	18-20 lbs	22-24 lbs	26-31 lbs	33-37 lbs	42-51 lbs	53-64 lbs	66-81 lbs
18-24 in	24-26 in	26-29 in	29-33 in	33-38 in	38-43 in	43-48 in	48-52 in	52-57 in

MEDICATIONS
MAGNESIUM SULFATE

PREGNANCY CLASS	A
ACTIONS	1. Central Nervous System Depressant 2. Anticonvulsant 3. Antiarrhythmic 4. Bronchodilation
INDICATIONS	1. Ventricular fibrillation / pulseless ventricular tachycardia in patients who are malnourished or chronic alcoholics 2. Treatment of seizures in eclampsia patients 3. Torsades de pointes 4. Asthma / COPD refractory to sympathomimetic
CONTRAINDICATIONS	1. Known hypersensitivity 2. Shock 3. Heart blocks
PRECAUTIONS	1. Hypotension 2. Renal impairment
SIDE EFFECTS	1. Respiratory depression 2. Flushing 3. Drowsiness
SUPPLIED	2 grams / 100 ml or 1 gram / 2 ml vial 50% solution or 2 grams / 50 ml VERIFY ACTUAL CONCENTRATION ON HAND BEFORE ADMINISTRATION
ADULT DOSAGE	Cardiac Arrest / Torsades or Hypomagnesemia: 1 - 2 g IV
	Torsades with Pulse: 1 - 2 g IV
	Eclampsia / Pre-Eclmapsia / Post-Partum Hypertension: 4 - 6 g IV
	Respiratory Distress / Bronchoconstriction with minimal relief from sympatomimietics 2 Grams Slow IV
PEDIATRIC DOSAGE	Not recommended in the pre-hospital setting
KEY POINTS	· Check deep tendon reflexes (DTR's) after administration · Monitor EKG, vital signs and respiratory effort during administration

MEDICATIONS

methylPREDNISolone (SOLU-medrol)

PREGNANCY CLASS	C
ACTIONS	1. Reduces inflammation in lower airways
INDICATIONS	1. Anaphylaxis 2. Asthma 3. COPD
CONTRAINDICATIONS	None in the emergency setting
PRECAUTIONS	1. Use with caution in diabetics, hyperglycemia 2. Use with caution in recent MI
SIDE EFFECTS	1. Hyperglycemia 2. Increased susceptibility to infection 3. GI bleeding
SUPPLIED	125 mg / 2 ml Act-o-Vial
ADULT DOSAGE	Anaphylaxis: 125 mg IV / IO Respiratory Distress / Asthma / COPD / Stridor: 125 mg IV / IO
PEDIATRIC DOSAGE	Anaphylaxis: 2 mg / kg IV (max dose 125 mg) Pediatric Upper Airway (Stridor / Croup): 2 mg / kg IV (max dose 125 mg) Pediatric Lower Airway (Wheezing): 2 mg / kg IV (max dose 125 mg) See PEDIATRIC DRUG ADMINISTRATION CHART for weight-based administration
KEY POINTS	• methylPREDNISolone (SOLU-medrol) will need to be mixed just prior to administration. Fluid will initially be cloudy, but will change quickly to clear • Be cautious with pediatric dosing, as the amounts may be very small. Use a 1 ml syringe for accuracy

3-5 kg	6-7 kg	8-9 kg	10-11 kg	12-14 kg	15-18 kg	19-23 kg	24-29 kg	30-36 kg
6-11 lbs	13-15 lbs	18-20 lbs	22-24 lbs	26-31 lbs	33-37 lbs	42-51 lbs	53-64 lbs	66-81 lbs
18-24 in	24-26 in	26-29 in	29-33 in	33-38 in	38-43 in	43-48 in	48-52 in	52-57 in

MEDICATIONS

MIDAZOLAM (Versed)

PREGNANCY CLASS	D
ACTIONS	Hypnotic and sedative effects
INDICATIONS	Premedication before cardioversion or transcutaneous pacing Status epilepticus
CONTRAINDICATIONS	1. Known hypersensitivity to the drug 2. Hypotension 3. Respiratory Depression 4. Allergy to Benzodiazepines 5. Caution with CHF and COPD
PRECAUTIONS	1. Use lower initial doses in elderly or debilitated patients 2. Avoid rapid injection
SIDE EFFECTS	1. Drowsiness 2. Hypotension 3. Amnesia 4. Respiratory Depression 5. CNS Depression 6. Nausea 7. Vomiting
SUPPLIED	5 mg / 1 ml VERIFY ACTUAL CONCENTRATION ON HAND BEFORE ADMINISTRATION
ADULT DOSAGE	Status Epilepticus - With Vascular Access: 2.5 mg IV - Max 5 mg
	Status Epilepticus - Without Vascular Access: 5 mg IM / IN Atomized – (1/2 dose up each nostril – 1 ml total for each nostril) Max 10 mg
	Procedural Sedation (Cardioversion, Pacing) With Vascular Access: 2.5 mg IV (1 minute prior to procedure) Max 5 mg
	Procedural Sedation (Cardioversion, Pacing) No Vascular Access: 5 mg IM / IN Atomized – (1/2 dose up each nostril – 1 ml total for each nostril) Max 10 mg
	Airway Management – With Vascular Access: 2.5 mg IV (1 minute prior to procedure) Max 5 mg
	Airway Management – No Vascular Access: 5 mg IM / IN Atomized – (1/2 dose up each nostril – 1 ml total for each nostril) Max 10 mg
	Alcohol Related Emergencies – Combative / Withdrawal – With Vascular Access 2.5 mg IV (1 minute prior to procedure) Max 5 mg
	Alcohol Related Emergencies – Combative / Withdrawal – No Vascular Access 5 mg IM / IN Atomized – (1/2 dose up each nostril – 1 ml total for each nostril) Max 10 mg
	Combative Psych Patient – With Vascular Access 2.5 mg IV (1 minute prior to procedure) Max 5 mg
	Combative Psych Patient – NO Vascular Access 5 mg IM / IN Atomized – (1/2 dose up each nostril – 1 ml total for each nostril) Max 10 mg
	Cocaine Induced ACS – With Vascular Access 2.5 mg IV (1 minute prior to procedure) Max 5 mg
	Cocaine Induced ACS – NO Vascular Access 5 mg IM / IN Atomized – (1/2 dose up each nostril – 1 ml total for each nostril) Max 10 mg
PEDIATRIC DOSAGE	Status Epilepticus – With Vascular Access: 0.1 mg / kg IV max dose 2 mg
	Status Epilepticus – NO Vascular Access: 0.2 mg / kg IN – (1/2 dose up each nostril) Max Dose 5 mg
	Procedural Sedation (Cardioversion, Pacing) With Vascular Access: 0.1 mg / kg IV max dose 2 mg
	Procedural Sedation (Cardioversion, Pacing) No Vascular Access: 0.2 mg / kg IN – (1/2 dose up each nostril) Max Dose 5 mg
	See PEDIATRIC DRUG ADMINISTRATION CHART for weight-based administration

3-5 kg	6-7 kg	8-9 kg	10-11 kg	12-14 kg	15-18 kg	19-23 kg	24-29 kg
6-11 lbs	13-15 lbs	18-20 lbs	22-24 lbs	26-31 lbs	33-37 lbs	42-51 lbs	53-64 lbs
18-24 in	24-26 in	26-29 in	29-33 in	33-38 in	38-43 in	43-48 in	48-52 in

KEY POINTS	• Monitor respiratory status continuously

MEDICATIONS

MORPHINE SULFATE

PREGNANCY CLASS	C
ACTIONS	1. Inhibits pain pathways altering perception and response to pain 2. Mild vasodilatation
INDICATIONS	1. Cardiac chest discomfort and acute MI 2. Pain Management
CONTRAINDICATIONS	1. Known hypersensitivity 2. Respiratory depression 3. Head injury or head trauma 4. Hypotension 5. Multi-system trauma patients
PRECAUTIONS	1. May cause respiratory depression and / or hypotension 2. Routinely monitor the patient's respiratory effort / Spo2 3. Morphine may mask pain, so conduct a complete assessment prior to administration 4. Administer slowly and titrate to pain
SIDE EFFECTS	1. Respiratory depression 2. Altered LOC 3. Hypotension 4. Bradycardia 5. Nausea and vomiting 6. Constricted pupils
SUPPLIED	10 mg / 1 ml VERIFY ACTUAL CONCENTRATION ON HAND BEFORE ADMINISTRATION
ADULT DOSAGE	Cardiac Chest Discomfort and Acute MI: 2.5 - 5 mg IV / IM Max Dose 10 mg
	Severe Pain Management: 2.5 - 5 mg IV / IM May Repeat q5 mins Max Dose 10 mg
PEDIATRIC DOSAGE	Severe Pain Management: 0.1 mg / kg IV / IM May Repeat q10 mins Max Dose 4 mg
	See PEDIATRIC DRUG ADMINISTRATION CHART for weight-based administration

3-5 kg	6-7 kg	8-9 kg	10-11 kg	12-14 kg	15-18 kg	19-23 kg	24-29 kg	30-36 kg
6-11 lbs	13-15 lbs	18-20 lbs	22-24 lbs	26-31 lbs	33-37 lbs	42-51 lbs	53-64 lbs	66-81 lbs
18-24 in	24-26 in	26-29 in	29-33 in	33-38 in	38-43 in	43-48 in	48-52 in	52-57 in

KEY POINTS	• Rapid administration increases likelihood of side effects • Elderly may be more susceptible to respiratory depression effects

MEDICATIONS

NALOXONE (Narcan)

PREGNANCY CLASS	C
ACTIONS	Blocks opiates from acting on opiate receptors
INDICATIONS	1. Respiratory depression due to opioids
CONTRAINDICATIONS	1. Known hypersensitivity
PRECAUTIONS	1. Assist ventilations prior to and while waiting for Naloxone (Narcan) to work 2. Should be used and titrated to desired respiratory effect, and not intended to restore full consciousness 3. Naloxone (Narcan) may induce acute withdrawal in patients who are opiate dependent. Be prepared for a potentially combative patient 4. The effects of Naloxone (Narcan) do not usually last as long as the effects of opiates, therefore subsequent doses may need to be administered 5. Withdrawal may cause: pain, hypertension, agitation, irritability, and diaphoresis
SIDE EFFECTS	Narcotic withdrawal
SUPPLIED	2 mg / 2 ml prefilled syringe or 4 mg / 0.1 ml unit dose nasal spray
ADULT DOSAGE	Opiate Overdose: 2 - 4 mg IV / IM may be repeated as needed to maintain respiratory effort – Max 12 mg
	Opiate Overdose: 2 - 4mg IN Atomized – If IN dose ineffective, summon ALS to administer subsequent doses IV / IO – Max 12 mg
PEDIATRIC DOSAGE	Opiate Overdose: 0.1 mg / kg IV / IM - Max 2 mg per dose May be repeated as needed to May be repeated as needed to maintain respiratory effort to max of 12 mg
	Opiate Overdose: 1 mg IN Atomized – If IN dose ineffective, summon ALS to administer subsequent doses IV / IO – Max 12 mg
	See PEDIATRIC DRUG ADMINISTRATION CHART for weight-based administration

3-5 kg	6-7 kg	8-9 kg	10-11 kg	12-14 kg	15-18 kg	19-23 kg	24-29 kg	30-36 kg
6-11 lbs	13-15 lbs	18-20 lbs	22-24 lbs	26-31 lbs	33-37 lbs	42-51 lbs	53-64 lbs	66-81 lbs
18-24 in	24-26 in	26-29 in	29-33 in	33-38 in	38-43 in	43-48 in	48-52 in	52-57 in

KEY POINTS	· Intra-arrest use of Naloxone (Narcan) is acceptable if indicated · If sufficient dose is not available to resolve breathing, ventilate and consider advanced airway intervention

MEDICATIONS
NITROGLYCERIN (Nitro-Stat)

PREGNANCY CLASS	C
ACTIONS	1. Vasodilatation 2. Coronary artery dilation 3. Decreases myocardial oxygen demand 4. Decreases vascular resistance
INDICATIONS	1. Suspected ischemic chest pain / AMI 2. Hypertensive emergency with signs and symptoms of ACS 3. Pulmonary edema
CONTRAINDICATIONS	1. Hypotension 2. Known hypersensitivity 3. Use of Viagra or similar erectile dysfunction or pulmonary hypertension medications within 48 hours
PRECAUTIONS	1. Use caution in patients with inferior wall MI or right ventricular involvement (Elevation in leads II, III, AVF or V4R) 2. Avoid use in patients with increased intracranial pressure or glaucoma 3. If the patient becomes hypotensive after nitroglycerine administration, then place the patient in a semi-reclined position with legs elevated and give IV normal saline bolus
SIDE EFFECTS	1. Hypotension 2. Throbbing headache 3. Lightheadedness / dizziness 4. Syncope
SUPPLIED	0.4 mg SL tablet or 400mcg SL powder (GoNitro)
ADULT DOSAGE	Cardiac Chest Discomfort / AMI: 0.4 mg (400 mcg) SL (may be repeated up to 3 doses total)
	a EMT CONTACT ONLINE MEDICAL CONTROL
	Pulmonary Edema / CHF: 0.4 mg (400 mcg) SL (may be repeated up to 3 doses total)
PEDIATRIC DOSAGE	Not recommended in prehospital setting
KEY POINTS	• May repeat up to 3 doses if B/P systolic > 110 with IV or 120 without IV • Assure that patient does not chew or swallow tablets

MEDICATIONS
OLANZapine (ZyPREXA) ODT

PREGNANCY CLASS	C
ACTIONS	1. Dopamine and Serotonin Antagonist
INDICATIONS	1. Acute Agitaton (Not combative or Violent)
CONTRAINDICATIONS	1. Hypersensitiveity to the drug or any component of the formulation
PRECAUTIONS	1. Elderly patients 2. Prolonged QT interval 3. Not approved for use in demential related psychosis
SIDE EFFECTS	1. Sedation 2. Extrapyramidal Symptoms (EPS) 3. Orthostasis
SUPPLIED	10 mg ODT (oral disingerating tablet)
ADULT DOSAGE	Behavioral Emergencies (Agitation) 10mg ODT x1 tablet
PEDIATRIC DOSAGE	Not recommended in prehospital setting
KEY POINTS	• Remove from foil blister by peeling back (do not push tablet through the foil) • Place tablet in mouth immediately upon removal • Tablet dissolves rapidly in saliva and may be swallowed with or without liquid • If administration causes extrapyramidal symptoms (EPS) give diphenhydrAMINE (Benadryl) 25 mg – 50 mg IV / IM EPS symptoms are: Involuntary purposeless movements of body, usually of the face such as grimacing, tongue protrusion, lip smacking, lip puckering, or eye blinking.

MEDICATIONS

ONDANSETRON (Zofran)

PREGNANCY CLASS	B
ACTIONS	1. Prevents nausea and vomiting by blocking serotonin peripherally and centrally in the small intestines
INDICATIONS	1. Nausea and vomiting 2. Chemotherapy and radiation induced nausea and vomiting
CONTRAINDICATIONS	1. Known hypersensitivity 2. Severe liver disease
PRECAUTIONS	1. Pregnancy 2. May prolong QT interval when used with another QT prolonging agent
SIDE EFFECTS	1. Constipation, diarrhea 2. Increased liver enzymes 3. Headache 4. Fatigue and malaise
SUPPLIED	4 mg / 2 ml single dose vial and 4 mg oral disintegrating tablets (ODT)
ADULT DOSAGE	Anti-Emetic 4 mg IM or IV May repeat in 15 minutes if symptoms unresolved
	Anti-Emetic ODT 8 mg Oral disintegrating tablets (ODT) (x2) 4mg tablets
PEDIATRIC DOSAGE	Anti-Emetic 0.15 mg / kg IM or IV -or- 0.15 mg / kg PO (injectable liquid) > 1 year old Max 4 mg
	Anti-Emetic ODT if > 40 kg / 12 Years, then 4 mg Oral disintegrating tablets (ODT) (x1) 4 mg tablet
	See PEDIATRIC DRUG ADMINISTRATION CHART for weight-based administration

3-5 kg	6-7 kg	8-9 kg	10-11 kg	12-14 kg	15-18 kg	19-23 kg	24-29 kg	30-36 kg
6-11 lbs	13-15 lbs	18-20 lbs	22-24 lbs	26-31 lbs	33-37 lbs	42-51 lbs	53-64 lbs	66-81 lbs
18-24 in	24-26 in	26-29 in	29-33 in	33-38 in	38-43 in	43-48 in	48-52 in	52-57 in

KEY POINTS	• Remove ODT tablet from foil blister by peeling back (do not push tablet through the foil) • Place the ODT tablet in mouth immediately upon removal • The ODT Tablet dissolves rapidly in saliva and may be swallowed with or without liquid

MEDICATIONS
ORAL GLUCOSE (Instant Glucose)

PREGNANCY CLASS	B
ACTIONS	Raises blood glucose level
INDICATIONS	Treatment of hypoglycemia
CONTRAINDICATIONS	1. Known hypersensitivity to corn products 2. Unconscious patients
PRECAUTIONS	1. Patient must be alert and able to sufficiently swallow 2. Monitor patient for difficulty swallowing or choking due to the thick consistency of agent
SUPPLIED	Squeeze tube containing 24 grams of flavored oral dextrose gel
ADULT DOSAGE	One complete tube (15 g – 37.5 g) by mouth
PEDIATRIC DOSAGE	Half a tube by mouth (7.5-18.75 g – Approximately) by mouth
KEY POINTS	The patient must be alert and have the ability to swallow!

MEDICATIONS
OXYGEN (O_2)

PREGNANCY CLASS	B
ACTIONS	1. Increases oxygen content of blood 2. Improves tissue oxygenation 3. Decreases energy expended for respirations
INDICATIONS	1. Cardiac chest discomfort / ACS 2. Suspected stroke 3. Hypoxemia 4. Cardiopulmonary emergencies 5. Trauma 6. Shortness of breath / dyspnea 7. Sedative drug administration 8. Unknown oxyhemoglobin saturation
CONTRAINDICATIONS	None in the prehospital setting
PRECAUTIONS	Be aware for respiratory depression in COPD patients on prolonged high flow oxygen
SIDE EFFECTS	High concentrations of oxygen may reduce the respiratory drive in some COPD patients; these patients should be carefully monitored
SUPPLIED	As a compressed gas in cylinders of varying sizes
ADULT DOSAGE	12 - 15 lpm via NRB mask or 2 - 6 lpm via nasal cannula, 6 - 10 lpm via small volume nebulizer, unless otherwise indicated
PEDIATRIC DOSAGE	12 - 15 lpm via NRB mask or 2 - 6 lpm via nasal cannula, or 6 - 10 lpm via unit dose nebulizer, unless otherwise indicated
KEY POINTS	• Never withhold oxygen to those who need it • All sedative medication administration must have oxygen administration

MEDICATIONS

PROMETHAZINE (Phenergan)

PREGNANCY CLASS	B
ACTIONS	1. Prevents nausea and vomiting 2. H_1 Blockade
INDICATIONS	1. Nausea and vomiting
CONTRAINDICATIONS	1. Known hypersensitivity 2. Under influence of depressants (including alcohol) with CNS depression 3. Coma
PRECAUTIONS	1. Pregnancy 2. May prolong QT interval when used with another QT prolonging agent
SIDE EFFECTS	1. Drowsyness 2. Imparied mental and physicial ability 3. Extrapyramidal Symptoms (EPS)
SUPPLIED	4 mg / 2 ml single dose vial and 4 mg oral disintegrating tablets (ODT)
ADULT DOSAGE	Anti-Emetic 12.5 mg IV – Diluted over 10 mins 25 mg IM May repeat in 15 minutes if symptoms unresolved
PEDIATRIC DOSAGE	Not recommended in prehospital setting
KEY POINTS	· If administration causes extrapyramidal symptoms (EPS) give diphenhydrAMINE (Benadryl) 25 mg – 50 mg IV / IM EPS symptoms are: Involuntary purposeless movements of body, usually of the face such as grimacing, tongue protrusion, lip smacking, lip puckering, or eye blinking. · Promethazine (Phenergan) may be administered after pain medications if the patient does not have an altered mental status after the administration of pain medications. · Promethazine will potentiate the effects of analgesics. · Direct IV administration is not recommended, infuse over 10 mins diluted

MEDICATIONS
RACEMIC EPINEPHRINE

PREGNANCY CLASS	C
ACTIONS	1. Reduces subglottic edema via vasoconstriction 2. Bronchodilation
INDICATIONS	1. Stridor 2. Croup
CONTRAINDICATIONS	Known hypersensitivity
PRECAUTIONS	Patient may have a rebound worsening after effects wear off
SIDE EFFECTS	1. Tachycardia 2. Hypertension
SUPPLIED	Single unit dose 0.5 ml 2.25% Must be diluted with 3 ml normal saline
ADULT DOSAGE	Stridor: Single unit dose (0.5 ml) nebulized, diluted in 3 ml normal saline
PEDIATRIC DOSAGE	Croup / Stridor: Single unit dose (0.5 ml) nebulized, diluted in 3 ml normal saline
KEY POINTS	

MEDICATIONS

SODIUM BICARBONATE

PREGNANCY CLASS	C
ACTIONS	Alkalinizing agent Decreases absorption of certain drug in the kidneys
INDICATIONS	1. Used in cardiac arrest for known dialysis patients 2. Tricyclic overdoses
CONTRAINDICATIONS	Known hypersensitivity
PRECAUTIONS	1. Should be administered after airway is secured 2. Heart failure
SIDE EFFECTS	1. Hyperosmolarity 2. Alkalosis
SUPPLIED	Prefilled syringes 8.4% 50ml
ADULT DOSAGE	Cardiac Arrest / Known Dialysis Patient: 1 meq / kg IV / IO Tricyclic Overdose: 1 meq / kg IV / IO Hyperkalemia / Sine Wave EKG: 1 meq / kg IV / IO
PEDIATRIC DOSAGE	Tricyclic Overdose: 1 mEq / kg IV / IO Max 50 meq / Dose See PEDIATRIC DRUG ADMINISTRATION CHART for weight-based administration

3-5 kg	6-7 kg	8-9 kg	10-11 kg	12-14 kg	15-18 kg	19-23 kg	24-29 kg	30-36 kg
6-11 lbs	13-15 lbs	18-20 lbs	22-24 lbs	26-31 lbs	33-37 lbs	42-51 lbs	53-64 lbs	66-81 lbs
18-24 in	24-26 in	26-29 in	29-33 in	33-38 in	38-43 in	43-48 in	48-52 in	52-57 in

KEY POINTS	· Tricyclic anti-depressants include (but not limited to): Amitriptyline, Nortryptyline, Elavil, Amoxapine, Clomipramine, Desipramine, Doxepin, Imipramine, Nortriptyline, Protriptyline, and Trimipramine · Administer until QRS complex narrows to less than 0.12 and the patient condition improves · Carefully flush IV lines after administration · Extravasation may cause tissue resistance · Will cause transient increase in capnography

MEDICATIONS
TETRACAINE (PONTOCAINE)

PREGNANCY CLASS	B
ACTIONS	Topical local anesthetic ophthalmic solution
INDICATIONS	Ocular irritation / pain with NO PENETRATING TRAUMA
CONTRAINDICATIONS	1. Hypersensitivity 2. Allergy to caine family (Novacaine, Lidocaine, Etc.) 3. Penetrating eye injury
PRECAUTIONS	
SIDE EFFECTS	1. Burning sensation 2. Redness 3. Tearing
SUPPLIED	0.5% 2 ml dropper
ADULT DOSAGE	Non-Penetrating Eye Trauma / Irritants 1 – 2 drops in affected eye
PEDIATRIC DOSAGE	Non-Penetrating Eye Trauma / Irritants 1 drop in affected eye
KEY POINTS	· Keep dropper sterile · Single patient use packaging · Patients receiving Tetricaine must be transported

MEDICATIONS
THIAMINE

PREGNANCY CLASS	A
ACTIONS	Allows the normal breakdown of glucose
INDICATIONS	Suspected thiamine deficiency in malnourished or alcoholic patients prior to giving dextrose
CONTRAINDICATIONS	Known hypersensitivity
PRECAUTIONS	Rare anaphylactic reactions
SIDE EFFECTS	1. Known hypersensitivity 2. Restlessness 3. Anaphylactic reaction 4. Nausea 5. Weakness
SUPPLIED	100 mg / 1 ml vial
ADULT DOSAGE	Hypoglycemic Chronic Alcoholic / Malnourished Patient: 100 mg IV or IM prior to dextrose
PEDIATRIC DOSAGE	Not recommended in the pre-hospital setting

MEDICATIONS
TICAGRELOR (Brilinta)

PREGNANCY CLASS	C
ACTIONS	P2Y platelet inhibitor
INDICATIONS	1. Confirmed STEMI
CONTRAINDICATIONS	1. Bleeding 2. Intracranial hemorrhage 3. Hepatic impairment
PRECAUTIONS	Use with caution in patients with other prescribed direct acting anti-platlet medications
SIDE EFFECTS	1. Bleeding 2. Dyspnea
SUPPLIED	90 mg tablets
ADULT DOSAGE	Confirmed STEMI: 180 mg PO (2 – 90 mg Tablets)
PEDIATRIC DOSAGE	Not recommended in the pre-hospital setting

MEDICATIONS

TRANEXAMIC ACID (TXA)

PREGNANCY CLASS	B
ACTIONS	Preserves the framework of existing clot structure, preventing clot breakdown.
INDICATIONS	· Adult > 16 years old · Evidence of current or previous uncontrolled hemorrhage · Hemorrhagic shock from recent Trauma (< 1 hour) · Sustained tachycardia (>120 bpm) and/or hypotension (systolic< 90mmHg) · TXA must be given within 60 minutes from time of injury
CONTRAINDICATIONS	· Hypersensitivity to medication · Suspected CVA, MI, or PE
PRECAUTIONS	· TXA should not be administered in non-traumatic and non-hemorrhagic shock · TXA should only be administered within 60 minutes of the injury and when time of injury to tertiary care exceeds one hour
SIDE EFFECTS	· Anaphylaxis · Thrombosis · Hypotension (with rapid infusion, such as rate of greaterthan 100 mg/min) · Nausea, vomiting, diarrhea · Visual disturbances (blurred vision, changes in color vision)
SUPPLIED	1 Gram / 10 ml Vial or Ampule
ADULT DOSAGE	Adult Trauma with Uncontrolled Bleeding and Hemodynamic Instability Mix 1gm in 100 ml of D5 and administer over 10minutes 10 gtt/ml drip set (2qtts/sec) 15 gtt/ml drip set (3gtts/sec)
PEDIATRIC DOSAGE	Not recommended in the pre-hospital setting

SPECIAL USE MEDICATIONS

Only for BIOLOGICAL EMERGENCY RESPONSE

CIPROFLOXACIN (Cipro)

PREGNANCY CLASS	C
ACTIONS	Antimicrobial
INDICATIONS	1. Anthrax exposure 2. Other microorganism exposure deemed public health threat
CONTRAINDICATIONS	1. Hypersentisitivity 2. Allergy
PRECAUTIONS	
SIDE EFFECTS	1. Nausea / Vomiting
SUPPLIED	100, 250, 500 mg tablets or 200 mg in 100 ml / 400 mg in 200 ml IV bags VERIFY ACTUAL CONCENTRATION ON HAND BEFORE ADMINISTRATION
ADULT DOSAGE	Anthrax / Microorganism Exposure: 500 mg PO or 400 mg IV / IO

SPECIAL USE MEDICATIONS

ONLY FOR USE IF TICAGRELOR (Brilinta) Unavailable

CLOPIDOGRIL (Plavix)

PREGNANCY CLASS	B
ACTIONS	Platelet aggregate inhibitor
INDICATIONS	1. Confirmed STEMI where Ticagrelor (Brilinta) is unavailable
CONTRAINDICATIONS	1. Bleeding 2. Intracranial hemorrhage 3. Hepatic impairment
PRECAUTIONS	
SIDE EFFECTS	1. Chest pain 2. Weakness 3. Bleeding
SUPPLIED	600 mg tablet
ADULT DOSAGE	Confirmed STEMI with NO TICAGRELOR (Brilinta) Available: 600 mg PO

SPECIAL USE MEDICATIONS

Only for BIOLOGICAL EMERGENCY RESPONSE

DOXYCYCLINE (Vibramycin)

PREGNANCY CLASS	D
ACTIONS	Antibiotic
INDICATIONS	1. Anthrax 2. Plague
CONTRAINDICATIONS	1. Allergy 2. Pregnancy 3. Pediatrics
PRECAUTIONS	
SIDE EFFECTS	Diarrhea
SUPPLIED	100 mg Tablet
ADULT DOSAGE	Anthrax / Plague Exposure: 100 mg PO

SPECIAL USE MEDICATIONS

Only for NERVE AGENT EMERGENCY RESPONSE

Duo-Dote (Atropine and Pralidoxime Chloride) VALIUM Auto Injector

PREGNANCY CLASS	C
ACTIONS	DuoDote • Blocks nerve agents effects and relieves airway constriction and secretions in the lungs and gastrointestinal tract. • Acts to restore normal functions at the nerve ending by removing the nerve agent and reactivating natural function Valium: • Given to treat seizures caused by exposure to nerve agents (buddy treatment) – SUPPLEMENT TO DUODOTE
INDICATIONS	Suspected or confirmed nerve agent exposure
CONTRAINDICATIONS	Both medications in the kit should be used with caution (but not withheld) in patients with preexisting cardiac disease, HTN, or CVA history
PRECAUTIONS	
SIDE EFFECTS	1. Chest pain 2. Exacerbation of angina 3. Myocardial infarction 4. Blurred vision 5. Headache 6. Drowsiness 7. Nausea 8. Tachycardia 9. Hypertension 10. Hyperventilation
SUPPLIED	DUODOTE - Each auto injector contains *BOTH:* Atropine 2.1 mg and Pralidoxime 600 mg Valium auto injector contains 10 mg
ADULT DOSAGE	For Nerve Agent Exposure (SLUDGE symptoms): Up to 3 auto injectors may be used for one patient based on signs (1 - 2 kits for self-treatment - up to 3 for buddy treatment with severe symptoms)
	For Seizures Associated with Nerve Agent Exposure: 1 Valium auto injector (buddy administration)
PEDIATRIC DOSAGE	DuoDotes are not authorized for the use of children under 41 kg (

SPECIAL USE MEDICATIONS

ONLY FOR DEPARTMENTS PERMITTED TO PERFORM RSI

ETOMIDATE (Amidate)

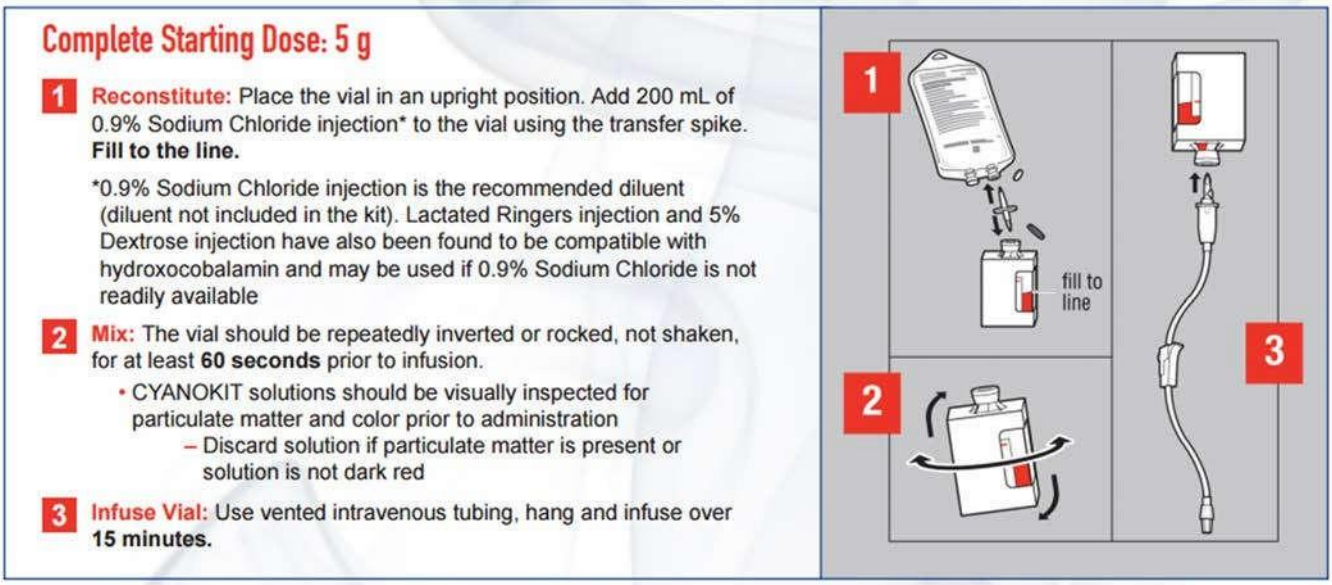
PREGNANCY CLASS	C
ACTIONS	Hypnotic sedative
INDICATIONS	Induction of anesthesia during RSI
CONTRAINDICATIONS	Hypersensitivity
PRECAUTIONS	
SIDE EFFECTS	Skeletal muscle movements
SUPPLIED	20 mg / 10 ml VERIFY ACTUAL CONCENTRATION ON HAND BEFORE ADMINISTRATION
ADULT DOSAGE	Induction For RSI: 0.3 mg / kg IV / IO - Usual dose 20 mg

SPECIAL USE MEDICATIONS

Only for CYANIDE EXPOSURE RESPONSE – Where available

HYDROXOCOBALMIN (Cyanokit)

PREGNANCY CLASS	C
ACTIONS	Cyanide antidote – binds to cyanide ions for excretion
INDICATIONS	Known or suspected cyanide poisoning
CONTRAINDICATIONS	None in the emergency setting – assure airway, breathing, and circulatory support are in place prior to administration.
PRECAUTIONS	1. Use caution if other cyanide antidotes are used simultaneously with Hydroxocobalmin (Cyanokit), use separate IV lines 2. Do not use if there is particulate matter in the vial after reconstitution or the solution is not dark red
SIDE EFFECTS	1. Possible allergic reaction 2. Eye irritation, redness, swelling 3. Abdominal pain, nausea, vomiting, diarrhea 4. Chest discomfort 5. Dizziness, restlessness 6. Dyspnea, tight throat 7. Skin flushing, urticaria
SUPPLIED	(1) 5 g vials for reconstitution – shake for 30 seconds per vial
ADULT DOSAGE	Cyanide Exposure: 5 g over 15 minutes
KEY POINTS	· A second dose of 5 g may be considered depending on patient response and severity of exposure. · Discard unused medication after 6 hours · Reconstitute with normal saline (0.9% sodium chloride) · May have drug interactions, administer all other medications via a separate IV line



SPECIAL USE MEDICATIONS

For PAIN MANAGEMENT where SUPPLIED AND SUPPORTED by EMS DEPARTMENT

NITROUS OXIDE / OXYGEN (Nitronox)

PREGNANCY CLASS	N
ACTIONS	1. Nitrous oxide / oxygen is a mixture of 50% nitrous oxide and 50% oxygen 2. When inhaled, nitrous oxide/oxygen depresses the central Nervous system, causing sedation and analgesia 3. Nitrous Oxide: oxygen is self-administered 4. Provides rapid, easily reversible relief of pain
INDICATIONS	1. Burns 2. Kidney stones 3. Musculoskeletal trauma 4. Fractures
CONTRAINDICATIONS	1. Known hypersensitivity 2. Decreased level of consciousness or unable to follow instructions 3. History of drug or alcohol ingestion 4. History of COPD, emphysema, or any condition that may compromise respiratory efforts including: chest trauma, CHF, respiratory tract burns, or other trauma 5. Bowel obstruction or traumatic abdominal injury 6. Maxillofacial injuries or head injuries 7. Obstetric patient not in the process of delivery 8. Pediatric patient < 12 years or < 75 pounds 9. Intoxication 10. Psychiatric problems 11. Respiratory distress 12. Increased intracranial pressure 13. Decompression sickness
SUPPLIED	Supplied as Nitronox, a set containing oxygen and a nitrous oxide cylinder joined by a valve that regulates flow to provide a 50:50 mixture of the two gasses. The mixture is piped to a demand valve apparatus.
SIDE EFFECTS	Dizziness, apnea, cyanosis, nausea, vomiting. Ambulance crew may experience giddiness if the vehicle is not properly vented
ADULT DOSAGE	Extremity Trauma: Instruct the patient to inhale deeply though a patient-held demand valve and mask or mouthpiece. Have patient inhale gas until pain relief or patient spontaneously is unable to hold mask.
PEDIATRIC DOSAGE	Not indicated in the pre-hospital setting
KEY POINTS	· Self-administered by mask: a good seal around mouth and nose is important; the gas is breathed deeply and may give relief after about two minutes; the patient should stop when relief is obtained · The paramedic should not hold the face mask in place for the patient

SPECIAL USE MEDICATIONS

ONLY FOR DEPARTMENTS PERMITTED TO PERFORM RSI

SUCCINYLCHOLINE (Anectine)

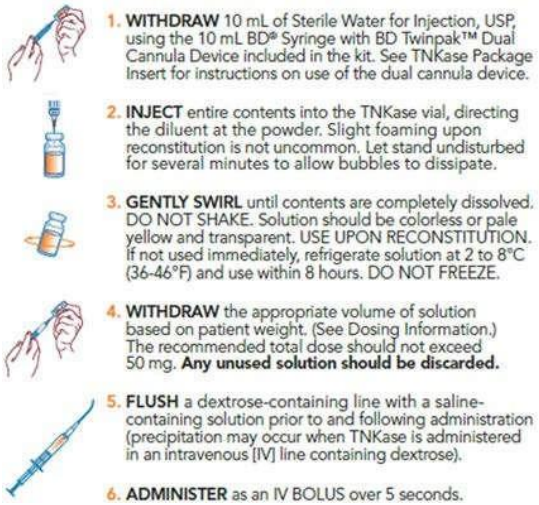
PREGNANCY CLASS	C
ACTIONS	Depolarizing neuromuscular blocking agent
INDICATIONS	Facilitate endotracheal intubation
CONTRAINDICATIONS	1. History of malignant hyperthermia 2. Skeletal muscle myopathies 3. Known or suspected hyperkalemia 4. Renal failure 5. Burns >34 hours old
PRECAUTIONS	
SIDE EFFECTS	1. Apnea 2. Arrhythmias 3. Increased intraocular pressure 4. Muscle fasciculations
SUPPLIED	200 mg / 10 ml VERIFY ACTUAL CONCENTRATION ON HAND BEFORE ADMINISTRATION
ADULT DOSAGE	Muscle Relaxant for RSI: 2 mg / kg - Usual dose 100 mg

SPECIAL USE MEDICATIONS

For CONFIRMED STEMI ONLY where SUPPLIED AND SUPPORTED due to TRANSPORT TIMES TO PCI CENTERS

TENECTEPLASE (TNKase)

PREGNANCY CLASS	C	
ACTIONS	Thrombolytic agent	
INDICATIONS	1. Confirmed STEMI where transport times to PCI are >60 min	
CONTRAINDICATIONS	1. Active bleeding 2. CVA History 3. Trauma within 2 months 4. Surgery within 2 months 5. Uncontrolled hypertension	
PRECAUTIONS	1. Cerebrovascular disease 2. Recent gastrointestinal or genitourinary bleeding 3. Recent trauma 4. Hypertension: systolic BP ≥180 mm Hg and/or diastolic BP ≥110 mm Hg 5. High likelihood of left heart thrombus, e.g., mitral stenosis with atrial fibrillation 6. Acute pericarditis 7. Subacute bacterial endocarditis 8. Hemostatic defects, including those secondary to severe hepatic or renal disease 9. Severe hepatic dysfunction 10. Pregnancy 11. Diabetic hemorrhagic retinopathy or other hemorrhagic ophthalmic conditions 12. Septic thrombophlebitis or occluded AV cannula at seriously infected site 13. Advanced age (see PRECAUTIONS: Geriatric Use) 14. Patients currently receiving oral anticoagulants, e.g., warfarin sodium 15. Recent administration of GP IIb/IIIa inhibitors 16. Any other condition in which bleeding constitutes a significant hazard or would be particularly difficult to manage because of its location	
SIDE EFFECTS	1. Bleeding 2. CVA	
SUPPLIED	50 mg vial with 10 ml sterile water for Reconstitution	
ADULT DOSAGE	Confirmed STEMI:	
	<60 kg	30 mg IV (6 ml)
	60 kg – 70 kg	35 mg IV (7 ml)
	70 kg – 80 kg	40 mg IV (8 ml)
	80 kg – 90 kg	45 mg IV (9ml)
	≥ 90 kg	50 mg IV (10ml)



1. **WITHDRAW** 10 mL of Sterile Water for Injection, USP, using the 10 mL BD® Syringe with BD Twinpak™ Dual Cannula Device included in the kit. See TNKase Package Insert for instructions on use of the dual cannula device.
2. **INJECT** entire contents into the TNKase vial, directing the diluent at the powder. Slight foaming upon reconstitution is not uncommon. Let stand undisturbed for several minutes to allow bubbles to dissipate.
3. **GENTLY SWIRL** until contents are completely dissolved. DO NOT SHAKE. Solution should be colorless or pale yellow and transparent. USE UPON RECONSTITUTION. If not used immediately, refrigerate solution at 2 to 8°C (36-46°F) and use within 8 hours. DO NOT FREEZE.
4. **WITHDRAW** the appropriate volume of solution based on patient weight. (See Dosing Information.) The recommended total dose should not exceed 50 mg. **Any unused solution should be discarded.**
5. **FLUSH** a dextrose-containing line with a saline-containing solution prior to and following administration (precipitation may occur when TNKase is administered in an intravenous [IV] line containing dextrose).
6. **ADMINISTER** as an IV BOLUS over 5 seconds.

PEDIATRIC WEIGHT BASED DOSING CHARTS

GRAY	CONCENTRATION	ROUTES	3 KG	4 KG	5 KG	RESUSCITATION
						ET Tube
Adenosine (1st dose)	6 mg / 2 ml	IV / IO	0.3 mg (0.1 ml)	0.4 mg (0.13 ml)	0.5 mg (0.17 ml)	3.0 – 3.5 C/UC
Adenosine (2nd dose)	6 mg / 2 ml	IV / IO	0.6 mg (0.2 ml)	0.8 mg (0.27 ml)	1.0 mg (0.33 ml)	ET Depth
Amiodarone (Cordarone)	150 mg / 3 ml	IV / IO	15 mg (0.3 ml)	20 mg (0.4 ml)	25 mg (0.5 ml)	9 – 10 cm
Atropine	1 mg / 10 ml	IV / IO	0.1 mg (1 ml)	0.1 mg (1 ml)	0.1 mg (1 ml)	Blade
Calcium Chloride	1 G / 10 ml	IV / IO	60 mg (0.6 ml)	80 mg (0.8 ml)	100 mg (1 ml)	1
Calcium Gluconate	100 mg / ml	IV / IO	180 mg (1.8ml)	240 mg (2.4ml)	300 (3 ml)	King
Dextrose 10% (Made from D50)	1 G / 10 ml	IV / IO	0.6 G (6 ml)	0.8 G (8 ml)	1 G (10 ml)	0 (Clear)
Dextrose 10%	10 grams / 100 ml	IV / IO	0.6 G (6 ml)	0.8 G (8 ml)	1 G (10 ml)	LMA
DiphenhydrAMINE (Benadryl)	50 mg / ml	IV / IO / IM	3 mg (0.06 ml)	4 mg (0.08 ml)	5 mg (0.1 ml)	1
EPINEPHrine 1 mg / ml (1:1,000)	1 mg / ml	IM	0.03 mg (0.03 ml)	0.04 mg (0.04 ml)	0.05 mg (0.05 ml)	OPA
EPINEPHrine 0.1 mg / ml (1:10,000)	0.1 mg / ml	IV / IO	0.03 mg (0.3 ml)	0.04 mg (0.4 ml)	0.05 mg (0.5 ml)	50 mm / 0 / Blue
FentaNYL (Sublimaze)	100 mcg / 2 ml	IN / IV / IM	3 mcg (0.06 ml)	4 mcg (0.08 ml)	5 mcg (0.1 ml)	NPA
Lidocaine (Xylocaine) for IO	20 mg / ml	IO	1.5 mg (0.075 ml)	2 mg (0.1 ml)	2.5 mg (0.125 ml)	14 Fr.
Lidocaine (Xylocaine) for Cardiac 1st	20 mg / ml	IV / IO	3 mg (0.15 ml)	4 mg (0.2ml)	5 mg (0.25 ml)	IV Caths
Lidocaine (Xylocaine) for Cardiac 2st	20 mg / ml	IV / IO	1.5 mg (0.075 ml)	2 mg (0.1 ml)	2.5 mg (0.125 ml)	22 – 24
LORazepam (Ativan)	2 mg / ml	IV / IO	0.15 mg (0.075 ml)	0.2 mg (0.1 ml)	0.25 mg (0.125 ml)	Defib Energy
MethylPREDNISolone (SOLU-medrol)	125 mg / 2 ml	IV / IO	6 mg (0.1 ml)	8 mg (0.125 ml)	10 mg (0.15 ml)	8 then 20
Midazolam (Versed)	5 mg / ml	IV / IO	0.3 mg (0.06 ml)	0.4 mg (0.08 ml)	0.5 mg (0.1 ml)	Cardiovert
Midazolam (Versed)	5 mg / ml	IN	0.6 mg (0.12 ml)	0.8 mg (0.16 ml)	1 mg (0.2 ml)	4 then 8
Morphine	10 mg / ml	IV / IO	0.3 mg (0.03 ml)	0.4 mg (0.04 ml)	0.5 mg (0.5 ml)	Bolus
Naloxone (Narcan)	2 mg / 2ml	IV / IO / IN	0.3 mg (0.3 ml)	0.4 mg (0.4 ml)	0.5 mg (0.5 ml)	80 ml
Ondansetron (Zofran)	4 mg / 2 ml	IV / IO / PO	0.45 mg (0.23 ml)	0.6 mg (0.3 ml)	0.75 mg (0.38 ml)	Hypotension<60

PINK	CONCENTRATION	ROUTES	6 - 7 KG (6.5 kg avg.)	RESUSCITATION
Adenosine (1st dose)	6 mg / 2 ml	IV / IO	0.65 mg (0.22 ml)	ET Tube
Adenosine (2nd dose)	6 mg / 2 ml	IV / IO	1.3 mg (0.43 ml)	3.0 Cuffed / 3.5 Uncuffed
Amiodarone (Cordarone)	150 mg / 3 ml	IV / IO	32 mg (0.64 ml)	ET Depth
Atropine	1 mg / 10 ml	IV / IO	0.13 mg (1.3 ml)	10-10.5 cm to lip
Calcium Chloride	1 G / 10 ml	IV / IO	130 mg (1.3 ml)	Laryngoscope Blade
Calcium Gluconate	100 mg / ml	IV / IO	390 mg (3.9 ml)	1
Dextrose 10% (Made from D50)	1 G / 10 ml	IV / IO	1.3 G (13 ml)	King
Dextrose 10%	10 grams / 100 ml	IV / IO	1.3 G (13 ml)	1 (White)
DiphenhydrAMINE (Benadryl)	50 mg / ml	IV / IO / IM	6.5 mg (0.13 ml)	LMA
EPINEPHrine 1 mg / ml (1:1,000)	1 mg / ml	IM	0.065 mg (0.065 ml)	1.5
EPINEPHrine 0.1 mg /ml (1:10,000)	0.1 mg / ml	IV / IO	0.065 mg (0.65 ml)	OPA
FentaNYL (Sublimaze)	100 mcg / 2 ml	IN / IV / IM	6.5 mcg (0.13 ml)	50 mm / 0 / Blue
Lidocaine (Xylocaine) for IO	20 mg / ml	IO	3.25 mg (0.16 ml)	NPA
Lidocaine (Xylocaine) for Cardiac 1st	20 mg / ml	IV / IO	6.5 mg (0.32 ml)	14 Fr.
Lidocaine (Xylocaine) for Cardiac 2st	20 mg / ml	IV / IO	3.25 mg (0.16 ml)	IV Caths
LORazepam (Ativan)	2 mg / ml	IV / IO	0.325 mg (0.1625 ml)	22 – 24
MethylPREDNISolone (SOLU-medrol)	125 mg / 2 ml	IV / IO	13 mg (0.21 ml)	Defib Energy
Midazolam (Versed)	5 mg / ml	IV / IO	0.65 mg (0.13 ml)	15 then 30
Midazolam (Versed)	5 mg / ml	IN	1.3 mg (0.26 ml)	Cardiovert
Morphine	10 mg / ml	IV / IO	0.65 mg (0.065 ml)	7 then 15
Naloxone (Narcan)	2 mg / 2ml	IV / IO / IN	0.65 mg (0.65 ml)	Bolus
Ondansetron (Zofran)	4 mg / 2 ml	IV / IO / PO	1 mg (0.5 ml)	130 ml
Sodium Bicarbonate 8.4%	1 mEq / ml	IV / IO	6.5 mEq (6.5 ml)	Hypotensive if < 70 SBP

RED	CONCENTRATION	ROUTES	8 - 9 kg (8.5 kg average)	RESUSCITATION
Adenosine (1st dose)	6 mg / 2 ml	IV / IO	0.85 mg (0.28 ml)	ET Tube
Adenosine (2nd dose)	6 mg / 2 ml	IV / IO	1.7 mg (0.57 ml)	3.5 Cuffed / 4.0 Uncuffed
Amiodarone (Cordarone)	150 mg / 3 ml	IV / IO	42 mg (0.84 ml)	ET Depth
Atropine	1 mg / 10 ml	IV / IO	0.17 mg (1.7 ml)	10.5-11 cm to lip
Calcium Chloride	1 G / 10 ml	IV / IO	170 mg (1.7 ml)	Laryngoscope Blade
Calcium Gluconate	100 mg / ml	IV / IO	510 mg (5.1 ml)	1
Dextrose 25% (Made from D50)	12.5 G / 50 ml	IV / IO	4.25 G (17 ml)	King
Dextrose 10%	10 grams / 100 ml	IV / IO	4.25 (42.5 ml)	1 (White)
DiphenhydrAMINE (Benadryl)	50 mg / ml	IV / IO / IM	8.5 mg (0.17 ml)	LMA
EPINEPHrine 1 mg / ml (1:1,000)	1 mg / ml	IM	0.085 mg (0.085 ml)	1.5
EPINEPHrine 0.1 mg / ml (1:10,000)	0.1 mg / ml	IV / IO	0.085 mg (0.85 ml)	OPA
FentaNYL (Sublimaze)	100 mcg / 2 ml	IN / IV / IM	8.5 mcg (0.17 ml)	50 mm / 0 / Blue
Lidocaine (Xylocaine) for IO	20 mg / ml	IO	4.25 mg (0.21 ml)	NPA
Lidocaine (Xylocaine) for Cardiac 1st	20 mg / ml	IV / IO	8.5 mg (0.42 ml)	16 Fr.
Lidocaine (Xylocaine) for Cardiac 2st	20 mg / ml	IV / IO	4.25 mg (0.21 ml)	IV Caths
LORazepam (Ativan)	2 mg / ml	IV / IO	0.425 mg (0.2125 ml)	22 - 24
MethylPREDNISolone (SOLU-medrol)	125 mg / 2 ml	IV / IO	17 mg (0.27 ml)	Defib Energy
Midazolam (Versed)	5 mg / ml	IV / IO	0.85 mg (0.17 ml)	20 then 50
Midazolam (Versed)	5 mg / ml	IN	1.7 mg (0.34 ml)	Cardiovert
Morphine	10 mg / ml	IV / IO	0.85 mg (0.085 ml)	9 then 20
Naloxone (Narcan)	2 mg / 2ml	IV / IO / IN	0.85 mg (0.85 ml)	Bolus
Ondansetron (Zofran)	4 mg / 2 ml	IV / IO / PO	1.3 mg (0.65 ml)	170 ml
Sodium Bicarbonate 8.4%	1 mEq / ml	IV / IO	8.5 mEq (8.5 ml)	Hypotensive if < 70 SBP

PURPLE	CONCENTRATION	ROUTES	10 - 11 kg (10.5 kg average)	RESUSCITATION
Adenosine (1st dose)	6 mg / 2 ml	IV / IO	1 mg (0.33 ml)	ET Tube
Adenosine (2nd dose)	6 mg / 2 ml	IV / IO	2 mg (0.66 ml)	3.5 Cuffed / 4.0 Uncuffed
Amiodarone (Cordarone)	150 mg / 3 ml	IV / IO	52 mg (1.04 ml)	ET Depth
Atropine	1 mg / 10 ml	IV / IO	0.21 mg (2.1 ml)	11-12 cm to lip
Calcium Chloride	1 G / 10 ml	IV / IO	210 mg (2.1 ml)	Laryngoscope Blade
Calcium Gluconate	100 mg / ml	IV / IO	630 mg (6.3 ml)	1
Dextrose 25% (Made from D50)	12.5 G / 50 ml	IV / IO	5.25 G (21 ml)	King
Dextrose 10%	10 grams / 100 ml	IV / IO	3.15 G (31.5 ml)	1 (White)
DiphenhydrAMINE (Benadryl)	50 mg / ml	IV / IO / IM	10.5 mg (0.21 ml)	LMA
EPINEPHrine 1 mg / ml (1:1,000)	1 mg / ml	IM	0.10 mg (0.1 ml)	2
EPINEPHrine 0.1 mg / ml (1:10,000)	0.1 mg / ml	IV / IO	0.1 mg (1 ml)	OPA
FentaNYL (Sublimaze)	100 mcg / 2 ml	IN / IV / IM	10.5 mcg (0.21 ml)	60 mm / 1 / Black
Lidocaine (Xylocaine) for IO	20 mg / ml	IO	5.25 mg (0.26 ml)	NPA
Lidocaine (Xylocaine) for Cardiac 1st	20 mg / ml	IV / IO	10.5 mg (0.52 ml)	18 Fr.
Lidocaine (Xylocaine) for Cardiac 2st	20 mg / ml	IV / IO	5.25 mg (0.26 ml)	IV Caths
LORazepam (Ativan)	2 mg / ml	IV / IO	0.525 mg (0.2625 ml)	20 - 24
MethylPREDNISolone (SOLU-medrol)	125 mg / 2 ml	IV / IO	21 mg (0.34 ml)	Defib Energy
Midazolam (Versed)	5 mg / ml	IV / IO	1.05 mg (0.21 ml)	20 then 50
Midazolam (Versed)	5 mg / ml	IN	2.1 mg (0.42 ml)	Cardiovert
Morphine	10 mg / ml	IV / IO	1.05 mg (0.105 ml)	10 then 20
Naloxone (Narcan)	2 mg / 2ml	IV / IO / IN	1.05 mg (1.05 ml)	Bolus
Ondansetron (Zofran)	4 mg / 2 ml	IV / IO / PO	1.58 mg (0.8 ml)	200 ml
Sodium Bicarbonate 8.4%	1 mEq / ml	IV / IO	10.5 mEq (10.5 ml)	Hypotensive if < 74 SBP

YELLOW	CONCENTRATION	ROUTES	12 - 14 kg (13 kg average)	RESUSCITATION
Adenosine (1st dose)	6 mg / 2 ml	IV / IO	1.3 mg (0.43 ml)	ET Tube
Adenosine (2nd dose)	6 mg / 2 ml	IV / IO	2.6 mg (0.87 ml)	4.0 Cuffed / 4.5 Uncuffed
Amiodarone (Cordarone)	150 mg / 3 ml	IV / IO	65 mg (1.3 ml)	ET Depth
Atropine	1 mg / 10 ml	IV / IO	0.26 mg (2.6 ml)	12.5-13.5 cm to lip
Calcium Chloride	1 G / 10 ml	IV / IO	260 mg (2.6 ml)	Laryngoscope Blade
Calcium Gluconate	100 mg / ml	IV / IO	780 mg (7.8ml)	2
Dextrose 25% (Made from D50)	12.5 G / 50 ml	IV / IO	6.5 G (26 ml)	King
Dextrose 10%	10 grams / 100 ml	IV / IO	6.5 G (65 ml)	2 (Green)
DiphenhydrAMINE (Benadryl)	50 mg / ml	IV / IO / IM	13 mg (0.21 ml)	LMA
EPINEPHrine 1 mg / ml (1:1,000)	1 mg / ml	IM	0.13 mg (0.13 ml)	2
EPINEPHrine 0.1 mg / ml (1:10,000)	0.1 mg / ml	IV / IO	0.13 mg (1.3 ml)	OPA
FentaNYL (Sublimaze)	100 mcg / 2 ml	IN / IV / IM	13 mcg (0.26 ml)	60 mm / 1 / Black
Lidocaine (Xylocaine) for IO	20 mg / ml	IO	6.5 mg (0.325 ml)	NPA
Lidocaine (Xylocaine) for Cardiac 1st	20 mg / ml	IV / IO	13 mg (0.65 ml)	20 Fr.
Lidocaine (Xylocaine) for Cardiac 2nd	20 mg / ml	IV / IO	6.5 mg (0.325 ml)	IV Caths
LORazepam (Ativan)	2 mg / ml	IV / IO	0.65 mg (0.325 ml)	20 - 22
MethylPREDNISolone (SOLU-medrol)	125 mg / 2 ml	IV / IO	26 mg (0.42 ml)	Defib Energy
Midazolam (Versed)	5 mg / ml	IV / IO	1.3 mg (0.26 ml)	30 then 70
Midazolam (Versed)	5 mg / ml	IN	2.6 mg (0.52 ml)	Cardiovert
Morphine	10 mg / ml	IV / IO	1.3 mg (0.13 ml)	15 then 30
Naloxone (Narcan)	2 mg / 2ml	IV / IO / IN	1.3 mg (1.3 ml)	Bolus
Ondansetron (Zofran)	4 mg / 2 ml	IV / IO / PO	1.95 mg (.975 ml)	250 ml
Sodium Bicarbonate 8.4%	1 mEq /ml	IV / IO	13 mEq (13 ml)	Hypotensive if < 78 SBP

WHITE	CONCENTRATION	ROUTES	15 - 18 kg (16.5 kg average)	RESUSCITATION
Adenosine (1st dose)	6 mg / 2 ml	IV / IO	1.65 mg (0.55 ml)	ET Tube
Adenosine (2nd dose)	6 mg / 2 ml	IV / IO	3.3 mg (1.1 ml)	4.5 Cuffed / 5.0 Uncuffed
Amiodarone (Cordarone)	150 mg / 3 ml	IV / IO	82.5 mg (1.65 ml)	ET Depth
Atropine	1 mg / 10 ml	IV / IO	0.33 mg (3.3 ml)	14-15 cm to lip
Calcium Chloride	1 G / 10 ml	IV / IO	330 mg (3.3 ml)	Laryngoscope Blade
Calcium Gluconate	100 mg / ml	IV / IO	990 mg (9.9ml)	2
Dextrose 25% (Made from D50)	12.5 G / 50 ml	IV / IO	8.5 G (34 ml)	King
Dextrose 10%	10 grams / 100 ml	IV / IO	8.25 G (82.5 ml)	2 (Green)
DiphenhydrAMINE (Benadryl)	50 mg / ml	IV / IO / IM	16.5 mg (0.33 ml)	LMA
EPINEPHrine 1 mg / ml (1:1,000)	1 mg / ml	IM	0.16 mg (0.16 ml)	2
EPINEPHrine 0.1 mg / ml (1:10,000)	0.1 mg / ml	IV / IO	0.165 mg (1.65 ml)	OPA
FentaNYL (Sublimaze)	100 mcg / 2 ml	IN / IV / IM	16.5 mcg (0.33ml)	60 mm / 1 / Black
Lidocaine (Xylocaine) for IO	20 mg / ml	IO	8.25 mg (0.41 ml)	NPA
Lidocaine (Xylocaine) for Cardiac 1st	20 mg / ml	IV / IO	16.5 mg (0.82 ml)	22 Fr.
Lidocaine (Xylocaine) for Cardiac 2nd	20 mg / ml	IV / IO	8.25 mg (0.41 ml)	IV Caths
LORazepam (Ativan)	2 mg / ml	IV / IO	0.825 mg (0.42 ml)	20 - 22
MethylPREDNISolone (SOLU-medrol)	125 mg / 2 ml	IV / IO	33 mg (0.53 ml)	Defib Energy
Midazolam (Versed)	5 mg / ml	IV / IO	1.65 mg (0.33 ml)	50 then 70
Midazolam (Versed)	5 mg / ml	IN	3.3 mg (0.66 ml)	Cardiovert
Morphine	10 mg / ml	IV / IO	1.65 mg (0.165 ml)	20 then 50
Naloxone (Narcan)	2 mg / 2ml	IV / IO / IN	1.65 mg (1.65 ml)	Bolus
Ondansetron (Zofran)	4 mg / 2 ml	IV / IO / PO	2.48 mg (1.24 ml)	250 ml
Sodium Bicarbonate 8.4%	1 mEq/ml	IV / IO	16.5 mEq (16.5 ml)	Hypotensive if < 82 SBP

BLUE	CONCENTRATION	ROUTES	19 - 23 kg (21 kg average)	RESUSCITATION
Adenosine (1st dose)	6 mg / 2 ml	IV / IO	2.1 mg (0.7 ml)	ET Tube
Adenosine (2nd dose)	6 mg / 2 ml	IV / IO	4.2 mg (1.4 ml)	5.0 Cuffed / 5.5 Uncuffed
Amiodarone (Cordarone)	150 mg / 3 ml	IV / IO	105 mg (2.1 ml)	ET Depth
Atropine	1 mg / 10 ml	IV / IO	0.42 mg (4.2 ml)	15.5-16.5 cm to lip
Calcium Chloride	1 G / 10 ml	IV / IO	420 mg (4.2 ml)	Laryngoscope Blade
Calcium Gluconate	100 mg / ml	IV / IO	1.26 G (12.6 ml)	2
Dextrose 25% (Made from D50)	12.5 G / 50 ml	IV / IO	10.5 G (42 ml)	King
Dextrose 10%	10 grams / 100 ml	IV / IO	10.5 G (105 ml)	2 (Green)
DiphenhydrAMINE (Benadryl)	50 mg / ml	IV / IO / IM	21 mg (0.42 ml)	LMA
EPINEPHrine 1 mg / ml (1:1,000)	1 mg / ml	IM	0.21 mg (0.21 ml)	2.5
EPINEPHrine 0.1 mg / ml (1:10,000)	0.1 mg / ml	IV / IO	0.21 mg (2.1 ml)	OPA
FentaNYL (Sublimaze)	100 mcg / 2 ml	IN / IV / IM	21 mcg (0.42 ml)	70 mm / 2 / White
Lidocaine (Xylocaine) for IO	20 mg / ml	IO	10.5 mg (0.525 ml)	NPA
Lidocaine (Xylocaine) for Cardiac 1st	20 mg / ml	IV / IO	21 mg (1.05 ml)	24 Fr.
Lidocaine (Xylocaine) for Cardiac 2nd	20 mg / ml	IV / IO	10.5 mg (0.525 ml)	IV Caths
LORazepam (Ativan)	2 mg / ml	IV / IO	1.05 mg (0.525 ml)	18 - 20
MethylPREDNISolone (SOLU-medrol)	125 mg / 2 ml	IV / IO	42 mg (0.675 ml)	Defib Energy
Midazolam (Versed)	5 mg / ml	IV / IO	2.1 mg (0.42 ml)	50 then 100
Midazolam (Versed)	5 mg / ml	IN	4.2 mg (0.84 ml)	Cardiovert
Morphine	10 mg / ml	IV / IO	2.1 mg (0.21 ml)	30 then 50
Naloxone (Narcan)	2 mg / 2ml	IV / IO / IN	2 mg (2 ml)	Bolus
Ondansetron (Zofran)	4 mg / 2 ml	IV / IO / PO	3.15 mg (1.58 ml)	250 ml
Sodium Bicarbonate 8.4%	1 mEq / ml	IV / IO	21 mEq (21 ml)	Hypotensive if < 86 SBP

ORANGE	CONCENTRATION	ROUTES	24 - 29 kg (26.5 kg average)	RESUSCITATION
Adenosine (1st dose)	6 mg / 2 ml	IV / IO	2.65 mg (0.9 ml)	ET Tube
Adenosine (2nd dose)	6 mg / 2 ml	IV / IO	5.3 mg (1.8 ml)	5.5 Cuffed / 6.0 Uncuffed
Amiodarone (Cordarone)	150 mg / 3 ml	IV / IO	132.5 mg (2.65 ml)	ET Depth
Atropine	1 mg / 10 ml	IV / IO	0.53 mg (5.3 ml)	17-18 cm to lip
Calcium Chloride	1 G / 10 ml	IV / IO	530 mg (5.3 ml)	Laryngoscope Blade
Calcium Gluconate	100 mg / ml	IV / IO	1.59 G (15.9 ml)	2
Dextrose 25% (Made from D50)	12.5 G / 50 ml	IV / IO	12.5 G (50 ml)	King
Dextrose 10%	10 grams / 100 ml	IV / IO	13.25 G (132.5 ml)	2.5 (Orange)
DiphenhydrAMINE (Benadryl)	50 mg / ml	IV / IO / IM	26.5 mg (0.54 ml)	LMA
EPINEPHrine 1 mg / ml (1:1,000)	1 mg / ml	IM	0.27 mg (0.27 ml)	2.5
EPINEPHrine 0.1 mg / ml (1:10,000)	0.1 mg / ml	IV / IO	0.27 mg (2.7 ml)	OPA
FentaNYL (Sublimaze)	100 mcg / 2 ml	IN / IV / IM	26.5 mcg (0.53 ml)	80 mm / 3 / Green
Lidocaine (Xylocaine) for IO	20 mg / ml	IO	13.25 (0.66 ml)	NPA
Lidocaine (Xylocaine) for Cardiac 1st	20 mg / ml	IV / IO	26.5 (1.32 ml)	26 Fr.
Lidocaine (Xylocaine) for Cardiac 2nd	20 mg / ml	IV / IO	13.25 (0.66 ml)	IV Caths
LORazepam (Ativan)	2 mg / ml	IV / IO	1.325 mg (0.66 ml)	18 - 20
MethylPREDNISolone (SOLU-medrol)	125 mg / 2 ml	IV / IO	53 mg (0.85 ml)	Defib Energy
Midazolam (Versed)	5 mg / ml	IV / IO	2 mg (0.4 ml)	70 then 120
Midazolam (Versed)	5 mg / ml	IN	5 mg (1 ml)	Cardiovert
Morphine	10 mg / ml	IV / IO	2.65 mg (0.265 ml)	30 then 70
Naloxone (Narcan)	2 mg / 2ml	IV / IO / IN	2 mg (2 ml)	Bolus
Ondansetron (Zofran)	4 mg / 2 ml	IV / IO / PO	4 mg (2 ml)	250 ml
Sodium Bicarbonate 8.4%	1 mEq / ml	IV / IO	26.5 mEq (26.5 ml)	Hypotensive if < 90 SBP

GREEN	CONCENTRATION	ROUTES	30 - 36 kg (33 kg average)	RESUSCITATION
Adenosine (1st dose)	6 mg / 2 ml	IV / IO	3.3 mg (1.1 ml)	ET Tube
Adenosine (2nd dose)	6 mg / 2 ml	IV / IO	6.6 mg (2.2 ml)	6.0 Cuffed / 6.5 Uncuffed
Amiodarone (Cordarone)	150 mg / 3 ml	IV / IO	165 mg (3.3 ml)	ET Depth
Atropine	1 mg / 10 ml	IV / IO	0.66 mg (6.6 ml)	18.5-19.5 cm to lip
Calcium Chloride	1 G / 10 ml	IV / IO	660 mg (6.6 ml)	Laryngoscope Blade
Calcium Gluconate	100 mg / ml	IV / IO	1.98 G (19.8 ml)	3
Dextrose 25% (Made from D50)	12.5 G / 50 ml	IV / IO	12.5 G (50 ml)	King
Dextrose 10%	10 grams / 100 ml	IV / IO	16.5 G (165 ml)	2.5 (Orange)
DiphenhydrAMINE (Benadryl)	50 mg / ml	IV / IO / IM	33 mg (0.66 ml)	LMA
EPINEPHrine 1 mg / ml (1:1,000)	1 mg / ml	IM	0.33 mg (0.33 ml)	3.0
EPINEPHrine 0.1 mg / ml (1:10,000)	0.1 mg / ml	IV / IO	0.33 mg (3.3 ml)	OPA
FentaNYL (Sublimaze)	100 mcg / 2 ml	IN / IV / IM	33 mcg (0.66 ml)	80 mm / 3 / Green
Lidocaine (Xylocaine) for IO	20 mg / ml	IO	16.5 mg (0.825 ml)	NPA
Lidocaine (Xylocaine) for Cardiac 1st	20 mg / ml	IV / IO	33 mg (1.65 ml)	28 Fr.
Lidocaine (Xylocaine) for Cardiac 2nd	20 mg / ml	IV / IO	16.5 mg (0.825 ml)	IV Caths
LORazepam (Ativan)	2 mg / ml	IV / IO	1.65 mg (0.825 ml)	16 - 20
MethylPREDNISolone (SOLU-medrol)	125 mg / 2 ml	IV / IO	66 mg (1.06 ml)	Defib Energy
Midazolam (Versed)	5 mg / ml	IV / IO	2 mg (0.4 ml)	70 then 150
Midazolam (Versed)	5 mg / ml	IN	5 mg (1 ml)	Cardiovert
Morphine	10 mg / ml	IV / IO	3.3 mg (0.33 ml)	50 then 70
Naloxone (Narcan)	2 mg / 2ml	IV / IO / IN	2 mg (2 ml)	Bolus
Ondansetron (Zofran)	4 mg / 2 ml	IV / IO / PO	4 mg (2 ml)	250 ml
Sodium Bicarbonate 8.4%	1 mEq / ml	IV / IO	33 mEq (33 ml)	Hypotensive if < 90 SBP

Reference

Patient Medication Reference

Drug Name	Other brand or generic name	Drug Type	Use / Condition
acarbose	Precose	oral hypoglycemic	diabetes mellitus
Accolate	zafirlukast	bronchospasm inhibitor	asthma
Accupril	quinapril	angiotensin-converting enzyme inhibitor	hypertension, congestive heart failure
accutane	isotretinoin		Severe cystic acne
acebutolol	Sectral	beta blocker	hypertension, angina, arrhythmias
Aceon	perindopril	angiotensin- converting enzyme inhibitor	hypertension, angina, arrhythmias
acetaminophen	Tylenol	non-narcotic analgesic	pain medication
acetazolamide	Diamox	diuretic/anticonvulsant	glaucoma congestive heart failure, epilepsy mountain sickness
acetylcysteine	Mucosil	mucolytic	asthma
Achromycin V	tetracycline	antibiotic	infection
Aciphex	rabeprazole	inhibits gastric acid secretions	ulcers
Aclovate	alclometasone	steroid anti-inflammatory	
acrivastine	Semprex-D	antihistamine/decongestant	allergies
Actifed	triprolidine+pseudoephedrine	antihistamine/decongestant	allergies
Actigall	ursodiol	bile acid which dissolves gall stones	gall stones
Actos	pioglitazone	oral hypoglycemic	diabetics
acyclovir	Zovirax	antiviral	herpes, shingles, chickenpox
Adalat, Adalat CC	nifedipine	CA++blocker	Angina, hypertension
adapalene	Differin	anti-acne	acne vulgaris
Adderall	amphetamines	central nervous system stimulant	ADD
Aidpex-P	Phentermine	appetite suppressant/stimulant	weight loss medication
Adrenalin	EPINEPHrine	bronchodilator	asthma
Advil	Ibuprofen	non-steroidal anti-inflammatory analgesic	pain medication
Aerobid	flunisolide	steroid anti-inflammatory inhaler	asthma, bronchitis
Aerolate, Aerolate III, Aerolate Jr.	theophylline	xanthine bronchodilator	asthma, COPD

Drug Name	Other brand or generic name	Drug Type	Use / Condition
Agenerase	amprenavir	antiretroviral agent	AIDS, HIV
Agrylin	anagrelide	platelet reducer	thrombocytopenia
Ah-Chew	chlorpheniramine, phenylephrine methscopalamine	antihistamine/decongestant	cold and sinus medication
Akineton	biperden	antiparkinsonian	Prophylaxis of EPS (dystonias)
Akne-Mycin	erythromycin	antibiotic	infection
albendazole	Albenza	anthelmintic	tapeworm
Albenza	albendazole	anthelmintic	tapeworm
albuterol	Proventil	beta-2 bronchodilator	asthma, chronic obstructive pulmonary disease
Aldactazide	hydrochlorothiszide, spironolactone	diuretics	hypertension
Aldactone	spironolactone	potassium-sparing diuretic	
Aldochlor	methyldopa+ chlorothiazide	antihypertensive/diuretic compound	hypertension
Aldomet	methyldopa	antihypertensive	hypertension
Aldoril	methyldopa+ hydrochlorothazide	antihypertensive compound	hypertension
Alesse21, Alesse 28	levonorgestrel, estradiol	oral contraceptive	birth control
Aleve	Naproxen	non-steroidal anti-inflammatory	pain medication
Alfenta	alfentanil	analgesic narcotic analgesic/ anesthetic	pain medication
Alkeran	melphanlan	anticancer agent	multiple myeloma, ovarian cancer
Allegra	fexofenadine	antihistamine	allergies
allopurinol	Zyloprim	reduces serum uric acid	gout
Alora	estradiol	hormone	menopause
alosetron	Lotronex	antidiarrheal	irritable bowel syndrome
alprazolam	Xanax	benzodiazepine hypnotic	anxiety
Altace	ramipril	angiotensin-converting enzyme inhibitor	hypertension
Alupent	metaproterenol	beta-2 bronchodilator	asthma, chronic obstructive pulmonary disease
Amaryl	glimepiride	oral hypoglycemic	diabetes mellitus
Ambien	zolpidem	hypnotic	insomnia
Amen	medroxyprogesterone	hormone	endometriosis, amenorrhea, uterine bleeding
Amikin	amikacin	antibiotic	infection
amiloride	Midamor	potassium-sparing diuretic	CHF / HTN

Drug Name	Other brand or generic name	Drug Type	Use / Condition
aminophylline	Mudrane	bronchodilator	asthma, chronic obstructive pulmonary disease
aminosalicylic acid	Paser Granules	antibacterial	tuberculosis
amitriptyline	Elavil	tricyclic antidepressant	depression
amoxapine	Asendin	tricyclic antidepressant	depression
amoxicillin	Amoxil	an antibiotic	infection
Amoxil	amoxicillin	an antibiotic	infection
amphetamine	Adderall	stimulant	attention deficit disorder
amphojel	aluminum hydroxide	antacid	indigestion
Amphotericin B	Fungizone	antifungal agent	fungus
ampicillin	omnipen	antibiotic	infection
Anafranil	clomipramine	tricyclic antidepressant	depression
Anaplex HD	Hydrocodone, phenylephrine, chlorpheniramine	narcotic antitussive/decongestant/ antihistamine	colds, allergies
Anaprox, Anprox DS	naproxen	NSAIS analgesic	
Anatuss DM	guaifenesin, pseudoephedrine, dextromethorphan	expectorant/decongestant antitussive	cough
Anatuss LA	guaifenesin, pseudoephedrine,	expectorant/decongestant	cough
Anacodon	flucytosine	antifungal agent	fungus
Android	methyltestosterone	androgen/ steroid/ masculinizing hormone	hypogonadism
Anolor 300	butalbital, acetaminophen, caffine	sedative/ analgesic	Pain relief
Antabuse	disulfiram	inhibits metabolism of alcohol	alcohol addiction
Antivert	meclizine	antinauseant	vertigo
Anusol HC	hydrocortisone	steroid anti- inflammory	hemorroids
Apap	acetaminophen	non-narcotic analgesic	pain medication
Aphrodyne	yohimbine	alpha blocker	impotence
APL	chorionic gonadotropin	growth hormone	
Aquatensen	methycothiazide	antihypertensive/diuretic	hypertension
Aralen	digestive enzymes		poor digestion
Acro-Lase	digestive enzymes		poor digestion
Arco-Lase Plus	digestive enzymes, hyoscyamine, atropine, phenobarbital		poor digestion
Aricept	donepezil	Cholinergic enhancer	Alzheimer's
Arimidex	anastrozole	anticancer agent	Breast cancer
Aristocort	triamcinolone	Steroid anti-inflammatory	
Artane	trihexyphenidyl	antiparkinsonian	prophylaxis of EPS (dystonias)

Drug Name	Other brand or generic name	Drug Type	Use / Condition
ASA	acetylsalicylic acid	aspirin, a NSAID analgesic	
Asacol	mesalamine	anti-inflammatory agent	colitis
Astelin	azelastine	antihistamine	allergic rhinitis
Astramorph PF	morphine	narcotic analgesic	pain medication
Atamet	carbidpa, levodopa	antiparkinsonian	Parkinson's disease
Atapryl	selegiline	monoamine oxidase inhibitor	Parkinson's disease
Atarax	hydroxyzine	sedative/ tranquilizer/antihistamine	urticaria, anxiety
atenolol & chlorthalidone		beta blocker, diuretic	hypertension
atenolol		beta blocker	hypertension, arrhythmias
Ativan	LORazepam	benzodiazepine hypnotic	
atovaquone	Mepron	antiprotozoal	pneumonia
Atrohist Plus	phenylephrine, phenylpropanolamine, chlorpheniramine, hyoscyamine, atropine	decongestant, antihistamine	allergies, cold
Atromid-S	clofibrate	antilipiddemic	hyperlipidemia
atropine		antispasmodic/anitsecretory	colds, gastrointestinal (GI) irritation
Atrorvent	ipratropium	anticholinergic bronchodilator	chronic obstructive pulmonary disease
Augmentin	amoxicillin, clavulanate, potassium	antibiotic	infection
Auralgan	antipyrine, benzocaine	ear drop analgesic	ear ache
Avandia	rosiglitazone	oral hypoglycemic	diabetes mellitus
Avonex	interferon	antiviral	multiple sclerosis
Axid	nizatidine	H-2 antagonist, inhibits gastric acid secretion	ulcers
Axocet	butalbital, acetaminophen	sedative/analgesic	tension headache
Aygestin	norethindrone	hormone	amenorrhea, endometriosis
azatadine	Rynatan	antihistamine/decongestant	cold and sinus medication
azathioprine	Imuran	immunosuppressant	organ transplants, arthritis
Azelex	Azelaic Acid	antiacne cream	acne
azithromycin	Zithromax	antibiotic	infection
Azmacort	triamcinolone	steroid anti-inflammatory	asthma, bronchitis
AZT	zidovudine	antiviral agent	AIDS, HIV
aztreonam	Azactam	antibiotic	respiratory tract infections

Drug Name	Other brand or generic name	Drug Type	Use / Condition
Azulfidine-EN	sulfasalazine	anti-infective, anti-inflammatory	colitis, arthritis
baclofen		muscle relaxant	multiple sclerosis, spinal cord disease
Bactrim, Bactrim DS	trimethoprim, sulfamethoxazole	antibacterials	urinary tract infection, ear infection, bronchitis
Bactroban	mupirocin	topical antibacterial	skin infections
balsam peru	Granulex	necrotic tissue debrider	decubitus and varicose ulcers, sunburn
Basaljel	aluminum carbonate	antacid	heartburn, indigestion
Baycol	cerivastatin	cholesterol inhibitor	high cholesterol
beclomethasone	Beconase	steroid anti-inflammatory	
Beclovent	beclomethasone	steroid anti- inflammatory	asthma, chronic obstructive pulmonary disease
Beconase, Beconase AQ	beclomethasone	steroid anti- inflammatory	asthma, chronic obstructive pulmonary disease
Beelith	magnesium, pyridoxine	magnesium/vitamin B6 supplement	magnesium/vitamin B6 deficiency
belladonna	Belladenal	antispasmodic	irritable bowel syndrome
Benadryl	diphenhydrAMINE	antihistamine	allergies
Benemid	probenecid	uricosuric	gout, also prolong effect of penicillin
Bentyl	Dicyclomine	gastrointestinal (GI) tract antispasmodic	gastrointestinal (GI) irritation
Benylin	diphenhydrAMINE	antihistamine	allergies
Benzac AC	benzoyl peroxide	antibacterial	acne vulgaris
Benzamycin	erythromycin, benzoyl, peroxide	topical antibiotic/ keratolytic compound	acne
benzocaine		topical anesthetic	topical pain medication
benzonatate	Tessalon	non-narcotic anittussive	cough
benztropine	Cogentin	anticholinergic	Parkinson's disease
bepridil	Vascor	calcium channel blocker	angina
Berocca	multivitamins	nutritional supplement	vitamin deficiency
Berocca Plus	multivitamins, minerals	nutritional supplement	vitamin deficiency
Betalin	thiamine	Vitamin B-1	vitamin deficiency
betamethasone	Celestone	steroid anti-inflammatory	
Betapace	sotalol	beta blocker	angina, hypertension, arrhythmais
Betaseron	interferon	immunologic	Multiple Sclerosis

Drug Name	Other brand or generic name	Drug Type	Use / Condition
betaxolol	Kerlone	beta blocker	hypertension
bethanechol	Urecholine	vagomimetic agent which increases bladder tone	urinary retention
Betoptic	betaxolol	beta-1 blocker eye drops	glaucoma
Biaxin	clarithromycin	antibiotic	infection
Bicillin	penicllin	antibiotic	infection
Bicitra	sodium citrate, citric acid	urinary alkalizer	acidosis
Biltricide	praziquantel	anthelmintic	Schistosomiasis flukes
Biohist-LA	Carbinoxamine, pseudoephedrine	antihistamine	cold and sinus medication
biperiden	Akineton	anticholinergic	Parkinson's disease, extrapyramidal symptom (dystonias)
bisacodyl	Dulcolax	laxative	constipation
bismuth subsalicylate	Pepto-Bismol	antidiarrheal/antinauseant	diarrhea
bisoprolol	Zebeta	beta blocker	hypertension
bitolterol	Tornalate	beta bronchodialtor	asthma
Blephamide	sulfacetamide, prenisolone	antibacterial, steroid anti-inflammatory	ocular infections
Blocadren	timolol	beta blocker	angina, hypertension, arrhythmias
Bonine	meclizine	antiemetic	nausea and vomiting, vertigo
Bontril PDM, Bontril Slow Release	phendimetrazine	stimulant, appetite suppressant	obesity
botulinum toxin type A	Botox	paralytic	strabismus, eyelid spasms
Brethine	terbutaline	beta-2 bronchodilator	asthma, chronic obstructive pulmonary disease
Brevicon		oral contraception	birth control
brimonidine	Alphagan	Alpha stimulant	glaucoma
Bromfed Capsules, PD Capsules	brompheniramine, pseudoephedrine	antihistamine, decongestant	Allergic rhinitis, nasal congestion
brompheniramine	Bromfed	antihistamine	allergies
Broncholate Syrup	ephedrine, guaifenesin	bronchodilator, expectorant	colds, bronchitis
budesonide	Rhinocort	corticosteroid	corticosteroid
bumetanide	Bumex	diuretic	edema, congestive heart failure
Bupap	butalbital, acetaminophen	sedative / analgesic	headache
Buprenex	buprenorphine	narcotic analgesic	pain medication

Drug Name	Other brand or generic name	Drug Type	Use / Condition
buprenorphine	Buprenex	narcotic analgesic	pain medication
bupropion	Wellbutrin	an antidepressant	depression
buspar	buspirone	antianxiety agent	anxiety disorders
butabarbital	Pyridium	barbiturate sedative / antispasmodic	
butalbital	Fiorinal	barbiturate muscle relaxant / sedative	
butalbital, acetaminophen, caffeine		sedative / analgesic	headache
butorphanol	Stadol NS	narcotic analgesic	pain medication
cabergoline	Dostinex	dopaminergic	hyperprolactinemia
caffeine		stimulant	headache
Calan, Calan SR	verapamil	calcium blocker	angina, hypertension, PSVT prophylaxis, headache
Calcet, Calcet Plus		calcium supplement	calcium deficiency
Calcibind	cellulose sodium phosphate	binds calcium	
Capital w/ Codeine	acetaminophen, codeine	narcotic analgesic	pain medication
captopril	Capoten	angiotensin-converting enzyme inhibitor	hypertension, congestive heart failure
Carafate	sucralfate	an anti ulcer agent	ulcers
carbamazepine	Tegretol	an anticonvulsant	epilepsy
carbidopa & levodopa	Sinemet	dopamine precursors	Parkinson's disease
Cardene	nicardipine	calcium blocker	angina, hypertension
Cardioquin	quinidine	antiarrhythmic	cardiac dysrhythmias
Cardizem, Cardizem CD	diltiazem	calcium blocker	angina, hypertension, PSVT tachycardia
Cardura	doxazosin	alpha blocker	hypertension, prostatic hypertrophy
carisoprodol	Soma	muscle relaxant / analgesic	
Carnitor	levocarnitine		carnitine deficiency
carteolol	Cartrol	beta blocker	hypertension, angina
Cartrol	carteolol	nonselective beta blocker	hypertension, angina
Casodex	bicalutamide	antiandrogen / anticancer	prostate cancer
Cataflam	diclofenac	non-steroidal anti-inflammatory analgesic	
Catapres	clonidine	an antihypertensive agent	hypertension
Catapres TTS	transdermal clonidine	an antihypertensive	hypertension

Drug Name	Other brand or generic name	Drug Type	Use / Condition
Ceclor, Ceclor CD	cefaclor	an antibiotic	infection
Cedax	ceftibuten	an antibiotic	infection
ceenu	lomustine	anticancer agent	brain cancer, Hodgkin's disease
cefaclor	Ceclor	an antibiotic	infection
cefadroxil	Duricef	an antibiotic	infection
cefazolin	Ancef	an antibiotic	infection
cefixime	Suprax	an antibiotic	infection
cefotetan	Cefotan	an antibiotic	infection
cefprozil	Cefzil	an antibiotic	infection
ceftibuten	Cedax	an antibiotic	infection
Ceftin	cefuroxime	an antibiotic	infection
Cefzil	cefprozil	an antibiotic	infection
Celestone	betamethasone	steroid anti-inflammatory	
cellcept	mycophenolate	immunosuppressant	organ transplants
Celontin	methsuximide	anticonvulsant	absence seizure
cephalexin	Keflex	an antibiotic	infection
Cerezyme	imiglucerase	enzyme	Gauchers disease
cetirizine	Zyrtec	antihistamine	allergic rhinitis, urticaria
Chemet		lead chelator	lead poisoning
chloral hydrate		a sedative	
chlordiazepoxide		a benzodiazepine hypnotic	
chlorothiazide	Diuril	an antihypertensive / diuretic	hypertension
chlorpheniramine		an antihistamine	allergies
chlorpromazine	Thorazine	a major tranquilizer	
chlorpropamide	Diabinese	oral hypoglycemic	diabetes
chlorthalidone	Hygroton	antihypertensive / diuretic	hypertension
chlorzoxazone	Parafon Forte	sedative / muscle relaxant	
Chromagen	iron, vitamin C, folic acid		anemias
cimetidine	Tagamet	H-2 blocker inhibits gastric acid secretion	ulcers
Cipro	ciprofloxacin	an antimicrobial agent	infection
Claforan	cefotaxime	an antibiotic	infection
Claritin	loratadine	non-sedating antihistamine	allergies

Drug Name	Other brand or generic name	Drug Type	Use / Condition
Claritin-D	loratadine, pseudoephedrine	antihistamine / decongestant	allergic rhinitis
clarithromycin	Biaxin	antibiotic	infection
clemastine	Tavist	antihistamine	allergy
Cleocin	clindamycin	an antibiotic	infection
Climara	estradiol	hormone	menopause
clindamycin	Cleocin	an antibiotic	infection
Clinoril	sulindac	non-steroidal anti-inflammatory analgesic	arthritis
clobetasol	Temovate	steroid anti-inflammatory	dermatoses
clofibrate	Atromid-S	reduces serum lipids	
Clomid	clomiphene	ovulatory stimulant, fertility drug	infertility
clomiphene	Clomid	ovulatory stimulant, fertility drug	infertility
clomipramine	Anafranil	a tricyclic antidepressant	depression
clonazepam	Klonopin	anticonvulsant	seizures, panic disorders
clonidine	Catapres	an antihypertensive agent	hypertension
clorazepate	Tranxene	antianxiety / anticonvulsant	anxiety disorders
clotrimazole	Mycelex	antifungal	candida
clozapine	Clozaril	antipsychotic	schizophrenia
Clozaril	clozapine	psychotropic	schizophrenia
Cocaine		mucous membrane anesthetic	
codeine		a narcotic analgesic / antitussive	pain medication
Codiclear DH	hydrocodone, guaifenesin	narcotic antitussive / expectorant	coughs
Codimal DH	hydrocodone, phenylephrine, pyrilamine	narcotic antitussive decongestant	colds, allergies
Codimal DM	dextromethorphan, phenylephrine, pyrilamine	non-narcotic antitussive / decongestant	colds, allergies
Codimal PH	codeine, phenylephrine pyrilamine	narcotic antitussive decongestant compound	colds, allergies
Cogentin	benztropine	an antiparkinsonian	extrapyramidal symptom (dystonias)
Cognex	tacrine	cholinomimetic / Ach-ase inhibitor	Alzheimer's Disease

Drug Name	Other brand or generic name	Drug Type	Use / Condition
Colace	docusate	a stool softener	constipation
ColBenemid	probenecid, colchicine	uricosuric	gout
colchicine	ColBenemid	reduces incidence of gout attacks	gout
Colestid	colestipol	reduces serum cholesterol	high cholesterol
colestipol	Colestid	reduces serum cholesterol	high cholesterol
colistin	Cortisporin-TC	antibiotic	ear infections
Combipatch	estradiol, norethindrone	estrogens	menopause symptoms
Combipres	clonidine, chlorthalidone	antihypertensive / diuretic	hypertension
Combivent	albuterol, ipratropium	bronchodilators	asthma
Combivir	lamivudine, zidovudine	antivirals	HIV, AIDS
Compazine	prochlorperazine	a phenothiazine antiemetic	
Compro	prochlorperazine	a phenothiazine antiemetic	
Concerta	methylphenidate	stimulant	ADHD in children, narcolepsy
Condylox	podofilox	antimitotic	anogenital warts
conjugated estrogens	Premarin		menopause
Copaxone	glatiramer	neurologic agent	Multiple Sclerosis
Cordarone	amiodarone	antiarrhythmic	ventricular fibrillation, ventricular tachycardia
Cordran	flurandrenolide	steroid anti-inflammatory	
Coreg	carvedilol	beta and alpha blocker	hypertension, CHF, angina
Cormax	clobetasol	steroid anti-inflammatory	dermatoses
Cortenema	hydrocortisone	steroid anti-inflammatory	colitis
Cortic Ear Drops	chloroxylenol, pramoxine, hydrocortisone	antiseptic, antifungal steroid anti-inflammatory	
Cortifoam	hydrocortisone	steroid anti-inflammatory	proctitis
Cortisol	hydrocortisone	steroid anti-inflammatory	proctitis
cortisone	Cortone	steroid anti-inflammatory	

Drug Name	Other brand or generic name	Drug Type	Use / Condition
Cortisporin	neomycin, polymyxin, hydrocortisone	antibiotic / steroid anti-inflammatory	
Cortone	cortisone	steroid anti-inflammatory	
Corzide	bendroflumethiazide, nadolol	beta blocker, diuretic	hypertension
Cosopt	timolol, dorzolamide	beta blocker, decreases intraocular pressure	glaucoma
Cotazym, Cotazym-S	pancrelipase	digestive enzyme	pancreatitus, cystic fibrosis
Coumadin	warfarin	an anticoagulant	thrombosis prophylaxis
Covera HS	verapamil	calcium blocker	hypertension, angina
Cozaar	losartan	an antihypertensive	hypertension
Creon	pancrelipase	pancreatic enzyme replacement	
Crixivan	indinavir	protease inhibitor antiviral	AIDS
cromolyn	Intal	antiallergenic	asthma prophylaxis
Cuprimine	penicillamine	chelating agent anti- inflammatory	Wilson's disease, arthritis heavy metal toxicity
Cutivate	fluticasone	topical steroid anti-inflammatory	dermatoses
cyanoobalamin	vitamin B-12		anemia
cyclobenzaprine	Felxeril	skeletal muscle relaxant	
cyclosporine	Sandimmune	immunosuppressant agent	prophylaxis of rejection of transplanted organs
cyclophosphamide	Cytoxan	anticancer agent	Hodgkin's disease, lymphomas
Cycrin	medroxyprogesterone	hormone	uterine bleeding
Cylert	pemoline	a stimulant	attention deficit disorder in children
cyproheptadine	Periactin	an antihistamine	cold, sinus, and allergies
Cystospaz, Cystospaz-M	hyoscyamine	urinary tract antispasmodic	
Cytomel	liothyronine	thyroid hormone	hypothyroidism
Cytotec	misoprostol	prevents gastric ulcers caused by NSAIDS	
Cytovene	ganciclovir	antiviral	AIDS-Related Complex, AIDS
Cytoxan	cyclophosphamide	anticancer agent	Hodgkin's disease, lymphomas
Dallergy	chlorpheniramine, phenylephrine, methscopolamine	antihistamine / decongestant	allergies

Drug Name	Other brand or generic name	Drug Type	Use / Condition
danazol	Danocrine	gonadotropin inhibitor	endometriosis, fibrocystic breast disease
Danocrine	danazol	gonadotropin inhibitor	endometriosis, fibrocystic breast disease
Dantrium	dantrolene	skeletal muscle antispasmodic	Multiple Sclerosis, cerebral palsy
dapsone		antibacterial drug	leprosy, dermatitis herpetiformis
Daranide	dichlorphenamide	carbonic anhydrase inhibitor, lowers intraocular pressure	glaucoma
Daraprim	pyrimethamine	antiparasitic	malaria, toxoplasmosis
Darvocet-N	propoxyphene, acetaminophen	narcotic analgesic	pain medication
Darvon	propoxyphene	narcotic analgesic	pain medication
Darvon Compound	propoxyphene, acetylsalicylic acid (aspirin), caffeine	narcotic analgesic compound	pain medication
Daypro	oxaprozin	non-steroidal anti-inflammatory	arthritis
DDAVP	desmopressin	antidiuretic hormone	nocturia, diabetes insipidus
ddC	HIVID, zalcitabine	antiviral	AIDS
Decadron	dexamethasone	steroid anti-inflammatory	
Decadron L.A.	dexamethasone	steroid anti-inflammatory	
Declomycin	demeclocycline	an antibiotic	infection
Deconsal II	pseudoephedrine, guaifenesin	decongestant / expectorant	colds
Defen-LA	pseudoephedrine, guaifenesin	decongestant / expectorant	the common cold
deferoxamine	Desferal	iron-chelator	iron toxicity
dehydroeplandrosterone	Vitamist	vitamins, minerals	vitamin deficiency
delavirudine	Rescriptor	antiviral	HIV
Demadex	torsemide	diuretic	HTN, edema, CHF, kidney disease liver disease
Demerol	meperidine	narcotic analgesic	pain medication
Demser	metyrosine	antihypertensive	pheochromocytoma
Demulen		oral contraceptive	birth control
Depakene	valproic acid	antiepileptic	epilepsy
Depakote	divalproex	antiepileptic	absence seizures
Depacon	divalproex	antiepileptic	absence seizures

Drug Name	Other brand or generic name	Drug Type	Use / Condition
Depen	penicillamine	disease-modifying antirheumatic	arthritis pain
Deponit	nitroglycerin	transdermal nitrate	angina
Depo-Medrol	methylPREDNISolone	steroid anti-inflammatory	
Depo-Provera	medroxyprogesterone	contraceptive / anticancer agent	endometrial or renal cancer
Deprenyl	selegiline	monoamine oxidase inhibitor	Parkinson's disease
Derifil	chlorophyllin copper	internal deodorant	colostomy, incontinence
Desferal	deferoxamine	iron-chelator	iron toxicity
desflurane	Suprane	inhaled general anesthetic agent	pain medication
desipramine	Norpramin	tricyclic antidepressant	depression
desmopressin	DDAVP	antidiuretic	bed-wetting, diabetes insipidus
Desogen	desogestrel, estradiol	oral contraceptive	birth control
desonide	Desowen	steroid anti-inflammatory	
Desowen	desonide	steroid anti-inflammatory	
Desoxyn	methamphetamine	a stimulant	
Detrol	tolterodine	cholinergic	urinary agent
dexamethasone	Decadron	steroid anti-inflammatory agent	
Dexedrine	dextroamphetamine	a stimulant	
dextroamphetamine	Dexedrine	a stimulant	ADHD narcolepsy
Dextrostat	dextroamphetamine	stimulant	ADHD narcolepsy
dextromethorphan	Delsym	a cough suppressant	cough
d4T stavudine	Zerit	antiviral	HIV
Diabeta	glyburide	oral hypoglycemic	diabetes
Diabe-Tuss DM	dextromethorphan	antitussive	cough
Diabinese	chlorpropamide	oral hypoglycemic	diabetes
Diamox	acetazolamide	diuretic / anticonvulsant	glaucoma, CHF, epilepsy, mountain sickness
Diastat	diazePAM	anxiolytic	anxiety, seizure, panic disorder
diazePAM	Valium	anxiolytic	anxiety, seizure, panic disorder

Drug Name	Other brand or generic name	Drug Type	Use / Condition
diazoxide	Hyperstat	antihypertensive / antihypoglycemic	hypertension
Dibenzyline	phenoxybenzamine	alpha blocker	hypertension, sweating
diclofenac	Voltaren	non-steroidal anti-inflammatory analgesic	arthritis
dicyclomine	Bentyl	anticholinergic	colitis
didanosine	Videx	antiviral	AIDS, HIV
Didronel	etidronate	bone metabolism regulator	Paget's disease, total hip replacement
Differin	adapalene	topical retinoid	acne
Diflucan	fluconazole	an antifungal agent	fungus
diflunisal	Dolobid	non-steroidal anti-inflammatory analgesic	
digoxin	Lanoxin	cardiac glycoside	CHF, supraventricular dysrhythmias
dihydrocodeine	Synalgos-DC	narcotic analgesic	pain medication
Dilacor XR	diltiazem	calcium blocker	hypertension, angina
Dilantin	phenytoin	an anticonvulsant	
Dilatrate SR	isosorbide	long-acting nitrate	angina
Dilaudid, Dilaudid HP	HYDROmorphone	narcotic analgesic	pain medication
Dilor, Dilor-200, Dilor- 400, Dilor Elixir	dyphylline	xanthine bronchodilator	asthma, COPD
Dilor-G	dyphylline, guaifenesin	bronchodilator / expectorant	cough / congestion
diltiazem, diltiazem CD	Cardizem	calcium blocker	angina, hypertension, PSVT
dimenhydrinate	Dramamine	antihistamine	allergies
Dimetane-DX	brompheniramine, pseudoephedrine, dextromethorphan	antihistamine / decongestant / antitussive	
diocytl	docusate	stool softener	constipation
Diovan	valsartan	angiotensin II inhibitor	hypertension
Dipentum	olsalazine	anti-inflammatory agent	ulcerative colitis
diphenhydrAMINE	Benadryl	an antihistamine	cough / congestion
diphenoxylate	Lomotil	narcotic	diarrhea
diphenoxylate & atropine	Lomotil	narcotic, antispasmodic	diarrhea
Diprivan	propofol	general anesthetic agent	
dipyridamole	Persantine	vasodilator	angina
dirithromycin	Dynabac	an antibiotic	infection
Disalcid	salsalate	non-steroidal anti-inflammatory	arthritis

Drug Name	Other brand or generic name	Drug Type	Use / Condition
disopyramide	Norpace	antiarrhythmic	premature ventricular contractions
disulfiram	Antabuse	inhibits metabolism of alcohol	alcohol addiction
Ditropan, Ditropan XL	oxybutynin	anticholinergic / antispasmodic	urinary frequency, incontinence, dysuria
Diucardin	hydroflumethiazide	antihypertensive / diuretic	hypertension
Diuril	chlorothiazide	antihypertensive / diuretic	hypertension
Diutensen-R	methyclothiazide, reserpine	an antihypertensive / diuretic compound	hypertension
docusate	Dialose	stool softener	constipation
Dolobid	diflunisal	non-steroidal anti-inflammatory analgesic	
Dolophine	methadone	narcotic analgesic	pain medication
donepezil	Aricept	cholinergic	Alzheimer's Disease
Donnagel	kaolin, pectin, belladonna alkaloids	antispasmodic / stool binder	diarrhea
Donnatal	phenobarbital, belladonna alkaloids	barbiturate sedative, antispasmodic	ulcers
Donnazyme	pancreatic enzymes		pancreatic insufficiency
Dopram	doxapram	respiratory stimulant	obstructive pulmonary disease, surgery
Doryx	doxycycline	an antibiotic	infection
dorzolamide	Trusopt		glaucoma, reduces IOP
Dostinex	cabergoline	dopaminergic	hyperprolactinemia
Dovonex	calcipotriene	topical agent	psoriasis
doxapram	Dopram	respiratory stimulant	COPD surgery
doxazosin	Cardura	alpha blocker	hypertension, prostatic hypertrophy
doxepin	Sinequan	tricyclic antidepressant	depression
Doxil	doxorubicin	antineoplastic	AIDS-related tumors
doxorubicin	Doxil	antineoplastic	AIDS-related tumors
doxycycline	Vibramycin	an antibiotic	infection
Dramamine	dimenhydrinate	an antinauseant	nausea, motion sickness
Dulcolax	bisacodyl	a laxative	constipation
Duramorph	morphine	a narcotic analgesic	pain medication
Duratuss	hydrocodone, pseudoephedrine, guaifenesin	antitussive / decongestant / expectorant	colds, allergies
Duratuss DM	dextromethorphan, guaifenesin	antitussive, expectorant	colds, allergies

Drug Name	Other brand or generic name	Drug Type	Use / Condition
Duratuss G	guaifenesin	expectorant	colds, allergies
Dura-Vent	phenylpropanolamine, guaifenesin	decongestant, expectorant	cough / congestion
Duricef	cefadroxil	an antibiotic	infection
Dyazide	hydrochlorothiazide, triamterene	antihypertensive / diuretic	hypertension
Dylix	dyphyllin	xanthine bronchodilator	asthma
Dynabac	dirithromycin	an antibiotic	infection
Dynacin	minocycline	an antibiotic	infection
Dynacirc CR	isradipine	calcium blocker	hypertension, angina
dyphylline	Lufyllin	bronchodilator	COPD asthma
Dyrenium	triamterene	potassium-sparing diuretic	congestive heart failure
Dytuss	diphenhydrAMINE, alcohol	antihistamine	cold, sinus, and allergies
E-mycin	erythromycin	an antibiotic	infection
Easprin	acetylsalicylic acid (aspirin)	non-steroidal anti-inflammatory analgesic	arthritis
Ecotrin		enteric coated aspirin, a NSAID analgesic	
Edecrin	ethacrynic acid	a diuretic	congestive heart failure
EES	erythromycin	an antibiotic	infection
Effexor, Effexor XR	venlafaxine	antidepressant	depression
Elavil	amitriptyline	tricyclic antidepressant	depression
Eldepryl	selegiline	monoamine oxidase inhibitor	Parkinson's disease
Elimite	permethrin	topical scabicidal agent	scabies, lice
Elmiron	pentosan	urinary tract analgesic	cystitis
Elocon	mometasone	topical steroid anti-inflammatory	
Elspar	asparginase	antineoplastic	leukemia, sarcoma
Emcyt	estramustine	anticancer agent	prostate cancer
Emla	lidocaine, prilocaine	topical anesthetic	sunburn, rash
enalapril	Vasotec	angiotensin-converting enzyme inhibitor	hypertension, congestive heart failure
enalaprilat	Vasotec	IV ACE inhibitor	hypertension
Endal-HD	hydrocodone, phenylephrine, chlorpheniramine	narcotic antitussive decongestant / antihistamine	
Enduron	methyclothiazide	antihypertensive / diuretic	hypertension
enflurane	Ethrane	general anesthetic	surgery

Drug Name	Other brand or generic name	Drug Type	Use / Condition
Entex	phenylephrine, guaifenesin phenylpropan-olamine	decongestant, expectorant	cough / congestion
Entex LA	phenylpropanolamine, guaifenesin	decongestant, expectorant compound	cough / congestion
Entex PSE	pseudoephedrine, guaifenesin	decongestant, expectorant	cough / congestion
ephedrine	Mudrane	a bronchodilator	asthma, COPD disease
Epi-Pen	EPINEPHrine	bronchodilator / vasoconstrictor	allergic reaction
EPINEPHrine	Primatene Mist	bronchodilator	asthma
Epivir 3tC	lamivudine	antiviral	HIV
epoetin alfa	Epogen	increases RBC production	anemia
Epogen	epoetin alfa	increases RBC production	anemia
epoprostenol	Flolan	antihypertensive	pulmonary hypertension
Equagesic	meprobamate, acetylsalicylic acid (aspirin)	tranquilizer / analgesic	
Equanil	meprobamate	a tranquilizer	
Ercaf	ergotamine, caffeine	vasoconstrictors	migraine headache
Ergamisol	levamisole	immunomodulator	colon cancer
Ergomar	ergotamine	antimigraine	vascular headache
Eryc	erythromycin	an antibiotic	infection
Eryped	erythromycin	an antibiotic	infection
Ery-Tab	erythromycin	an antibiotic	infection
Erythrocin	erythromycin	an antibiotic	infection
erythromycin	EES	an antibiotic	infection
erythromycin with sulfisoxazole		antibiotics	urinary tract infection
erythropoetin	Epogen	increases RBC production	anemia
Esgic	acetaminophen, caffeine butalbital	analgesic / muscle relaxant antianxiety compound	headache
Esgic-Plus	butalbital, acetaminophen, caffeine	sedative / analgesic	
Eskalith	lithium	a tranquilizer	mania, depression
esmolol	Brevibloc	beta blocker	supraventricular tachycardia (SVT)
estazolam	Prosom	sedative / hypnotic	insomnia
Estrace	estradiol	estrogen	menopause
Estraderm	estradiol	topical estrogen	menopause

Drug Name	Other brand or generic name	Drug Type	Use / Condition
estradiol	Climara	estrogen	menopause
Estratest	estrogens, methyltestosterone		menopause
Estrostep	norethindrone, estradiol	oral contraceptive	birth control
estropipate	Ogen	estrogens	menopause
ehinyl estradiol	Ortho-Novum	oral contraceptive	birth control
Ethmozine	moricizine		severe ventricular dysrhythmias
etodolac	Lodine	non-steroidal anti-inflammatory analgesic	headache, arthritis, gout
Etrafon	perphenazine, amitriptyline	major tranquilizer, tricyclic antidepressant	anxiety with depression
Eulexin	flutamide	anticancer agent	prostate cancer
Evista	raloxifene		osteoporosis prevention
Exgest LA	phenylpropanolamine, guaifenesin	decongestant / expectorant	cough / congestion
Extendryl	phenylephrine, methscopolamine, chlorpheniramine	antihistamine, decongestant	allergies
famciclovir	Famvir	antiviral	herpes
famotidine	Pepcid	H-2 blocker, inhibits gastric acid	ulcers
Famvir	famciclovir	antiviral	herpes zoster, genital herpes
Fastin	phentermine	a stimulant	appetite suppression
FE-50	iron	an iron supplement	iron deficiency
felbamate	Felbatol	antiepileptic	seizures
Felbatol	felbamate	antiepileptic	seizures
Feldene	piroxicam	a non-steroidal anti-inflammatory analgesic	
felodipine	Plendil	calcium blocker	hypertension, angina
Femara	letrozole	estrogen inhibitor	breast cancer
Fenesin	guaifenesin	an expectorant	colds
Fenesin DM	dextromethorphan, guaifenesin	antitussive, expectorant	colds
fenoprofen	Nalfon	non-steroidal anti-inflammatory analgesic	
fentaNYL	Duragesic	narcotic analgesic	pain medication
Feosol		an iron supplement	iron deficiency
Fero-Folic-500	iron, folic acid, vitamin C	vitamins	vitamin deficiency
Fero-Grad-500	iron, vitamin C	vitamin / mineral	vitamin deficiency

Drug Name	Other brand or generic name	Drug Type	Use / Condition
ferrous gluconate		an iron supplement	iron deficiency
ferrous sulfate		an iron supplement	iron deficiency
Fetrin	iron, vitamin C, cyanocobalamin	vitamins	vitamin deficiency
fexofenadine	Allegra	antihistamine	allergies
Fioricet	butalbital, acetaminophen, caffeine, codeine	analgesic	headache
Fioricet with codeine	butalbital, acetaminophen, caffeine, codeine	sedative / narcotic analgesic	pain medication
Fiorinal	butalbital, acetylsalicylic acid (aspirin), caffeine	a non-narcotic analgesic	pain medication
Fiorinal with codeine	butalbital, aspirin, caffeine, codeine	narcotic analgesic compound	pain medication
Flagyl	metronidazole	an antimicrobial agent	
flavoxate	Urispas	urinary tract antispasmodic	urinary incontinence
Flexeril	cyclobenzaprine	skeletal muscle relaxant	
Flonase	fluticasone	steroid	allergic rhinitis
Florical	fluoride, calcium	mineral supplement	mineral deficiency
Flomax	tamsulosin	alpha-1 blocker	enlarged prostate
Flovent	fluticasone	steroid anti-inflammatory	asthma
Floxin	ofloxacin	an antibiotic	infection
floxuridine	Fudr	antineoplastic	liver, gastrointestinal (GI) cancer
fluconazole	Diflucan	an antifungal agent	fungus
Flumadine	rimantadine	antiviral	influenza A
fluoxetine	Prozac	a heterocyclic antidepressant	depression
fluphenazine		antipsychotic	schizophrenia, delusions, hallucinations
flurazepam	Dalmane	sedative-hypnotic	insomnia
flurbiprofen		non-steroidal anti-inflammatory analgesic	arthritis
fluvastatin	Lescol	cholesterol reducer	high cholesterol
fluvoxamine	Luvox	antidepressant	depression
folic acid B9	Cefol	vitamin coenzyme	anemia
Fortaz	ceftazidime	an antibiotic	infection
Fosamax	alendronate	reduces bone loss	osteoporosis, Paget's disease
fosinopril	Monopril	angiotensin-converting enzyme inhibitor	hypertension
Fulvicin	griseofulvin	an antifungal agent	fungus

Drug Name	Other brand or generic name	Drug Type	Use / Condition
Fumatinic	iron, vitamins	vitamin / mineral supplement	vitamin deficiency
Furadantin	nitrofurantoin	antibacterial agent	urinary tract infection
furosemide	Lasix	diuretic	congestive heart failure, hypertension
Furoxone	furazolidone	antimicrobial	diarrhea
Garamycin	gentamicin	an antibiotic	infection
Gastrocrom	cromolyn	antiasthmatic, antiallergic	diarrhea, headache, urticaria, nausea
Gaviscon	magnesium, aluminum	antacid, laxative	constipation, acid reflux
gemfibrozil	Lopid	lowers serum lipids	high cholesterol
Gemzar	gemcitabine	antineoplastic	lung, pancreatic cancer
gentamicin	Garamycin	an antibiotic	infection
Genotropin	somatropin	growth stimulator	AIDS, wasting syndrome, growth disorders
Geocillin	carbenicillin	an antibiotic	infection
glimepiride	Amaryl	oral hypoglycemic	diabetes
glipizide	Glucotrol	oral hypoglycemic	diabetes
glucagon		hormone, mobilizes glucose	hypoglycemia
Glucophage	metformin	oral hypoglycemic	diabetes
glucosamine	Cosamin-DS	cartilage growth stimulator	
Glucotrol	glipizide	oral hypoglycemic	diabetes
Glucovance	glyburide, metformin	oral hypoglycemic	
Glutofac-MX	vitamins, minerals		dietary supplement
glyburide	Diabeta	oral hypoglycemic	diabetes
glycopyrrolate	Robinul	anticholinergic	peptic ulcers
Glynase	glyburide	oral hypoglycemic	diabetes
Glyset	miglitol	oral hypoglycemic	diabetes
Golytely	polyethylene glycol, electrolytes	bowel evacuant	
goserelin	Zoladex	antineoplastic	prostate cancer, endometriosis
granisetron	Kytril	antiemetic	chemotherapy, nausea
Grifulvin V	griseofulvin	antifungal	ringworm
grepafloxacin	Raxar	antibiotic	bronchitis, gonorrhea
Grisactin	griseofulvin	antifungal agent	fungus
griseofulvin	Fulvicin	antifungal	ringworm
gris-PEG	griseofulvin	antifungal	ringworm
Guaifed, Guaifed-PD	guaifenesin, pseudoephedrine	expectorant / decongestant	cough / congestion

Drug Name	Other brand or generic name	Drug Type	Use / Condition
guaifenesin	Robitussin	expectorant	colds, bronchitis
guaifenesin with codeine	Robitussin	expectorant / narcotic antitussive	cough / congestion
Guai-Vent	pseudoephedrine, guaifenesin	decongestant, expectorant	colds, bronchitis
guanabenz	Wytensin	antihypertensive	hypertension
guanfacine	Tenex	antihypertensive	hypertension
Gynazole-I	butoconazole	antifungal	yeast infections
Habitrol	nicotine		relief of nicotine withdrawal symptoms
Halcion	triazolam	a benzodiazepine hypnotic	insomnia
Haldol	haloperidol	a major tranquilizer	
Halfprin	aspirin		acute myocardial infarction prophylaxis
haloperidol	Haldol	antipsychotic	psychotic disorders, hyperactivity
hydrochlorothiazide	hydrochlorothiazide	antihypertensive / diuretic	hypertension
Healthy Heart	vitamins	vitamin supplement	vitamin deficiency
Hemocyte	iron	iron supplement	iron deficiency
Hemocyte Plus	iron, vitamins, minerals	vitamin / mineral supplement	vitamin deficiency
Hemocyte F Elixir	iron, vitamins, alcohol	vitamin / mineral supplement	vitamin deficiency
Hemocyte F tablets	iron, folic acid	iron supplement	hepatic dysfunction
HEP-Forte	protein, vitamins, mineral	nutritional supplement	vitamin deficiency
Hexalen	altretamine	anticancer agent	ovarian cancer
Histussin D	hydrocodone, pseudoephedrine	narcotic antitussive / decongestant	
Histussin HC	hydrocodone, phenylephrine, chlorpheniramine	narcotic antitussive / decongestant / antihistamine	
HIVID	zalcitabine	antiviral	AIDS
homosalate	Solbar	sunscreen	UVA, UVB protection
Humalog	insulin	hypoglycemic	diabetes mellitus
Humate-P	antihemophilic factor IV		hemophilia
Humatrope	somatropin	human growth hormone	
Humegon	mentropins	gonadotropin hormone	infertility
Humibid LA	guaifenesin	expectorant	colds

Drug Name	Other brand or generic name	Drug Type	Use / Condition
Humorsol	demecarium	topical miotic	glaucoma
Humulin N, Humulin R	insulin	hypoglycemic	diabetes
Hyalgan	sodium hyaluronate	intra-articular polymer injection	osteoarthritis
hyaluronate	Hyalgan	intra-articular polymer injection	osteoarthritis
Hycamtin	topotecan	antineoplastic	ovarian, hepatic cancer
Hycodan	hydrocodone, homatropine	narcotic antitussive	
Hycomine Compound	hydrocodone, chlorpheniramine caffeine, phenylephrine	narcotic antitussive / decongestant / antihistamine	colds, upper respiratory infection
Hycomine Syrup	hydrocodone, phenylpropanolamine	narcotic antitussive / decongestant	cough, nasal congestion
Hycotuss	hydrocodone, guaifenesin	narcotic antitussive / expectorant	
hydralazine	Apresoline	antihypertensive agent	hypertension
Hydra-Zide	hydralazine, hydrochlorothiazide	antihypertensive / diuretic	hypertension
Hydrea	hydroxyurea	anticancer agent	melanoma, leukemia, ovarian cancer
Hydrocet	hydrocodone, acetaminophen	narcotic analgesic compound	pain medication
hydrochlorothiazide	hydrochlorothiazide	antihypertensive / diuretic	hypertension
hydrocodone		narcotic analgesic / antitussive	pain medication
hydrocodone with acetaminophen	T-Gesic	narcotic analgesic	pain medication
hydrocortisone	Cortef	steroid anti-inflammatory agent	
Hydrocortone	hydrocortisone	steroid anti-inflammatory	
Hydrodiuril	hydrochlorothiazide	antihypertensive / diuretic	hypertension
hydroflumethiazide	Salutensin	an antihypertensive / diuretic	hypertension
HYDROmorphone	Dilaudid	narcotic analgesic / antitussive	pain medication
hydroquinone	Melanex		pigmentation disorders
hydroxypropyl	Lacrisert	ophthalmic lubricant	dry eyes
hydroxyurea	Hydrea	anticancer agent	melanoma, leukemia, ovarian cancer

Drug Name	Other brand or generic name	Drug Type	Use / Condition
hydroxyzine	Atarax	sedative / tranquilizer / antihistamine	
Hygroton	chlorthalidone	antihypertensive / diuretic	hypertension
Hylorel	guanadrel	a sympatholytic antihypertensive	hypertension
hyoscyamine	Cystospas	an antispasmodic	lower urinary and gastrointestinal (GI) tract spasm
hypericum	St John's wort	mood elevator, dietary supplement	depression
Hyperstat	diazoxide	antihypertensive	hypertension
Hytone	hydrocortisone	steroid anti-inflammatory	hypertension
Hytrin	terazosin	an antihypertensive agent	hypertension
Hyzaar	losartan, hydrochlorothiazide	antihypertensive compound	hypertension
Iberet	iron, vitamins, mineral	vitamin / mineral supplement	vitamin deficiency
IBU	ibuprofen	non-steroidal anti-inflammatory analgesic	
ibuprofen	Advil	non-steroidal anti-inflammatory analgesic	
ibutilide	Corvert	antiarrhythmic	A Fib, A FL
Iletin	insulin preparations		diabetes mellitus
Imdur	isosorbide mononitrate	long-acting nitrate	angina
imipramine	Tofranil	a tricyclic antidepressant	depression
Imitrex	sumatriptan		migraine headache
Imodium	loperamide	slows peristalsis	diarrhea
Imodium A-D	loperamide	anti-diarrhea agent	diarrhea
Imuran	azathioprine	immunosuppressant	organ transplants, ulcerative colitis, lupus, severe arthritis
indapamide	Lozol	an antihypertensive / diuretic	hypertension
Inderal, Inderal LA	propranolol	beta blocker	HTN, cardiac dysrhythmias, AMI angina, and migraine headache
Inderide	propranolol, hydrochlorothiazide	beta blocker, antihypertensive / diuretic compound	hypertension
Indocin, Indocin SR	indomethacin	non-steroidal anti-inflammatory	arthritis

Drug Name	Other brand or generic name	Drug Type	Use / Condition
indomethacin	Indocin	non-steroidal anti-inflammatory analgesic	arthritis
Infergen	interferon alfacon-1	antiviral	hepatitis C
INH	isoniazid	antibiotic	tuberculosis
insulin	Humulin	hypoglycemic	diabetes mellitus
Intal	cromolyn	antiallergic	asthma prophylaxis
interferon alfa-2a	Roferon-A	antitumor / antiviral	HEP C, leukemia, AIDS-related Kaposi's sarcoma
interferon alfa-2b	Intron-A	antitumor / antiviral	leukemia, melanoma, lymphoma genital warts
interferon alfacon-1	Infergen	antiviral	hepatitis C
interferon beta 1a	Avonex	immunologic	multiple sclerosis
interferon beta 1b	Betaseron	immunologic	multiple sclerosis
interferon gamma 1b	Actimmune	immunologic	Chronic Granulomatous Disease
Inversine	mecamylamine	an antihypertensive agent	hypertension
Invirase	saquinavir	protease inhibitor antiviral	HIV
Ionamin	phentermine	stimulant	appetite suppression
ipratropium	Atrovent	bronchodilator	
ISMO	isosorbide mononitrate	vasodilator	angina
isoetharine	Bronkometer	beta bronchodilator	COPD asthma
isoniazid	INH	antibiotic	tuberculosis
isoproterenol		beta bronchodilator	COPD asthma
Isoptin SR	verapamil	calcium blocker	angina, HTN, PSVT prophylaxis, headache
Isordil	isosorbide dinitrate	long-acting nitrate	angina
isosorbide dinitrate	Isordil	long-acting nitrate	angina
Je-Vax	Japanese encephalitis virus vaccine inactivated		
K-Dur	potassium chloride	a potassium supplement	potassium deficiency
K-Lor	potassium chloride	a potassium supplement	potassium deficiency
K-Phos	potassium phosphate	potassium iron	
K-Tab	potassium chloride	a potassium supplement	potassium deficiency
Kadian	morphine	narcotic analgesic	pain medication
kaolin-pectin	Kaopectate	stool binder	diarrhea

Drug Name	Other brand or generic name	Drug Type	Use / Condition
Kaopectate	kaolin, pectin	stool binder	diarrhea
Kayexalate	sodium polystyrene	ion exchange resin	hyperkalemia
Keflex	cephalexin	an antibiotic	infection
Keftab	cephalexin	an antibiotic	infection
Kefurox	cefuroxime	an antibiotic	infection
Kefzol	cefazolin	an antibiotic	infection
Kerlone	betaxolol	beta-1 blocker	hypertension
ketoconazole	Nizoral	an antifungal agent	fungus
ketoprofen	Orudis	non-steroidal anti-inflammatory	arthritis
ketorolac	Toradol	non-steroidal anti-inflammatory analgesic	
KIE Syrup	potassium iodide, ephedrine	expectorant / bronchodilator	asthma
Kionex	sodium polystyrene	ion exchange resin	hyperkalemia
Klaron	sulfacetamide	an antibacterial	infection
Klonopin	clonazepam	a benzodiazepine hypnotic	seizures
Klor-Con	potassium chloride	a potassium supplement	potassium deficiency
Kogenate	antihemophilic factor VIII		hemophilia
Kristalose	lactulose	stool softener	constipation
Kronofed-A	pseudoephedrine, chlorpheniramine	decongestant, antihistamine	colds allergies
Kutrase	digestive enzymes, hyoscyamine, phenyltoloxamine	antispasmodic / sedative	indigestion
Ku-Zyme	digestive enzymes		indigestion
Kwell	lindane	parasiticide	lice, scabies
Kytril	granisetron	antinauseant / antiemetic	
labetalol	Normodyne	beta blocker	hypertension, angina
Lactocal-F		multivitamin / mineral supplement	vitamin deficiency
lactulose	Duphalac	laxative	constipation
Lamictal	lamotrigine	anticonvulsant	seizures
Lamisil	terbinafine	antifungal	fungal infections
lamivudine	Epivir	antiviral	HIV
lamotrigine	Lamictal	anticonvulsant	seizures
Lanoxicaps	digoxin	cardiac glycoside	CHF supraventricular dysrhythmias
Lanoxin	digoxin	cardiac glycoside	congestive heart failure, dysrhythmias

Drug Name	Other brand or generic name	Drug Type	Use / Condition
lansoprazole	Prevacid	suppresses gastric acid	ulcers
Lantus	insulin	hypoglycemic agent	diabetes
Lariam	mefloquine	antimalarial agent	malaria
Lescol	fluvastatin	cholesterol reducer	high cholesterol
Leukeran	chlorambucil	anticancer agent	leukemia, lymphoma, Hodgkin's Disease
Leukine	sargramostim	white blood cell mobilizer	chemotherapy, bone marrow transplant
leuprolide	Lupron	hormone	endometriosis
levalbuterol	Xopenex	beta-2 bronchodilator	COPD asthma
levamisole	Ergamisole	immunostimulant	colon cancer
Levaquin	levofloxacin	antibacterial	pneumonia
levatiracetam	Keppra	antiepileptic	seizures
Levatol	penbutolol	beta blocker	hypertension
Levbid	hyoscyamine	antispasmodic	ulcers
Levlen 21, 28	levonorgestrel, estradiol	oral contraceptive	birth control
levodopa	Atamet	dopamine precursor	Parkinson's Disease
Levo-Dromoran	levorphanol	a narcotic analgesic	pain medication
levofloxacin	Levaquin	antibacterial	pneumonia
levonorgestrel	Norplant	implanted contraceptive	
Levora	levonorgestrel, estradiol	oral contraceptive	birth control
levorphanol	Levo-Dromoran	a narcotic analgesic	pain medication
Levothroid	levothyroxine	thyroid hormone	thyroid
levothyroxine	Synthroid	thyroid hormone	thyroid
Levoxyl	levothyroxine	thyroid hormone	thyroid
Levsin, Levsinex	hyoscyamine	antispasmodic	ulcers
Lexxel	enalapril, felodipine	ACE inhibitor, calcium blocker	hypertension
Librium	chlordiazepoxide	benzodiazepine hypnotic	
Lidex, Lidex E	fluocinolone	steroid anti-inflammatory agent	
Limbitrol, Limbitrol DS	chlordiazepoxide, amitriptyline	benzo hypnotic / tricyclic antidepressant	depression with anxiety
lindane	Kwell	parasiticide	scabies
liothyronine	Cytomel	thyroid hormone	thyroid
liotrix	Thyrolar	thyroid hormone	thyroid
Lipitor	atorvastatin	antihyperlipidemic	high cholesterol

Drug Name	Other brand or generic name	Drug Type	Use / Condition
lisinopril	Zestril	ACE inhibitor	hypertension, CHF, acute myocardial infarction
lisinopril, hydrochlorothiazide	Zestoretic	ACE inhibitor	hypertension,CHF , acute myocardial infarction
lithium	Lithobid	antimanic	depression, mania
Lithobid	lithium	antimanic	depression, mania
Locoid	hydrocortisone	steroid anti-inflammatory	
Lodine, Lodine XL	etodolac	non-steroidal anti-inflammatory analgesic	
Lodrane allergy capsules	brompheniramine	antihistamine	allergies
Lodrane LD capsules	brompheniramine, pseudoephedrine	antihistamine / decongestant	colds, allergies
Lodrane liquid	brompheniramine, pseudoephedrine	antihistamine / decongestant	colds, allergies
Loestrin 21 FE	norethindrone, estradiol	oral contraceptive	birth control
Lomotil	diphenoxylate, atropine	narcotic antidiarrheal / antispasmodic compound	
Lonox	diphenoxylate, atropine	narcotic antidiarrheal / antispasmodic compound	
LO/Ovral, LO/Ovral 28		an oral contraceptive	birth control
loperamide	Imodium	antidiarrheal agent	diarrhea
Lopid	gemfibrozil	lowers serum lipids	
Lopressor	metoprolol	beta-1 blocker	hypertension
Lopressor HCT	metoprolol, hydrochlorothiazide	beta-1 blocker, diuretic	hypertension
Loprox	ciclopirox	antifungal	ringworm, candida
Lorabid	loracarbef	antibiotic	sinusitis
loratadine	Claritin	non-sedating antihistamine	allergies
LORazepam	Ativan	a benzodiazepine hypnotic	
Lorcet 10/650, Lorcet HD, Lorcet Plus	hydrocodone, acetaminophen	narcotic analgesic compound	pain medication
Lortab	hydrocodone, acetaminophen	narcotic analgesic	pain medication
losartan	Cozaar	antihypertensive	hypertension
Lotensin	benazepril	angiotensin-converting enzyme inhibitor	hypertension, congestive heart failure

Drug Name	Other brand or generic name	Drug Type	Use / Condition
Lotrel	amlodipine, benazepril	calcium blocker / ACE inhibitor	hypertension
Lotrimin	clotrimazole	an antifungal agent	fungus
Lotrisone	clotrimazole, betamethasone	topical antifungal / steroid anti- inflammatory	
Lotronex	alosetron	antidiarrheal	irritable bowel syndrome
lovastatin	Mevacor	lowers serum cholesterol	high cholesterol
loxapine	Loxitane	an antipsychotic	schizophrenia
Loxitane	loxapine	a tranquilizer	
Lozol	indapamide	an antihypertensive / diuretic	hypertension
Lufyllin	dyphylline	bronchodilator	COPD asthma
Lupron Depot	leuprolide	hormone	endometriosis
Luvox	fluvoxamine	antidepressant	Obsessive Compulsive Disorder
Lysodren	mitotane	chemotherapy agent	adrenal cancer
Macrobid	nitrofurantoin	antibacterial	urinary tract infection
Macrodantin	nitrofurantoin	antibacterial	urinary tract infection
Mag-Carb	magnesium carbonate	nutritional supplement	magnesium deficiency
Magonate	magnesium gluconate	electrolyte sedative	alcoholism, hypertension, asthma
Mag-OX	magnesium	mineral dietary supplement	magnesium deficiency
Magsal	magnesium, phenyltoloxamine	a sedative compound	
Magtab SR	magnesium	nutritional supplement	magnesium deficiency
Malarone	atovaquone, proguanil	antimalarial agents	malaria
malathion	Ovide	organophosphate insecticide	head lice
maprotiline	Ludiomil	cyclic antidepressant	depression
Marax	ephedrine, theophylline, hydroxyzine	bronchodilator compound	asthma
Marinol	dronabinol	appetite stimulant	weight loss in AIDS, chemotherapy
Materna		vitamin supplement	vitamin deficiency
Matulane	procarbazine	anticancer drug	Hodgkin's Disease
Mavik	trandolapril	angiotensin-converting enzyme inhibitor	hypertension
Maxair	pirbuterol	beta-2 stimulant	Asthma COPD disease

Drug Name	Other brand or generic name	Drug Type	Use / Condition
Maxaquin	lomefloxacin	an antibiotic	infection
Maxzide	triamterene, hydrochlorothiazide	antihypertensive / diuretic	hypertension
Mebaral	mephobarbital	barbiturate sedative / anticonvulsant	
meclizine	Antivert	antinauseant	vertigo
meclofenamate		NSAID	arthritis, pain, heavy menstrual blood loss
Medigesic	butalbital, acetaminophen, caffeine	analgesic compound	headache
Mediplex		vitamin/mineral complex	
medroxyprogesterone		hormone	endometriosis, amenorrhea, uterine bleeding, contraception
Mefoxin	cefoxitin	an antibiotic	infection
	megestrol	appetite stimulant , an antineoplastic	anorexia with AIDS, breast and endometrial cancer
megestrol	Megace	antineoplastic	breast, endometrial cancer
Megadose		vitamin/mineral complex	
melatonin		hormone	jet lag, S.A.D., depression
Menest	estrogens	hormones	menopause, breast cancer, prostatic cancer
Mentax	butenafine	antifungal	ringworm
Mepergan	meperidine, promethazine	phenothiazine sedative / antiemetic	
meperidine	Demerol	narcotic analgesic	pain medication
mephobarbital	Mebaral	barbiturate sedative / anticonvulsant	
Mephyton	vitamin K-1		coagulation disorders
meprobamate	Miltown	a tranquilizer	
Mepron	atovaquone	antibiotic	pneumocystis carinii pneumonia in AIDS
Mestinon	pyridostigmine	anticholinesterase	myasthenia gravis
metaproterenol	Alupent	beta-2 bronchodilator	COPD asthma
metformin	Glucophage	oral hypoglycemic	diabetes
methadone	Dolophine	narcotic analgesic	pain medication
methamphetamine	Desoxyn	stimulant appetite suppressant	ADD, obesity

Drug Name	Other brand or generic name	Drug Type	Use / Condition
methazolamide		reduces intraocular pressure	glaucoma
methenamine	Urised	antiseptic	urinary tract infection, cystitis
Methergine	methylergonovine	uterotonic	postpartum hemorrhage
methimazole	Tapazole	antithyroid	hyperthyroidism
methocarbamol	Robaxin	skeletal muscle antispasmodic	
methotrexate		anticancer agent	psoriasis, arthritis
methsuximide	Celontin	anticonvulsant	absence seizures
methyclothiazide	Aquatensen	antihypertensive/ diuretic	hypertension
methyldopa	Aldomet	an antihypertensive	hypertension
methylphenidate	Ritalin	stimulant	attention deficit disorder, narcolepsy
methylPREDNISolone	Medrol	steroid anti-inflammatory	
metoclopramide	Reglan	improves gastric emptying	heartburn, ulcers
metolazone	Zaroxolyn	antihypertensive/ diuretic	hypertension
metoprolol	Lopressor	cardioselective beta blocker	hypertension, angina, arrhythmias
metronidazole	Flagyl	an antimicrobial agent	
Mevacor	lovastatin	lowers serum cholesterol	high cholesterol
mexiletine	Mexitil	an antiarrhythmic	abnormal heart rhythm
Mexitil	mexiletine	an antiarrhythmic	abnormal heart rhythm
Mezlin	mezlocillin	broad spectrum antibiotic	infection
Micardis	telmisartan	angiotensin-converting enzyme inhibitor	hypertension
miconazole	Monistat	antifungal	candidiasis
Micronase	glyburide	oral hypoglycemic	diabetes
Micronor	norethindrone	oral contraceptive	birth control
Microzide	hydrochlorothiazide	thiazide antihypertensive/ diuretic	hypertension
Midamor	amiloride	a potassium-sparing diuretic	
midazolam	Versed Syrup	sedative / anxiolytic	
Midrin	isometheptene, acetaminophen dichloralphenazone,	vasoconstrictor/ sedative /analgesic	headache

Drug Name	Other brand or generic name	Drug Type	Use / Condition
miglitol	Glycet	oral hypoglycemic	diabetes
Miltown	meprobamate	a tranquilizer	
Minipress	prazosin	alpha-1 blocker	hypertension
Minitran	transdermal nitroglycerin	nitrate	angina
Minizide	prazosin, polythiazide	an antihypertensive	hypertension
Minocin	minocycline	an antibiotic	infection
minocycline	Minocin	an antibiotic	infection
minoxidil		vasodilator/ antihypertensive / topical hair growing agent	hypertension, baldness
Miralax	polyethylene glycol	a laxative	
mirtazapine	Remeron	antidepressant	depression
Moban	molindone	a tranquilizer	
Mobic	meloxicam	non-steroidal anti-inflammatory analgesic	
Moderil	rescinnamine	an antihypertensive	hypertension
Modicon 21, 28		an oral contraceptive	birth control
Moduretic	amiloride, hydrochlorothiazide	antihypertensive/ diuretic	hypertension
moexipril	Univasc	angiotensin-converting enzyme inhibitor	hypertension
mometasone	Elocon	topical steroid anti-inflammatory	
Monistat, Monistat Dual-Pak, Monistat 3	miconazole	an antifungal agent	candidiasis
Monocal	fluoride, calcium	mineral supplement	mineral deficiency
Monoclate-P	Factor VIII	antihemophilic factor	
Monodox	doxycycline	an antibiotic	infection
Monoket	isosorbide mononitrate	nitrate	angina
Monopril	fosinopril	angiotensin-converting enzyme inhibitor	hypertension
Monurol	fosfomycin	antibiotic	urinary tract infection
morphine sulfate		a narcotic analgesic	pain medication
motofen	difenoxin, atropine	narcotic antidiarrheal agent	diarrhea
moxifloxacin	Avelox	antibiotic	bronchitis, pneumonia
Muco-Fen DM	dextromethorphan, guaifenesin	antitussive/ expectorant	colds
Muco-Fen LA	guaifenesin	expectorant	colds
mupirocin	Bactroban	topical antibacterial	skin infections
Myambutol	ethambutol	chemotherapeutic	tuberculosis
Mycelex, Mycelex G	clotrimazole	antifungal	candidiasis
Mycobutin	rifabutin	antibiotic	AIDS

Drug Name	Other brand or generic name	Drug Type	Use / Condition
Mycostatin	nystatin	antifungal	candidiasis
mycophenolate	Cellcept	immunosuppressant	organ transplants
Mykrox	metolazone	an antihypertensive/ diuretic	hypertension
Myleran	busulfan	anticancer agent	leukemia
Mylicon	simethicone	antiflatulent	flatulence
Mysoline	primidone	anticonvulsant	epilepsy
nabumetone	Relafen	non-steroidal anti-inflammatory	arthritis
nadolol	Corgard	beta blocker	hypertension, angina, arrhythmias
Naftin	naftifine	topical antifungal agent	fungus
Nalex-A	chlorpheniramine, phenylephrine phenlytoloxamine,	antihistamine/sedative /decongestant	colds
Nalex DH	hydrocodone, phenylepherine, alcohol	narcotic antitussive/ decongestant	colds
Nalfon	fenoprofen	non-steroidal anti-inflammatory analgesic	
nalmefene	Revex	narcotic antidote	narcotic overdose
naltrexone	Revia	opioid antagonist; alcohol deterrent	
naphazoline	Naphcon	steroid anti-inflammatory	itching eyes, ocular congestion
Naphcon	naphazoline	steroid anti-inflammatory	itching eyes, ocular congestion
Naprelan	naproxen	non-steroidal anti-inflammatory analgesic	
Naprosyn	naproxen	non-steroidal anti-inflammatory analgesic	
naproxen	Anaprox	non-steroidal anti-inflammatory analgesic	
naratriptan	Amerge		migraine headache
Nardil	phenelzine	monoamine oxidase inhibitor	depression, bulimia
Nasacort, Nasacort AQ	triamcinolone	steroid anti-inflammatory	allergies
Nasalide	flunisolide	a steroid anti-inflammatory agent	
Nasarel	flunisolide	a steroid anti-inflammatory agent	rhinitis
Nascobal	cyanocobalamin	vitamin B-12	anemia
Navane	thiothixene	a major tranquilizer	

Drug Name	Other brand or generic name	Drug Type	Use / Condition
Navelbine	vinorelbine	antineoplastic	breast and ovarian cancer, Hodgkin's disease
nedocromil	Tilade	anti-inflammatory	asthma
nefazodone	Serzone	antidepressant	depression
neggram	nalidixic acid	antibacterial	urinary tract infection
nelfinavir	Viracept	protease inhibitor antiviral	HIV
Nembutal	pentobarbital	barbiturate sedative/ hypnotic	
Neodecadron	neomycin, dexamethasone	antibiotic/steroid anti-inflammatory	
neomycin	Neosporin	antibiotic	infection
Neoral	cyclosporine	immunosuppressant	organ transplant
Neosporin Ointment	polymyxin, bacitracin, neomycin	an antibiotic compound	infection
Neo-Synephrine	phenylephrine	vasoconstrictor, decongestant	
Nesacaine	chloroprocaine	local anesthetic	
Neptazane	methazolamide	reduces aqueous humor production	glaucoma
Nestabs CBF	multivitamins	vitamin supplement	vitamin deficiency
netilmicin	Netromycin	antibiotic	infection
Netromycin	netilmicin	antibiotic	infection
Neupogen	filgrastim	nutrient	chemotherapy
Neurontin	gabapentin	an antiepileptic	
Neutrexin	trimetrexate	an antineoplastic	cancer and pneumocystis pneumonia in AIDS
nevirapine	Viramune	antiviral	HIV, AIDS
Nexium	esomeprazole	suppresses gastric acid pump	ulcers, esophagitis
niacin	vitamin B-3	reduces serum cholesterol	high cholesterol
Niacor	niacin	vitamin B-3	lowers serum cholesterol
nicardipine	Cardene	calcium blocker	angina, hypertension
Nicorette	nicotine chewing gum		cigarette withdraw
nicotine	Nicotrol NS		relief of nicotine withdraw symptoms
Nicotrol NS, Nicotrol Transdermal	nicotine		relief of nicotine withdraw symptoms
nifedipine, nifedipine CC, nifedipine XL	Procardia	calcium blocker	angina, hypertension
Niferex, Niferex-150	iron	mineral	anemia

Drug Name	Other brand or generic name	Drug Type	Use / Condition
Niferex-150 Forte	iron, vitamins	iron/vitamin supplement	iron/vitamin deficiency
Niferex-PN, Niferex-PN Forte	iron, multivitamins	iron / vitamin supplement	iron / vitamin deficiency
Nilandron	nilutamide	antiandrogen	prostate cancer
Nimotop	nimodipine	CCB, improves neurological def after subarachnoid hemorrhage	
nisoldipine	Sular	calcium channel blocker	hypertension
Nitro-Dur	nitroglycerin	long-acting nitrate	angina prophylaxis
nitrofurantoin	Furadantin	antibacterial agent	urinary tract infection
nitroglycerin	Nitrostat	vasodilator	angina
Nitrol	nitroglycerin	nitrate ointment	angina
Nitrolingual Spray	nitroglycerin	nitrate	angina
Nitrostat	nitroglycerin	vasodilator	angina
Nix	permethrin	parasiticide	head lice
nizatidine	Axid	histamine-2 antagonist	ulcers
Nizoral	ketoconazole	antifungal agent	yeast infections
Nolahist	phenindamine	antihistamine	allergies
Nolamine	phenindamine, chlorpheniramine, phenylpropanolamine	antihistamine/ decongestant	colds, allergies
Nolvadex	tamoxifen	anticancer agent	breast cancer
Norco CIII	hydrocodone, acetaminophen	narcotic analgesic compound	pain medication
Nordette		an oral contraceptive	birth control
Norel	guaifenesin, phenylephrine phenylpropanolamine,	expectorant/ decongestant	colds
Norel Plus	acetaminophen, phenyltoloxamine, chlorpheniramine	analgesic/decongestant /antihistamine	colds
norethindrone	Ortho-Novum	oral contraceptive	birth control
Norflex	orphenadrine	non-narcotic analgesic	pain medication
Norgesic	orphenadrine	non-narcotic analgesic	pain medication
Norinyl		an oral contraceptive	birth control
Normodyne	labetalol	beta blocker	hypertension, angina
Noroxin	norfloxacin	urinary tract antibiotic	urinary tract infection
Norpace, Norpace CR	disopyramide	antiarrhythmic	premature ventricular contractions
Norplant	levonorgestrel	contraceptive	birth control
Norpramin	desipramine	a tricyclic antidepressant	depression
Nor-QD	norethindrone	oral contraceptive	birth control
nortriptyline	Pamelor	a tricyclic antidepressant	depression

Drug Name	Other brand or generic name	Drug Type	Use / Condition
Norvasc	amlodipine	calcium blocker	hypertension, angina
Norvir	ritonavir	protease inhibitor antiviral	HIV
Novolin	insulin		diabetes mellitus
Nubain	nalbuphine	a narcotic analgesic	pain medication
Nucofed	codeine, pseudoephedrine	narcotic antitussive / decongestant compound	
Nucofed Expectorant	codeine, pseudoephedrine, guaifenesin	narcotic antitussive / decongestant compound	
Nu-Iron	iron		anemia
Nu-Iron Plus	iron, vitamins	iron/vitamin supplement	iron/vitamin deficiency
Nu-Iron V	iron, vitamins	iron/vitamin supplement	iron/vitamin deficiency
Numorphan	oxymorphone	a narcotic analgesic	pain medication
Nuprin	ibuprofen	a non-steroidal anti-inflammatory analgesic	
nystatin	Mycostatin	an antifungal agent	infection
Nystop	nystatin	antifungal	candida
Obegyn		vitamins and minerals	vitamin/mineral deficiency
Ocuflox	ofloxacin	ophthalmic anti-infective	conjunctivitis, corneal ulcers
ofloxacin	Floxin	an antibiotic	infection
Ogen	estropipate	estrogen	menopause
OLANZapine	Zyprexa	antipsychotic	psychosis
olsalazine	Dipentum	salicylate	ulcerative colitis
omeprazole	Prilosec	suppresses gastric acid secretion	ulcers, esophagitis, GERD
Omnicef	cefdinir	antibiotic	pneumonia, bronchitis
Omnihist LA	chlorpheniramine, phenylephrine, methscopalamine	antihistamine/ decongestant	colds, allergies
opium alkaloids		narcotic analgesic/ antidiarrheal	diarrhea
Oramorph	morphine sulfate	narcotic analgesic	pain medication
Orap	pimozide	antipsychotic	motor and phonic tics
Organidin NR	guaifenesin	expectorant	bronchitis
Orlaam	levomethadyl	opiate agonist	narcotic addiction
orlistat	Zenical	lipase inhibitor	obesity
Ornade	chlorpheniramine phenylpropanolamine	antihistamine/ decongestant compound	colds, allergies
orphenadrine	Norflex	non-narcotic analgesic	
Ortho-Cept 21, 28		an oral contraceptive	birth control

Drug Name	Other brand or generic name	Drug Type	Use / Condition
Ortho-Cyclen-21, 28		an oral contraceptive	birth control
Ortho-EST	estropipate	estrogen	menopause, osteoporosis
Ortho-Novum		an oral contraceptive	birth control
Ortho Tri-Cyclen-21, 28		an oral contraceptive	birth control
Orudis	ketoprofen	non-steroidal anti-inflammatory	arthritis
Oruvail	ketoprofen	non-steroidal anti-inflammatory analgesic	
Os-Cal		calcium and vitamin D supplement	calcium and vitamin D deficiency
Ovcon		an oral contraceptive	birth control
Ovral		an oral contraceptive	birth control
Ovrette	norgestrel	an oral contraceptive	birth control
Oxandrin	oxandrolone	anabolic steroid	osteoporosis, weight loss
oxaprozin	Daypro	non-steroidal anti-inflammatory	arthritis
oxazepam	Serax	a benzodiazepine hypnotic	
Oxistat	oxiconazole	topical antifungal agent	fungus
oxycodone	Percodan	a narcotic analgesic	pain medication
oxycodone with acetaminophen	Tylox	narcotic analgesic compound	pain medication
Oxycontin	oxycodone	narcotic analgesic	pain medication
Oxyir	oxycodone	narcotic analgesic	pain medication
Pacaps	butalbital, caffeine, acetaminophen	sedative/analgesic	headache
Pamelor	nortriptyline	a tricyclic antidepressant	depression
Pancrease, Pancrease MT	pancreatic enzymes		cystic fibrosis, pancreatitus
pantoprazole	Protonix	suppresses gastric acid	ulcers
Parafon Forte	chlorzoxazone, acetaminophen	muscle relaxant/ analgesic compound	
Paraplatin	carboplatin	anti-cancer agent	ovarian cancer
paricalcitrol	Zemplar	vitamin D	hyperparathyroidism
Parlodel	bromocriptine	ergot	Parkinson's disease, hypogonadism, infertility, amenorrhea
Parnate	tranylcypromine	monoamine oxidase inhibitor	depression
paroxetine	Paxil	antidepressant	depression
Paser	aminosalicylic acid	bacteriostatic	tuberculosis

Drug Name	Other brand or generic name	Drug Type	Use / Condition
Patanol	olopatadine		allergic conjunctivitis
Pavulon	pancuronium	paralytic	surgery, endotracheal intubation
Paxil	paroxetine	antidepressant	depression
PCE	erythromycin	an antibiotic	infection
Pediacof	phenylephrine, chlorpheniramine phenylephrine, chlorpheniramine, phenylephrine, chlorpheniramine,	narcotic antitussive / decongestant / antihistamine	
Pediaflor		mineral	osteoporosis, dental caries
Pediapred	prednisolone	steroid	allergies, arthritis, multiple sclerosis
Pediazole		an antibiotic compound	infection
Pediotic	neomycin, polymyxin, hydrocortisone	antibiotic/steroid	ear infections
pemoline	Cylert	stimulant	ADHD, narcolepsy
penbutolol	Levatol	beta blocker	hypertension, angina
penciclovir	Denavir	antiviral	herpes
Penecort	hydrocortisone	steroid anti-inflammatory	
Penetrex	enoxacin	antibacterial	STDs, urinary tract infection
penicillamine	Cuprimine	chelator, antirheumatic	heavy metal poisoning Wilson's disease, arthritis, cystinuria
penicillin		an antibiotic	infection
Pentasa	mesalamine	for ulcerative colitis	ulcerative colitis
pentazocine	Talwin	narcotic analgesic	pain medication
pentazocine & naloxone	Talwin NX	narcotic analgesic	pain medication
pentobarbital	Nembutal	sedative/hypnotic	insomnia
pentosan	Elmiron	urinary tract analgesic	bladder pain
pentostatin	Nipent	oncologic, antibiotic	leukemia
pentoxifylline	Trental	reduces blood viscosity improves circulation in PVD	
Pentoxil	pentoxifylline	reduces blood viscosity improves circulation in PVD	
Pentritol	pentaerythritol tetranitrate	long-acting nitrate	angina prophylaxis
Pepcid	famotidine	H-2 blocker which inhibits gastric acid production	ulcers
Percocet	oxycodone, acetaminophen	narcotic analgesic	pain medication
Percodan	oxycodone, aspirin	narcotic analgesic	pain medication
Percodan-Demi	oxycodone, aspirin	narcotic analgesic	pain medication

Drug Name	Other brand or generic name	Drug Type	Use / Condition
percolone	oxycodone	narcotic analgesic	pain medication
Perdiem	psyllium	a bulk-forming laxative	
Peridin C	vitamins, antioxidants	dietary supplement	vitamin/antioxidant deficiency
Perigard	chlorhexidine	oral rinse	
pergolide	Permax	dopamine receptor stimulator	Parkinson's disease
Pergonal	mentropins	gonadotropin hormone	stimulates ovulation, spermatogenesis
Periactin	cyproheptadine	an antihistamine	allergies
Peri-Colace	casanthranol, docusate	laxative/stool softener	constipation
Periostat	doxycycline	an antibiotic	infection
perindopril	Aceon	angiotensin-converting enzyme inhibitor	hypertension
Permax	pergolide	dopamine receptor stimulator	Parkinson's disease
permethrin lotion	Nix	parasiticide	head lice
perphenazine	Trilafon	phenothiazine major tranquilizer	
Persantine	dipyridamole	cerebral and coronary vasodilator	cerebrovascular accident (stroke), angina
Pfizerpen	penicillin	an antibiotic	infection
Phenaphen with codeine	acetaminophen, codeine	narcotic analgesic	pain medication
phenelzine	Nardil	monoamine oxidase inhibitor	depression, bulimia
phenazopyridine	Pyridium	urinary tract analgesic	
Phenergan	promethazine	phenothiazine sedative /antiemetic	
pheniramine	Poly-Histine	antihistamine	allergies
phenobarbital		barbiturate sedative/ anticonvulsant	
phentermine	Adipex-P	amphetamine	obesity
phenylephrine	Neo-Synephrine	decongestant	colds
phenylpropanolamine	Entex	decongestant	colds
phenylpropanolamine with guaifenesin	Entex LA	decongestant/ expectorant compound	
phenytoin	Dilantin	anticonvulsant	epilepsy
phoslo	calcium	phosphate reducer	renal failure
phosphatidylcholine	Phoschol	lecithin	nutritional supplement, synthesizes acetylcholine

Drug Name	Other brand or generic name	Drug Type	Use / Condition
Photofrin	porfimer	antineoplastic	esophageal cancer, lung cancer
Phrenilin	butalbital, acetaminophen	analgesic compound	
phytonadione	Aquamephyton	vitamin K1	coagulation disorders
pilocarpine	Salagen	cholinergic	dry mouth, Sjogren's syndrome
Pima	potassium iodide	expectorant	asthma, bronchitis
pimozide	Orap	antipsychotic	Tourette's syndrome
pindolol	Visken	beta blocker	hypertension, angina
pioglitazone	Actos	oral hypoglycemic	diabetes
piperacillin	Pipracil	antibiotic	infection
Pipracil	piperacillin	antibiotic	infection
pirbuterol	Maxair	beta bronchodilator	asthma, COPD disease
piroxicam	Feldene	non-steroidal anti-inflammatory analgesic	arthritis
Placidyl	ethchlorvynol	hypnotic	insomnia
Plaquenil	hydroxychloroquine	an antimalarial agent	malaria
Plendil	felodipine	calcium blocker	hypertension, angina
Pneumomist	guaifenesin	expectorant	asthma, bronchitis
Pneumotussin HC	guaifenesin, hydrocodone	expectorant/narcotic antitussive	
Podocon-25	podophyllin	cytotoxic	venereal warts
Poly-Histine, Poly- Histine D, Poly-Histine Ped Caps	phenylpropanolamine, phenyltoloxamine, pyrilamine, pheniramine	decongestant/ antihistamine	colds, allergies
Poly-Histine CS	codeine, phenylpropanolamine, brompheniramine	narcotic antitussive / decongestant/ antihistamine	
Poly-Histine Elixir	phenyltoloxamine, pyrilamine, pheniramine, alcohol	decongestant/ antihistamine	colds, allergies
Poly-Histine D Elixir	phenyltoloxamine, pyrilamine, pheniramine, alcohol	decongestant/ antihistamine	colds, allergies
Poly-Histine DM	dextromethorphan, phenylpropanolamine, brompheniramine	antitussive/ decongestant/ antihistamine	
polymyxin	Neosporin	an antibiotic	infection
polythiazide	Renese	antihypertensive/ diuretic	congestive heart failure, hypertension
Polytrim	trimethoprim, polymyxin	antibacterial	eye infections
Ponstel	mefenamic acid	non-steroidal anti-inflammatory analgesic	

Drug Name	Other brand or generic name	Drug Type	Use / Condition
Potaba	aminobenzoate		fibrosis, scleroderma
potassium chloride	K-Tab	potassium supplement	potassium deficiency
Prandin	repaglinide	increases insulin release	diabetes
Pramosone	hydrocortisone, pramoxine	steroid anti- inflammatory/ anesthetic	dermatoses
Pravachol	pravastatin	cholesterol reducer	high cholesterol
pravastatin	Pravachol	cholesterol reducer	high cholesterol
prazosin	Minipress	alpha-1 blocker, vasodilator	hypertension
Precose	acarbose	delays carbohydrate digestion	diabetes mellitus
prednisolone	Prelone	a steroid anti-inflammatory agent	
prednisone		a steroid anti-inflammatory agent	
Prempro	estrogens	hormone	menopause
Prelone Syrup	prednisolone	steroid anti-inflammatory	
Prelu-2	phendimetrazine	amphetamine appetite suppressant	obesity
Premarin		estrogens	menopause
Premphase	estrogens, medroxyprogesterone	hormones	menopause, osteoporosis
Prevacid	lansoprazole	gastric acid pump inhibitor	ulcers, esophagitis
Prevalite	cholestyramine	cholesterol reducer	high cholesterol
Prilosec	omeprazole	gastric acid pump inhibitor	ulcers, esophagitis
Primatene Mist	EPINEPHrine	bronchodilator	asthma
Primatene tablets	theophylline, ephedrine, phenobarbital	xanthine bronchodilator	asthma
primidone	Mysoline	anticonvulsant	epilepsy
Prinivil	lisinopril	angiotensin-converting enzyme inhibitor	hypertension, congestive heart failure
Prinzide	lisinopril, hydrochlorothiazide	antihypertensive compound	hypertension
probenecid	Benemid	increases uric acid secretion in gout; also slows the elimination of penicillin from the body	
procainamide	Procanbid	antiarrhythmic	premature ventricular contractions
Procanbid	procainamide	antiarrhythmic	premature ventricular contractions

Drug Name	Other brand or generic name	Drug Type	Use / Condition
Procardia, Procardia XL	nifedipine	calcium channel blocker	angina, hypertension
prochlorperazine	Compazine	phenothiazine antiemetic	
Prodium	phenazopyridine	urinary tract analgesic	urinary tract infection
Profen-LA, Profen II	phenylpropanolamine, guaifenesin	decongestant/ expectorant	colds
Proglycem	diazoxide	increases blood glucose	hypoglycemia
promethazine	Phenergan	sedative / antiemetic	
Propagest	phenylpropanolamine	nasal decongestant	colds, allergies
Propecia	finasteride		hair loss prevention
propantheline	Pro-Banthine	anticholinergic, inhibits gastric acid secretion	peptic ulcers
propoxyphene	Darvon	narcotic analgesic	pain medication
propranolol	Inderal	beta blocker	HTN, prophylaxis of: angina cardiac dysrhythmias,
Propulsid	cisapride	increases gastric emptying	
propylthiouracil		antithyroid agent	hyperthyroidism
Proscar	finasteride		prostatic hypertrophy
Prosom	estazolam	hypnotic	insomnia
Prostigmin	neostigmine	anticholinesterase	myasthenia gravis
Protid	acetaminophen, chlorpheniramine, phenylephrine	analgesic/ antihistamine/ decongestant	colds
Protonix	pantoprazole	proton pump inhibitor	ulcers
Protropin	somatrem	human growth hormone	
Proventil HFA	albuterol	beta-2 bronchodilator	asthma
Provera	medroxyprogesterone	hormone	amenorrhea
Prozac	fluoxetine	a heterocyclic antidepressant	depression
pseudoephedrine	Sudafed	decongestant	colds
Pulmicort turbuhaler	budesonide	steroid anti-inflammatory	asthma
Pulmozyme	domase alfa or DNase	lytic enzyme which dissolves infected lung secretions	cystic fibrosis
Purinethol	mercaptopurine	antileukemia agent	leukemia
pyrazinamide	Rifater	antibacterial	tuberculosis
Pyridium	phenazopyridine	urinary tract analgesic	
Q-BID	coenzyme Q-10	helps maintain muscle increases ATP production	
quetiapine	Seroquel	antipsychotic	psychosis

Drug Name	Other brand or generic name	Drug Type	Use / Condition
Quinaglute	quinidine	antiarrhythmic	supraventricular and ventricular dysrhythmias
quinapril	Accupril	angiotensin-converting enzyme inhibitor	hypertension, congestive heart failure
Quinidex	quinidine	antiarrhythmic	supraventricular and ventricular dysrhythmias
quinidine gluconate	quinidine	antiarrhythmic	supraventricular and ventricular dysrhythmias
quinidine sulfate	quinidine	antiarrhythmic	supraventricular and ventricular dysrhythmias
quinine		antimalarial	malaria
quinupristin / dalfopristin	Synercid	antimicrobials	
Quixin	levofloxacin	ocular anti-infective	conjunctivitis
rabies vaccine		vaccine for pre- and post-rabies exposure	rabies
raloxifene	Evista		osteoporosis prevention
ramipril	Altace	angiotensin-converting enzyme inhibitor	hypertension
ranitidine	Zantac	histamine-2 blocker	ulcers
Rebetron	interferon alfa, ribavirin	antivirals	Hepatitis C
Recombinate	Factor VIII	clotting agent	hemophilia
Recombivax HB	hepatitis B vaccine	vaccine	hepatitis B
Reglan	metoclopramide	improves gastric emptying	heartburn, ulcers
Regonol	pyridostigmine	anticholinesterase	Myasthenia Gravis
Regranex	becaplermin	cellular growth agent	ulcers, diabetes
Relafen	nabumetone	non-steroidal anti-inflammatory	arthritis
Remeron	mirtazapine	antidepressant	depression
remifentanil	Ultiva	narcotic analgesic	pain medication
Renese	polythiazide	antihypertensive/ diuretic	congestive heart failure, hypertension
Renova	tretinoin	an anti-acne, anti-wrinkle agent	acne, wrinkles
repaglinide	Prandin	stimulates insulin release	diabetes
Repronex	mentropins	fertility drug, induces ovulation	infertility
Requip	ropinirole	dopaminergic	Parkinson's disease

Drug Name	Other brand or generic name	Drug Type	Use / Condition
rescinnamine	Moderil	an antihypertensive	hypertension
Rescriptor	delavirdine	antiviral	HIV
Rescula	unoprostone	lowers intraocular pressure	glaucoma
reserpine	Salutensin	antihypertensive / tranquilizer	hypertension
Respa-1st	pseudoephedrine, guaifenesin	decongestant / expectorant	colds
Respa-DM	dextromethorphan, guaifenesin	antitussive / expectorant	colds, allergies
Respa-GF	guaifenesin	expectorant	colds
Respahist	brompheniramine, pseudophedrine	antihistamine / decongestant	colds, allergies
Respaire-SR	pseudoephedrine, guaifenesin	decongestant / expectorant	colds
Restoril	temazepam	a benzodiazepine hypnotic	
Retin-A	tretinoin	an anti-acne, anti-wrinkle agent	acne, wrinkles
Retrovir	zidovudine	antiviral agent	HIV (AIDS) virus
Revia	naltrexone	opioid antagonist, alcohol deterrent	
Rezulin	troglitazone	oral hypoglycemic	diabetes
Rhinocort	budesonide	corticosteroid	allergic rhinitis
riboflavin	vitamin B-2	vitamin supplement	vitamin deficiency
Rifadin	rifampin	antibiotic	tuberculosis, meningitis
Rifamate	rifampin, isoniazid	antibiotics	tuberculosis
Rifater	isoniazid, rifampin, pyrazinamide	antibiotic	tuberculosis
Rilutek	riluzole		amyotrophic lateral sclerosis (ALS)
Rimactane	rifampin	antibiotic	tuberculosis, meningitis
Risperdal	risperidone	antipsychotic	schizophrenia
Ritalin, Ritalin-SR	methylphenidate	a stimulant	attention deficit disorder in children, narcolepsy
ritonavir	Norvir	antiviral	HIV
Robaxin	methocarbamol	sedative	painful musculoskeletal conditions
Robaxin 750	methocarbamol	sedative	painful musculoskeletal conditions
Robaxisal	methocarbamol, aspirin	sedative/analgesic	painful musculoskeletal conditions

Drug Name	Other brand or generic name	Drug Type	Use / Condition
Robinul, Robinul Forte	glycopyrrolate	anticholinergic	peptic ulcers
Robitussin	guaifenesin	expectorant	colds
Robitussin A-C	guaifenesin, codeine, alcohol	expectorant, cough suppressant	colds
Robitussin-DAC	guaifenesin, codeine, alcohol, pseudoephedrine	expectorant, cough suppressant, decongestant	colds
Rocaltrol	calcitrol	vitamin D analog	hypocalcemia, bone disease
Rocephin	ceftriaxone	an antibiotic	infection
Roferon-A	interferon	immunoadjuvant	hairy cell leukemia, AIDS-related Kaposi's sarcoma
Rogaine	minoxidil	topical hair growing agent	baldness, hypertension
Rondec chewable tablet	brompheniramine, pseudophedrine	antihistamine / decongestant	colds, allergies
Rondec oral drops, Rondec TR tablet Rondec tablet Rondec syrup	carbinoxamine, pseudoephedrine	antihistamine / decongestant	colds, allergies
Rondec DM	carbinoxamine, pseudoephedrine, dextromethorphan	antihistamine/ decongestant/ antitussive	colds, allergies
ropinirole	Requip	dopaminergic	Parkinson's disease
rosiglitazone	Avandia	oral hypoglycemic	diabetes
Rowasa	mesalamine	anti-inflammatory	colitis, proctitis
Roxanol 100	morphine	narcotic analgesic	pain medication
Roxicodone	oxycodone	narcotic analgesic	pain medication
Roxilox	oxycodone, acetaminophen	narcotic analgesic compound	pain medication
Roxiprin	oxycodone, acetylsalicylic acid (aspirin)	narcotic analgesic compound	pain medication
Rum-K	potassium	potassium supplement	potassium deficiency
Rynatan	phenylephrine, chlorpheniramine, pyrilamine	antihistamine / decongestant compound	colds, allergies
Rynatuss		antitussive / decongestant / antihistamine	colds, allergies
Rythmol	propafenone	antiarrhythmic	severe ventricular dysrhythmias such as ventricular tachycardia
Safe Tussin 30	guaifenesin, dextromethorphan	expectorant/ antitussive	colds
Saizen	somatropin	growth hormone	
Sal-Acid	salicylic acid		removes warts
Salactic film	salicylic acid		removes warts

Drug Name	Other brand or generic name	Drug Type	Use / Condition
Salagen	pilocarpine	parasympathomimetic	glaucoma
Salbutamol	albuterol	beta-2 bronchodilator	asthma, CPOD
Salflex	salsalate	non-steroidal anti-inflammatory analgesic	arthritis
salicylic acid	Sal-Acid		removes warts
salmeterol	Serevent	beta-2 bronchodilator	asthma, chronic obstructive pulmonary disease
Salplant gel	salicylic acid	for removal of common warts	common warts
salsalate	Salflex	non-steroidal anti-inflammatory analgesic	arthritis
Sandimmune	cyclosporine	immunosuppressant agent	prophylaxis of rejection of transplanted organs
Sandostatin	octreotide	antidiarrheal, growth inhibitor	carcinoid tumor, acromegaly intestinal tumors, diarrhea
Sangcya	cyclosporine	immunosuppressant agent	prophylaxis of rejection of transplanted organs
saquinavir	Invirase	antiviral	HIV
Sarapin	Pitcher Plant extract	analgesic	nerve block for sciatic pain, neuritis, neuralgia
sargramostim	Leukine	bone marrow stimulant	bone marrow transplant, leukemia
scopolamine		antispasmodic/ sedative	
Sectral	acebutolol	beta blocker	hypertension, cardiac dysrhythmias
Sedapap	butbalbital, acetaminophen	sedative/analgesic	tension headache
selenium	Selsun Blue	trace mineral	seborrhea, dandruff
Semprex-D	acrivastine, pseudoephedrine	antihistamine/ decongestant	colds, allergies
senna extract	Senokot	laxative	constipation
Senokot	senna fruit extract	laxative	constipation
Senokot Xtra	senna extract	laxative	constipation
Senokot-S	senna, docusate	laxative/stool softener	constipation
Sensorcaine, Sensorcaine-MPF	bupivacaine	local anesthetic	
Sensorcaine with Epi	bupivacaine, EPINEPHrine	local anesthetic with vasoconstrictor	
Septra, Septra DS	trimethoprim, sulfamethoxazole	antibacterial compound	urinary tract infection, ear infection, bronchitis
Serentil	mesoridazine	a major tranquilizer	
Serevent	salmeterol	beta-2 bronchodilator	asthma COPD

Drug Name	Other brand or generic name	Drug Type	Use / Condition
sermorelin	Geref	growth hormone	
Seromycin	cycloserine	antibiotic	tuberculosis, urinary tract infection
Serophene	clomiphene	induces ovulation	
Seroquel	quetiapine	antipsychotic	schizophrenia
Serostim	somatropin	hormone	AIDS wasting
sertraline	Zoloft	antidepressant	depression, panic disorder, obsessive-compulsive disorder
Serzone	nefazodone	antidepressant	depression
Silvadene	silver sulfadiazine	topical antimicrobial agent	infection prophylaxis for burns of the skin
Sinemet, Sinemet CR	carbidopa, levodopa	dopamine precursors	Parkinson's disease
Sinequan	doxepin	a tricyclic antidepressant	depression
Singulair	montelukast		asthma
Sinulin	acetaminophen phenylpropanolamine, chlorpheniramine	analgesic/ decongestant / antihistamine	colds, allergies
Sinutab	phenylephrine, guaifenesin	decongestant/ expectorant	colds
Sinutab Sinus	acetaminophen, pseudoephedrine	analgesic/ decongestant	colds, allergies
Sinutab Sinus Allergy	acetaminophen pseudoephedrine chlorpheniramine	analgesic/decongestant /antihistamine	colds
Sinuvent	phenylpropanolamine, guaifenesin	decongestant/ expectorant	colds
Skelaxin	metaxalone	sedative/analgesic	
Slo-Bid	theophylline	bronchodilator	COPD asthma
Slo-Niacin	niacin	reduces serum cholesterol	high cholesterol
Slo-Phyllin	theophylline	bronchodilator	COPD asthma
Soma	carisoprodol	sedative/ antispasmodic	
Soma compound	carisoprodol, aspirin	sedative/antispasmodic /analgesic	muscle spasm
Sorbitrate	isosorbide dinitrate	nitrate	angina
Soriatane	acitretin	retinoid	psoriasis
sotalol	Betapace	beta blocker	hypertension, angina, arrhythmias
Spectazole	econazole	antifungal agent	fungus
Spectrobid	bacampicillin	an antibiotic	infection

Drug Name	Other brand or generic name	Drug Type	Use / Condition
spironolactone	Aldactone	potassium-sparing diuretic	
spironolactone, triamterene, hydrochlorothiazide		diuretics	hypertension
Sporanox	itraconazole	an antifungal	fungus
SSKI	potassium iodide	an expectorant	colds
Stadol NS	butorphanol	a narcotic analgesic	pain medication
stavudine d4T	Zerit	antiviral	HIV
Stelazine	trifluoperazine	a major tranquilizer	
Sterapred, Sterapred DS	prednisone	steroid anti-inflammatory	
Stimate	desmopressin	pituitary hormone	hemophilia
Stromectol	ivermectin	anti-parasite	intestinal nematodes
sucralfate	Carafate	anti-ulcer agent	duodenal ulcers
Sudafed	pseudoephedrine	nasal decongestant	colds, allergies
Sudafed Cold & Allergy	pseudoephedrine, chlorpheniramine	decongestant/ antihistamine	colds, allergies
Sufenta	sufentanil	narcotic analgesic/ anesthetic	pain medication
Sular	nisoldipine	calcium channel blocker	hypertension
sulfamethoxazole	Gantanol	a bacteriostatic agent	urinary tract infection
sulfanilamide	AVC	anti-infective	candida
sulfisoxazole	Gantrisin	a bacteriostatic agent	urinary tract infection
sulindac	Clinoril	non-steroidal anti-inflammatory analgesic	arthritis
sumatriptan	Imitrex		migraine headache
Suprax	cefixime	broad spectrum antibiotic	
Surmontil	trimipramine	a tricyclic antidepressant	depression
Sustiva	efavirenz	antiviral	HIV, AIDS
Symmetrel	amantadine	an antiparkinsonian/ antiviral	Parkinson's disease
Synalar	fluocinolone	topical steroid anti-inflammatory	
Synalgos-DC	dihydrocodeine, aspirin, caffeine	narcotic analgesic compound	pain medication
Synemol	fluocinolone	topical steroid anti-inflammatory	
Synthroid	levothyroxine	thyroid hormone	thyroid
Tagamet	cimetidine	H-2 blocker which inhibits gastric acid secretion	ulcers

Drug Name	Other brand or generic name	Drug Type	Use / Condition
Talacen	pentazocine + acetaminophen	narcotic analgesic	pain medication
Talwin compound	pentazocine, acetylsalicylic acid (aspirin)	narcotic analgesic	pain medication
Talwin NX	pentazocine, naloxone	narcotic analgesic	pain medication
Tambocor	flecainide	ventricular antiarrhythmic	
tamoxifen	Nolvadex	anticancer agent	breast cancer
Tao	troleandomycin	antibiotic	pneumonia, upper respiratory infection
Tapazole	methimazole	antithyroid	hyperthyroidism
Tarka	trandolapril, verapamil	angiotensin-converting enzyme inhibitor/ calcium blocker	hypertension
Tavist	clemastine	an antihistamine	allergies
Tavist-D	clemastine, phenylpropanolamine	an antihistamine/ decongestant	allergies
Tazicef	ceftazidime	an antibiotic	infection
Tazidime	ceftazidime	an antibiotic	infection
Tedral	theophylline, ephedrine, phenobarbital	bronchodilator compound	asthma, bronchitis
Tegretol, Tegretol XR	carbamazepine	anticonvulsant	epilepsy
temazepam	Restoril	benzodiazepine hypnotic	
telmisartan	Micardis	angiotensin-converting enzyme inhibitor	hypertension
Temovate	clobetasol	steroid anti-inflammatory	
Tenex	guanfacine	an antihypertensive agent	hypertension
teniposide	Vumon	antineoplastic	leukemia
Tenoretic	atenolol, chlorthalidone	beta-1 blocker/diuretic	hypertension
Tenormin	atenolol	beta-1 blocker	dysrhythmias, HTN, angina, MI prophylaxis
Tensilon	edrophonium	cholinergic	Myasthenia Gravis
Terazol	terconazole	antimicrobial	candidiasis
terazosin	Hytrin	alpha-1 blocker antihypertensive	hypertension
terbinafine	Lamisil	antifungal	nail fungus, ringworm
terbutaline	Brethine	beta bronchodilator	COPD asthma
terconazole	Terazol	antimicrobial	candidiasis

Drug Name	Other brand or generic name	Drug Type	Use / Condition
Terra-Cortril	hydrocortisone, oxytetracycline	steroid anti-inflammatory, antibiotic	ocular infections
Terramycin	oxytetracycline	an antibiotic	infection
Terramycin with polymyxin B	oxytetracycline	antibiotics	infection
Teslac	testolactone	antineoplastic	breast cancer
Tessalon	benzonatate	a non-narcotic cough suppressant	cough
Testred	methlytestosterone	androgenizing hormone	
Testoderm	testosterone	androgen	hypogonadism
testosterone	Androderm	androgenizing hormone	
tetracaine	Cetacaine	topical anesthetic	
tetracycline	Achromycin	an antibiotic	infection
Tetramune	diphtheria & tetanus toxoids	vaccine	
thalidomide	Thalomid	immunosuppressant	HIV, leprosy
Thalitone	chlorthalidone	antihypertensive/ diuretic	hypertension, congestive heart failure
Thalomid	thalidomide	immunosuppressant	HIV, leprosy
Theo-24	theophylline	bronchodilator	asthma,COPD
Theo-Dur	theophylline	bronchodilator	asthma,COPD
Theolair	theophylline	bronchodilator	asthma,COPD
theophylline	Theo-Dur	bronchodilator	asthma,COPD
Theo-X	theophylline	bronchodilator	asthma,COPD
Thera-Gesic	salicylate	topical NSAID analgesic	arthritis
Theramycin Z	erythromycin	antibiotic	infection
thiabendazole	Mintezol	antiparasitic	pinworm, roundworm, trichinosis
thiamine	vitamin B-1	vitamin supplement	vitamin deficiency
Thiola	tiopronin	cysteine-depleting agent	kidney stone prevention
thioguanine	Tabloid	anticancer agent	leukemia
Thiopental	pentothal	general anesthetic	
Thioplex	thiotepa	antineoplastic	breast, ovarian, and urinary cancer
thioridazine		major tranquilizer	

Drug Name	Other brand or generic name	Drug Type	Use / Condition
thiotepa	Thioplex	antineoplastic	breast, ovarian, and urinary cancer
thiothixene	Navane	major tranquilizer	
Thorazine	chlorpromazine	a major tranquilizer	
Thyrel TRH	protirelin	increases release of thyroid stimulating hormone	thyroid
thyroid		thyroid	thyroid
Thyrolar	liotrix	thyroid hormone	thyroid
tiagabine	Gabitril	antiepileptic	partial seizures
Tiazac	diltiazem	calcium blocker	hypertension, angina,PSVT
Ticar	ticarcillin	an antibiotic	infection
Ticlid	ticlopidine	platelet inhibitor	stroke prophylaxis
Tigan	trimethobenzamide	an antiemetic	
Tilade	nedocromil	anti-inflammatory	asthma
Timentin	ticarcillin/clavulanate	antibiotic compound	infection
Timolide	timolol, hydrochlorothiazide	beta blocker/ antihypertensive/ diuretic	glaucoma
timolol	Blocadren	beta blocker	hypertension, angina, arrhythmias
Timoptic	timolol	beta blocker	glaucoma
tizanidine	Zanaflex	alpha blocker	spasticity
Tobradex	tobramycin, dexamethasone	antibiotic/steroid	eye infection/ inflammation
Tofranil	imipramine	a tricyclic antidepressant	depression
tolazamide		oral hypoglycemic	diabetes
tolbutamide		oral hypoglycemic	diabetes
Tolectin	tolmetin	non-steroidal anti-inflammatory analgesic	
tolmetin	Tolectin	non-steroidal anti-inflammatory analgesic	
Tonocard	tocainide	ventricular antiarrhythmic	
Topamax	topiramate	anticonvulsant	seizures
Toprol-XL	metoprolol	cardioselective beta blocker	hypertension, angina, arrhythmias
Toradol	ketorolac	non-steroidal anti-inflammatory analgesic	
Tornalate	bitolterol	beta bronchodilator	asthma
tramadol	Ultram	analgesic	
Trandate	labetalol	beta blocker	hypertension

Drug Name	Other brand or generic name	Drug Type	Use / Condition
Transderm Nitro	nitroglycerin	nitrate vasodilator	angina prophylaxis
Transderm-Scop	scopolamine	anticholinergic antiemetic	motion sickness prophylaxis
Tranxene T - Tab, Tranxene-SD	clorazepate	benzodiazepine hypnotic	anxiety seizures
Traumeel		anti-inflammatory	arthritis
trazodone	Desyrel	an antidepressant	depression
Trecator-SC	ethionamide	bacteriostatic	tuberculosis
Trental	pentoxifylline	reduces blood viscosity, improves circulation in PVD	
tretinoin	Retin-A	an anti-acne, anti-wrinkle agent	acne, wrinkles
triamcinolone	Azmacort	steroid anti-inflammatory	
triamterene c hydrochlorothiazide	Dyazide	antihypertensive/ diuretic	hypertension
Triavil	amitriptyline, perphenazine	a TCA/major tranquilizer combination	
triazolam	Halcion	benzodiazepine hypnotic	insomnia
trifluoperazine	Stelazine	a major tranquilizer	
trihexyphenidyl	Artane	antispasmodic	Parkinson's disease
Trilafon	perphenazine	a major tranquilizer	
Tri-Levlen		an oral contraceptive	birth control
Trilisate	salicylate	anti-inflammatory/ analgesic	
trimethoprim	Bactrim	an antibiotic	infection
trimethoprim-sulfamethoxazole	Bactrim	antibacterials	urinary tract infection, ear infection, bronchitis
Trinalin	azatadine, pseudoephedrine	an antihistamine/ decongestant compound	colds, allergies
Tri-Norinyl 21, 28		an oral contraceptive	birth control
Trinsicon	vitamins	anti-anemia compound	anemia
Triphasil		an oral contraceptive	birth control
triprolidine	Actidil	antihistamine	allergies
Tritec	ranitidine	histamine-2 blocker	ulcers
troglitazone	Rezulin	oral hypoglycemic	diabetes
Trusopt	dorzolamide		glaucoma, reduction of IOP
Tuss-DA Rx	dextromethorphan, pseudoephedrine	antitussive/ decongestant	

Drug Name	Other brand or generic name	Drug Type	Use / Condition
Tussafed HC	hydrocodone, phenylephrine, guaifenesin	narcotic antitussive/ decongestant/ expectorant	colds, allergies
Tussend expectorant	hydrocodone, pseudoephedrine, guaifenesin	narcotic antitussive/ decongestant/ expectorant	colds, allergies
Tussend syrup, Tussend tablets	hydrocodone, pseudoephedrine, chlorpheniramine	narcotic antitussive / decongestant / antihistamine	colds, allergies
Tussionex	hydrocodone, chlorpheniramine	narcotic antitussive/ antihistamine	coughs, allergies,cold
Tussi-Organidin	glycerol, codeine	a narcotic antitussive / expectorant compound	colds
Tussi-Organidin DM	dextromethorphan iodinated glycerol	antitussive /mucolytic, expectorant	COPD asthma, colds
Tylenol w/codeine	acetaminophen, codeine	narcotic analgesic	pain medication
Tylox	oxycodone, acetaminophen	narcotic analgesic	pain medication
Ubi-Qgel	coenzyme Q-10	helps maintain healthy muscle, increases ATP production	mitochondrial cytopathy
Ultrabrom, Ultrabrom PD	brompheniramine, pseudoephedrine	antihistamine/ decongestant	colds, allergies
Ultram	tramadol	analgesic	pain relief
Ultrase, Ultrase MT	pancreatic enzymes		cystic fibrosis, pancreatitis
Uni-Dur	theophylline	bronchodilator	asthma, COPD
Uniphyl	theophylline	bronchodilator	asthma, COPD
Uniretic	moexepril, hydrochlorothiazide	ACE inhibitor/ diuretic	hypertension
Unisom	doxylamine	antihistamine sedative	insomnia
Univasc	moexepril	angiotensin-converting enzyme inhibitor	hypertension
urea	Accuzyme	debriding ointment	pressure ulcers
Urecholine	bethanechol	increases bladder tone	urinary retention
Urex	methenamine	antiseptic	urinary tract infection
Urised	methenamine, methylene blue, salicylate, atropine, hyoscyamine	antiseptic/analgesic / antispasmodic	urinary tract infection
Urispas	flavoxate	urinary tract antispasmodic	urinary tract incontinence
Urobiotic	oxytetracycline, sulfamethizole, phenazopyridine	antibiotic/analgesic	urinary tract infection

Drug Name	Other brand or generic name	Drug Type	Use / Condition
Urocit-K	potassium citrate	urinary alkalinizer	kidney stones
Uro-Mag	magnesium	magnesium supplement	magnesium deficiency
Uro-Qid Acid No.2	methenamine	bactericide	urinary tract infection
ursodiol	Actigall	bile acid which dissolves gall stones	gall stones
valacyclovir	Valtrex	antiviral	herpes, shingles
Valium	diazePAM	a benzodiazepine hypnotic	
valproex	Depacon	anticonvulsant	seizures
valproic acid	Depakene	anticonvulsant	seizures
valrubicin	Valstar	anticancer agent	bladder cancer
valsartan	Diovan	angiotensin II inhibitor	hypertension
Valtrex	valaciclovir	antiviral	herpes, shingles
Vancenase, Vancenase AQ	beclomethasone	steroid anti-inflammatory agent	allergic rhinitis, nasal polyps
Vanceril Inhaler	beclomethasone	steroid	asthma
Vancocin	vancomycin	an antibiotic	infection
vancomycin	Vancocin	antibiotic	colitis
Vanoxide HC	benzoyl peroxide, hydrocortisone	skin cleanser, steroid anti-inflammatory	acne
Vantin	cefpodoxime	an antibiotic	infection
Vaqta	hepatitis A vaccine	inactivated virus vaccine	
Vascor	bepridil	calcium blocker	angina prophylaxis
Vaseretic	enalapril, hydrochlorothiazide	antihypertensive/ diuretic	hypertension
Vasotec	enalaprilat	an angiotensin- converting enzyme inhibitor	hypertension, congestive heart failure
Vasoxyl	methoxamine	vasoconstrictor	increases BP
Vectrin	minocycline	an antibiotic	infection
Velban	vinblastine	antineoplastic	Hodgkin's disease, lymphoma, Kaposi's sarcoma
Velosulin	insulin	hypoglycemic	diabetes mellitus
venlafaxine	Effexor	an antidepressant	depression
Ventolin	albuterol	beta-2 bronchodilator	asthma, chronic obstructive pulmonary disease
vepesid	etoposide	anticancer agent	lung, testicular cancer
verapamil	Calan	calcium blocker	angina, PSVT hypertension, headache
Verelan, Verelan PM	verapamil	calcium blocker	angina, hypertension, PSVT headache

Drug Name	Other brand or generic name	Drug Type	Use / Condition
Vermox	mebendazole	anthelminthic	intestinal worms
Versed	midazolam	a benzodiazepine hypnotic	
Vesanoid	tretinoin	anticancer agent	leukemia
Viagra	sildenafil		male erectile dysfunction
Vibramycin	doxycycline	an antibiotic	infection
Vibra-Tabs	doxycycline	an antibiotic	infection
Vicodin HP, Vicodin ES	hydrocodone, acetaminophen	narcotic analgesic/ antitussive compound	pain medication
Vicodin Tuss	hydrocodone, guaifenesin	narcotic analgesic / antitussive expectorant compound	pain medication
Vicon Forte	vitamins		
Vicoprofen	hydrocodone, ibuprofen	narcotic analgesic compound	pain medication
Videx	didanosine	an antiviral	AIDS
Viokase	pancreatic enzymes		cystic fibrosis, pancreatitis
Vioxx	rofecoxib	non-steroidal anti-inflammatory analgesic	
Viracept	nelfinavir	protease inhibitor antiviral	HIV
Viramune	nevirapine	antiviral	HIV
Virazole	ribavirin	an antiviral	chronic Hepatitis C
Virilon	methyltestosterone	androgen / masculinizing hormone	
Vistaril	hydroxyzine	antiemetic/ antihistamine/sedative	
Vitafol, Vitafol Syrup, Vitafol-PN		multivitamins and minerals	vitamin/mineral deficiency
Vivactil	protriptyline	tricyclic antidepressant	depression
Vivelle	estradiol		osteoporosis, menopausal symptoms
Volmax	albuterol	beta-2 bronchodilator	asthma, chronic obstructive pulmonary disease
Voltaren	diclofenac	non-steroidal anti-inflammatory analgesic	arthritis
Voltaren XR	diclofenac	non-steroidal anti-inflammatory analgesic	arthritis
warfarin	Coumadin	anticoagulant	A-Fib, myocardial infarction, venous thrombosis
Wellbutrin	bupropion	an antidepressant	depression

Drug Name	Other brand or generic name	Drug Type	Use / Condition
Wigraine	ergotamine, caffeine	alpha blocker / cranial vasoconstrictor	migraine headache
Winrho SD	immune globulin	immunizing agent	prevents isoimmunization in pregnant Rh- women given Rh+ blood
Winstrol	stanozolol	anabolic steroid/ androgen	hereditary angioedema
Wycillin	penicillin	an antibiotic	infection
Wygesic	propoxyphene, acetaminophen	narcotic analgesic	pain medication
Wytensin	guanabenz	an antihypertensive	hypertension
Xanax	alprazolam	a benzodiazepine hypnotic	
Xeloda	capecitabine	oral anticancer agent	breast cancer
Xenical	orlistat	lipase inhibitor	obesity
Xopenex	levallbuterol	beta-2 bronchodilator	asthma, chronic obstructive pulmonary disease
yellow fever vaccine	YF-VAX	vaccine	
YF-VAX	yellow fever vaccine	vaccine	
Yodoxin	iodoquinol	amebicide	intestinal amebiasis
yohimbine	Aphrodyne	alpha blocker	impotence
Yohimex	yohimbine	alpha blocker	impotence
Zagam	sparfloxacin	antibiotic	pneumonia, bronchitis
zalcitabine	Hivid	antiviral	HIV, AIDS
zaleplon	Sonata	anxiolytic, hypnotic	insomnia
Zanaflex	tizanidine	muscle relaxant	muscle spasticity
Zanosar	streptozocin	antineoplastic	pancreatic cancer
Zantac	ranitidine	Histamine-2 blocker, inhibits gastric acid secretion	ulcers
Zarontin	ethosuximide	anticonvulsant	absence seizure
Zaroxolyn	metolazone	antihypertensive/ diuretic	hypertension
Zebeta	bisoprolol	beta blocker antihypertensive	hypertension
Zephrex, Zephrex LA	pseudoephedrine, guaifenesin	decongestant/ expectorant	colds
Zerit	stavudine d4T	antiviral	HIV
Zestoretic	lisinopril, hydrochlorothiazide	ACE inhibitor / diuretic	hypertension
Zestril	lisinopril	angiotensin-converting enzyme inhibitor	hypertension, congestive heart failure
Ziac	bisoprolol, hydrochlorothiazide	antihypertensive/ diuretic	hypertension

Drug Name	Other brand or generic name	Drug Type	Use / Condition
zidovudine	AZT	an antiviral agent	HIV (AIDS) virus
Zithromax	azithromycin	an antibiotic	infection
Zocor	simvastatin	cholesterol reducer	high cholesterol
Zofran	ondansetron	antinauseant	chemotherapy
Zoladex	goserelin	gonadotropin-releasing hormone agonist	endometriosis
Zoloft	sertraline	antidepressant	depression
zolpidem	Ambiem	hypnotic	insomnia
Zomig	zolmitriptan		migraine headache
Zovirax	acyclovir	an antiviral agent	herpes, shingles
Zydone	acetaminophen, hydrocodone	a narcotic analgesic	pain medication
Zyflo	zileuton	bronchospasm inhibitor	asthma
Zyloprim	allopurinol	reduces serum uric acid	gout
Zymase	pancreatic enzymes		cystic fibrosis, pancreatitis
Zyrtec, Zyrtec Syrup	cetirizine	antihistamine	allergy, hives, asthma

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APPENDIX #2: MEDICAL PROCEDURES

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Equipment and Procedure Disclaimer Statement

The devices and equipment illustrated in this section represent devices commonly in use in the region at the time of this writing. Inclusion of any item in this document does not represent any endorsement by the regional protocol group.

The individual Medical Director and the supported EMS agency have the right to choose which equipment and devices fit their needs. It is incumbent upon the Medical Director and the supported EMS agency to provide all required training for devices and equipment provided.

MEDICAL PROCEDURES

ADULT PATIENT ASSESSMENT

INDICATIONS

- Any MEDICAL patient 18 years or older, any TRAUMA patient 16 years or older.

PROCEDURE

1. Scene size-up, including universal precautions, scene safety, environmental hazards assessment, need for additional resources, by-stander safety, and patient / caregiver interaction.
2. Assess need for additional resources.
3. Initial assessment includes a general impression as well as the status of a patient's airway, breathing, and circulation.
4. Assess mental status (e.g., AVPU) and disability (e.g., GCS).
5. Control major hemorrhage and assess overall priority of patient.
6. Perform a focused history and physical based on patient's chief complaint.
7. Assess need for critical interventions.
8. Complete critical interventions and perform a complete secondary exam to include a baseline set of vital signs as directed by protocol.
9. Maintain an on-going assessment throughout transport, to include patient response / possible complications of interventions, need for additional interventions, and assessment of evolving patient complaints / conditions.

KEY POINTS

Dealing with the family:

- REMAIN CALM. Show efficiency and competence, even if you don't really feel it.
- Show a caring a concerned manner for both the family and the patient. If you have negative feelings about the situation (for example if it is an injury because of neglect or abuse), try not to let them show. This will only increase hostility between yourself and the family.
- Honestly inform them of what you are doing and what you think is wrong with the patient.
- Reassurance is important for the family as well. Involve them in the care (for example, holding the oxygen or talking to the patient to calm them). This will help develop some trust between you and the family.

PEDIATRIC PATIENT ASSESSMENT

INDICATIONS

- Any MEDICAL patient less than 18 years old, or any TRAUMA patient less than 16 years old

PROCEDURE

1. Scene size-up, including universal precautions, scene safety, environmental hazards assessment, need for additional resources, by-stander safety, and patient / caregiver interaction.
2. Assess patient using the pediatric triangle of ABCs:
   - Airway and appearance: speech / cry, muscle tone, inter-activeness, look / gaze, movement of extremities
   - Work of breathing: absent or abnormal airway sounds, use of accessory muscles, nasal flaring, body positioning
   - Circulation to skin: pallor, mottling, cyanosis
3. Establish spinal immobilization if suspicion of spinal injury.
4. Establish responsiveness appropriate for age. (AVPU, GCS, etc.)
5. Color code using weight-based tape / treatment chart.
6. Assess disability. (pulse, motor function, sensory function, papillary reaction)
7. Perform a focused history and physical exam. Recall that pediatric patients easily experience hypothermia and thus should not be left uncovered any longer than necessary to perform an exam.
8. Record vital signs (BP > 3 years of age, cap refill < 3 years of age)
9. Include immunizations, allergies, medications, past medical history, last meal, and events leading up to injury or illness where appropriate.
10. Treat chief complaint as per protocol.

KEY POINTS

- Illness and injuries in children can cause significant anxiety for prehospital personnel as well as panic in the patient, family, and bystanders. It is important for the EMT to remain calm and take control of the patient and situation.

Dealing with the child:

- Tell them what's happening. It is important to remember to communicate with the child.
- Relate and speak one their developmental level.
- Be honest with them. Don't say, "This won't hurt", if it will. Explain actions.
- Try to enlist their cooperation, if possible.
- Do not separate child from the parent unless they are ill enough to require significant interventions like airway positioning and ventilation.
- Reassure the child frequently.

Dealing with the family:

- REMAIN CALM. Show efficiency and competence, even if you don't really feel it.
- Show a caring a concerned manner for both the family and the patient. If you have negative feelings about the situation (for example if it is an injury as a result of neglect or abuse), try not to let them show. This will only increase hostility between yourself and the family.
- Honestly inform them of what you are doing and what you think is wrong with the patient.
- Reassurance is important for the family as well. Involve them in the care (for example, holding the oxygen or talking to the patient to calm them). This will help develop some trust between you and the family.

AEROSOL / INHALER TREATMENTS

AEROSOL TREATMENT

INDICTATIONS	SIGNS AND SYMPTOMS	CONTRAINDICATIONS
• Patients experiencing bronchospasm	• Shortness of breath • Wheezing • History of COPD / asthma • Unable to complete full sentences • Accessory muscle use • Nasal flaring • Fatigue	• Allergy to medication • Arrhythmias

PROCEDURE – EMT MUST CONTACT MEDICAL CONTROL

1. Gather the necessary equipment.
2. Assemble the nebulizer kit.
3. Instill the premixed medication into the reservoir well of the nebulizer.
4. Connect the nebulizer device to oxygen at 6 - 8 liters per minute or adequate flow to produce a steady, visible mist.
5. Instruct the patient to inhale normally through the mouthpiece of the nebulizer. The patient needs to have a good lip seal around the mouthpiece if no mask.
6. The treatment should last until the solution is depleted. Tapping the reservoir well near the end of the treatment will assist in utilizing all the solution.
7. Monitor the patient for medication effects. This should include the patient's assessment of his / her response to the treatment and reassessment of vital signs, ECG, and breath sounds.
8. Document the treatment, dose, and route on the patient care report (PCR).

KEY POINTS
• Use mouthpiece if patient is able to hold nebulizer effectively. • Use nebulizer mask if patient is unable to hold nebulizer effectively.

PERSONAL INHALER TREATMENT – EMT DOES NOT NEED MEDICAL CONTROL

INDICATIONS	SIGNS AND SYMPTOMS	CONTRAINDICATIONS
• Patients experiencing bronchospasm	• Shortness of breath • Wheezing • Patient has own prescribed inhaler	• Medication is not prescribed to patient • Medication has expired • Patient has received maximum dose

PROCEDURE

1. Make sure that personal inhaler is at room temperature or warmer.
2. Follow the instructions for either gentle or vigorous shaking.
3. Instruct patient to seal lips around opening of inhaler, using spacer if present.
4. Instruct patient to inhale deeply while depressing the inhaler.
5. Instruct patient to hold breathe if possible.
6. Follow the Respiratory Distress protocol.

AIRWAY / BREATHING

CONTINUOUS POSITIVE AIRWAY PRESSURE (CPAP) DEVICE

INDICATIONS	SIGNS AND SYMPTOMS	CONTRAINDICATIONS
• Breathing patient whose condition is not improving with oxygen therapy • Respiratory distress or failure, due to pulmonary edema, CHF, or COPD • Patients 16 years of age or older	• Dyspnea and tachypnea > 25 • Chest pain • Hypertension • Tachycardia • Anxiety • Altered LOC • Rales and wheezes • Frothy sputum (severe cases) • Accessory muscle use • Retractions • SPO2 < 94%	• Respiratory arrest / compromise • Agonal respirations • Unconscious • Shock (cardiac insufficiency) • Pneumothorax - (with no chest tube) • Penetrating chest trauma • Persistent nausea and vomiting • Facial anomalies, facial trauma • Known blebs • Unable to follow commands • Hypercarbia • B/P < 90 systolic

PROCEDURE

1. Assure there is a patent airway and patient breathing is life sustaining.
2. Administer 100% oxygen via appropriate delivery system.
3. Perform appropriate patient assessment, including obtaining vital signs, SPO2 reading and cardiac rhythm.
4. Verbally instruct the CPAP procedure to the patient.
5. Apply CPAP device, starting at 5 cm H20.
6. Slowly titrate the pressure up to patient response. 10 cm H2O maximum.
7. Continuously reassess the patient, obtaining vital signs every 5 minutes.
8. Monitor continuous SPO2.
1. Follow the appropriate set of standing orders for your specific device for continued treatment.
2. Contact medical control as soon as possible to allow for prompt availability of hospital CPAP equipment and respiratory personnel.

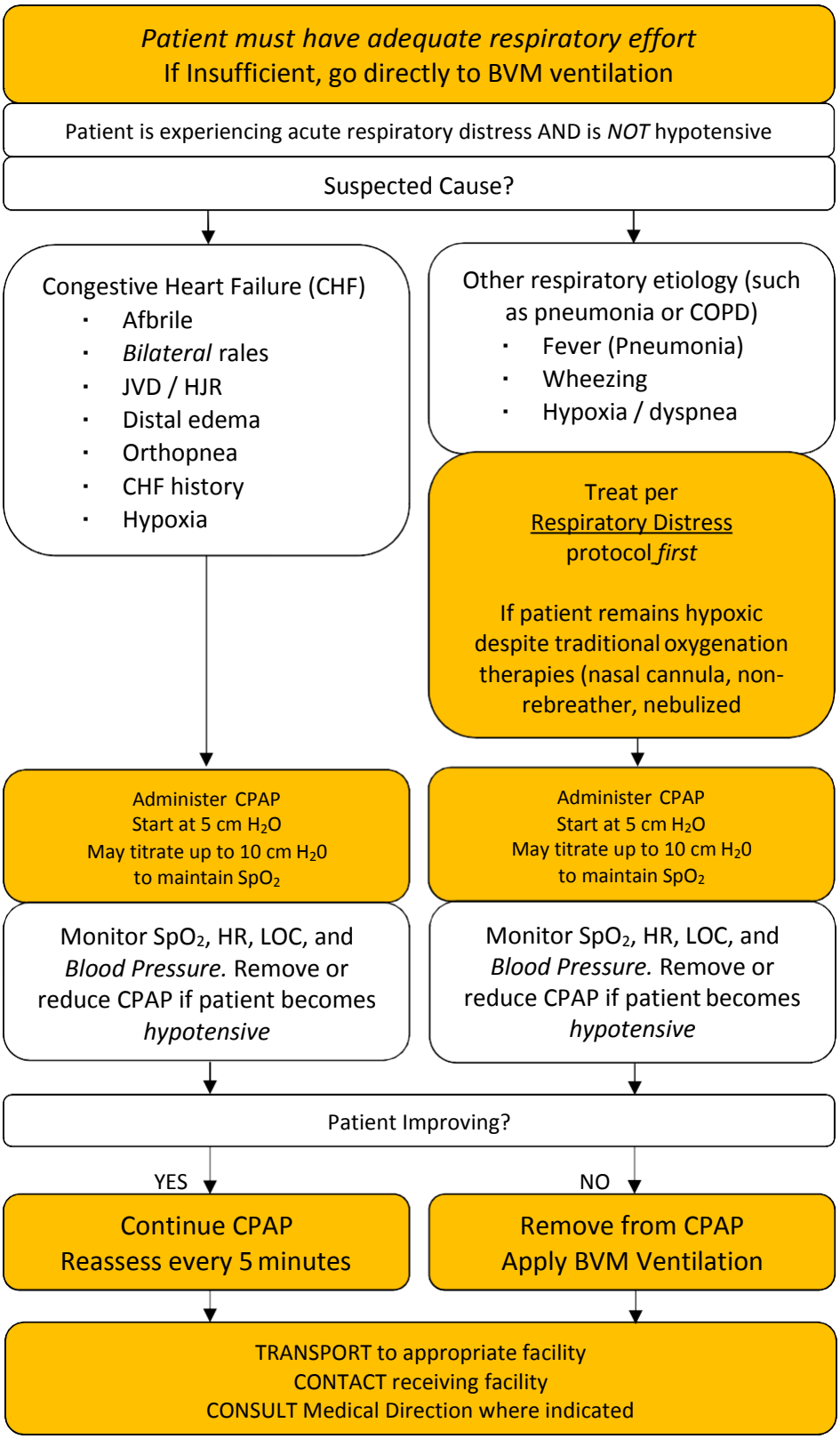
KEY POINTS

- The use of CPAP has long been recognized as an effective treatment for patients suffering from exacerbation of congestive heart failure.
- Utilize aerosol treatments in-line as defined in protocol.
- The use of CPAP for the treatment of patients who might otherwise receive endotracheal intubation holds several benefits:
  1. CPAP is a less invasive procedure with lesser risk of infection. This eliminates the possibility for adverse reactions following the administration of any antibiotics given for infection.
  2. CPAP eliminates the necessity of weaning the patient off an ET tube and ventilator.
  3. CPAP used prehospitally reduces the need to intubate patients in the hospital.
  4. CPAP allows the alert patient to have a continued dialogue with his / her caregivers. This allows for the exchange of additional medical history. It also allows for the patient to be involved in the decision-making process for his / her care.
  5. CPAP should be used as a last resort only in asthmatic patents. Prepare to intubate and ventilate.

For circumstances in which the patient does not improve or continues to deteriorate despite CPAP and / or medication therapy, terminate CPAP administration and perform BVM ventilation and endotracheal intubation if necessary.

AIRWAY / BREATHING

CONTINUOUS POSITIVE AIRWAY PRESSURE (CPAP) DEVICE



ASTHMA CAUTION

Use extreme caution when using CPAP on ASTHMA patients.

Use only if patient is hypoxic and not responding to any other treatment including aerosols and IM EPINEPHrine (ADRENALINE).

Be prepared to intubate and ventilate these patients.

KEY POINTS

- CPAP Indications: Hypoxemia and SOB secondary to CHF or other causes not responding to O_2 therapy
- CPAP Contraindications: BP <90 systolic, respiratory arrest, agonal respirations, unconscious, shock, pneumothorax, penetrating chest trauma, persistent nausea and vomiting, facial anomalies, facial trauma, known blebs, unable to follow commands, apnea, hypercarbia, and airway compromise.
- Patient must be adequately and spontaneous breathing

AIRWAY / BREATHING		
END TIDAL CO2 / CAPOGRAPHY PROCEDURE		
INDICATIONS	**SIGNS AND SYMPTOMS**	**CONTRAINDICATIONS**
• The End-Tidal CO_2 shall be measured on all intubated patients, or with placements of King Airway / LMA	• Cardiac Arrest / Shock • Intubated Patients • Respiratory Failure • COPD • Hyper / Hypoventilation / Siezures • Sedated Patients	This device is not to be used for: • Detection of mainstem bronchial intubation

Capnography vs. Capnometry

Capnography comprises the continuous analysis and recording of carbon dioxide concentrations (CO_2) in respiratory gases. Although the terms capnography and capnometry are sometimes considered synonymous, capnometry suggests measurement (ie, analysis alone) without a continuous waveform.

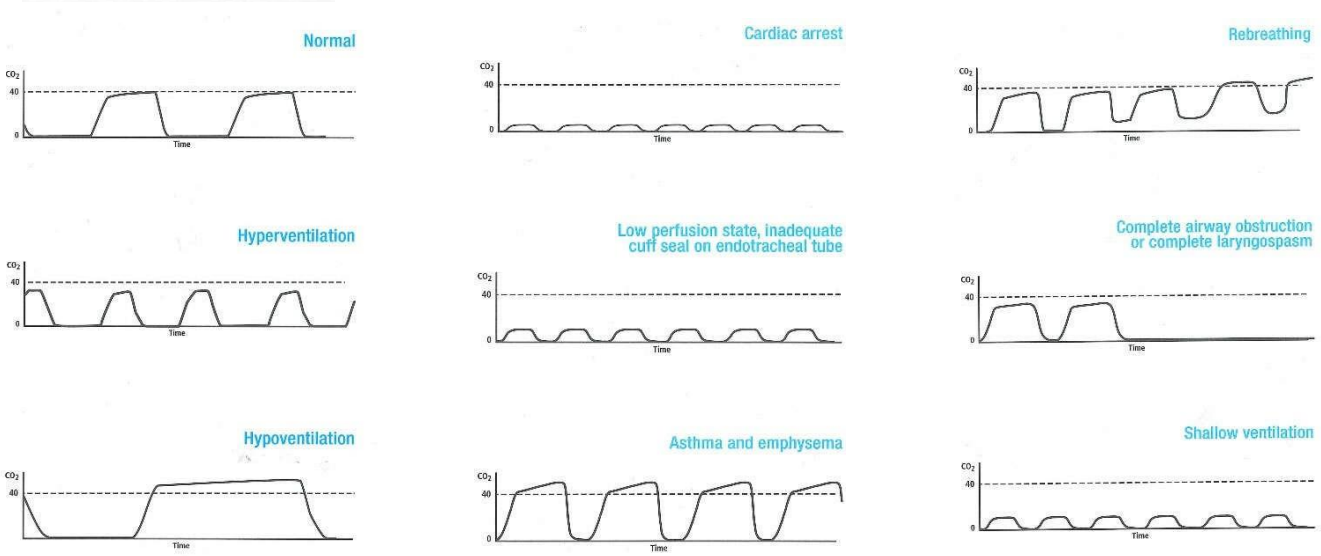
PROCEDURE – Capnography (Intubated Patient)

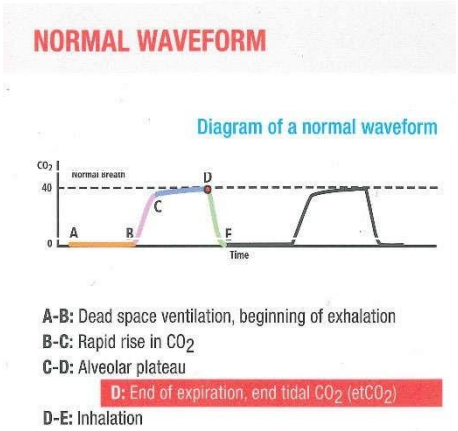
Capnography is required for all patients requiring ventilation through an ET tube, King Airway / LMA.

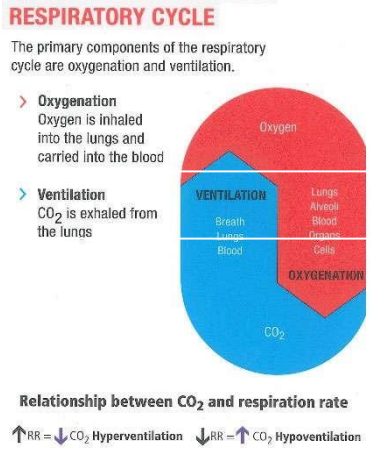
1. Turn on recording instrumentation (usually part of a cardiac monitor in the pre-hospital setting)
2. Place CO_2 Sampling device in between ventilation device (BVM / Ventilator) and the ET / BIAD
3. Attach sampling device to recording instrumentation and ventilate to a CO_2 of 35 – 45
4. If ResQPOD is used, place ResQPOD directly on tube, followed by intubated CO_2 sampling device, then BVM.

PROCEDURE – Capnography (Non-Intubated, Spontaneously breathing patient)

1. Turn on recording instrumentation (usually part of a cardiac monitor in the pre-hospital setting)
2. Place the sampling cannula on the patient
3. Attach sampling device to recording instrumentation record results and treat per results







KEY POINTS

COLORIMETRIC END TIDAL CO_2 PROCEDURE

INDICATIONS	SIGNS AND SYMPTOMS	CONTRAINDICATIONS
• Backup to Capnography	• Intubated Patients	This device is not to be used for: • Detection of hypercarbia • Detect mainstem bronchial intubation • Not for continuous monitoring, use capnography

PROCEDURE – Colorimetric Co2 monitoring

1. Remove the CO_2 detector from package or activate detector.
2. Attach the CO_2 detector to a King or endotracheal tube.
3. Ventilate patient and note color change on the CO_2 detector.
4. Compare color of indicator on full end-expiration to color chart on product dome. SEE ALGORITHM BELOW.
5. The CO_2 detector shall remain in place with the airway and monitored throughout the prehospital care and transport. Any loss of CO_2 detection or color change is to be documented and monitored as procedures are done to verify or correct the airway problem.
6. Tube placement should be verified frequently and with each patient move or change in the CO_2 detector.
7. If initial intubation attempts fail, the CO_2 detector can be used for re-intubation on the same patient provided the indicator color still matches the "CHECK" color standard on product dome.
8. Document the procedure and the results on the patient care report (PCR).

INDICATED COLOR	INDICATED COLOR	INDICATED COLOR
ET tube in esophagus / BIAD not ventilating lungs – and / or – no pulmonary perfusion	Questionable device placement or inadequate pulmonary perfusion	ET tube in trachea or BIAD successfully ventilating lungs
Determine if evidence of no pulmonary perfusion Cardiac Arrest Hypoxia / Cyanosis despite oxygenation	Deliver 6 additional breaths If color unchanged treat as purple	
Re-visualize ET tube placement Only leave in place if placement can be visualized and confirmed by at least one other method		
Verify placement of extraglottic airway (BIAD) is creating bilateral chest rise Assure extraglottic airway (BIAD) seal Remove only if no chest rise		

AIRWAY / BREATHING

INTUBATION - ENDOTRACHEAL

INDICATIONS	SIGNS AND SYMPTOMS	PRECAUTIONS
• A patient without a gag reflex, is apneic, or is demonstrating inadequate respiratory effort • Any patient medicated for rapid sequence intubation	• Unstable airway • Respiratory arrest • Cardiac arrest • GCS less than 8 without a treatable cause (for example, hypoglycemia)	• Patient intolerance is only a relative contraindication to this procedure

PARAMEDIC Intervention

AEMT Intervention

PROCEDURE

1. Cervical immobilization should be applied to the patient when indicated by mechanism of injury or when it is deemed necessary.
2. Prepare all equipment and have suction ready.
3. Hyperoxygenate the patient (one breath every three seconds) for at least one minute before attempting endotracheal intubation, if possible.
4. Suction the pharynx as needed.
5. Open the patient's airway and holding the laryngoscope in the left hand, insert the blade into the right side of the mouth and sweep the tongue to the left.
6. Use the blade to lift the tongue and epiglottis (either directly with the straight blade or indirectly with the curved blade).
7. Once the glottic opening is visualized, slip the tube through the cords and continue to visualize until the cuff is past the cords.
8. No more than 30 seconds may be used per attempt.
    a. Re-ventilation for at least 30 seconds after each attempt.
    b. Some situations such as copious vomiting or bleeding may require suction attempts longer than 30 seconds. These are the exception; not the norm.
9. Remove the stylet.
10. Inflate the cuff of the endotracheal tube with 10 ml of air.
11. Attach the bag-valve device to the ET tube and ventilate the patient.
12. Assess for tube placement:
    a. Watched tube pass through cords.
    b. Waveform Capnography
    c. Confirmation of lung sounds in the apices and bases bilaterally.
    d. Absence of epigastric sounds.
    e. Chest rise with ventilation..
    f. Good compliance with bag-valve ventilation
    g. Patent color improves.
    h. SpO_2 improves. (If distal perfusion is present to create a reading)

If at any time placement cannot be confirmed or obtained, the ETT shall be removed, an alternate airway placed, and the patient shall be ventilated. If there is any doubt about proper placement, the tube shall be removed.

13. If proper placement is confirmed, the cm markings on the tube at the level of the teeth shall be noted and secure the tube with a commercial tube holder.
14. Document ETT size, time, result, and placement location by the centimeter marks either at the patient's teeth or lips on the patient care report (PCR). Document all devices used to confirm initial tube placement. Also document breath sounds before and after each movement of the patient.
15. Routinely reassess for proper tube placement. The initial tube placement and all reassessments must be documented.

KEY POINTS

- It is essential to have complete and detailed documentation concerning the placement of the endotracheal tube. The documentation MUST include: Methods used, success / failure, pre-oxygenation, suction, SpO_2, CO_2, medications used, visualization, tube size, lip line, all confirmation techniques, securement of tube, and repeat assessments of placement.
- Placement - direct visualization of the tube passing through the vocal cords.
- Applying c-collar may assist in minimizing ETT movement after placement.
- It is the responsibility of the practioner to be familiar with the proper technique of using the different laryngoscope blades.
- Tube placement must be confirmed; after it was initially placed, after every movement, any significant change in patient status, and prior to entering the emergency department.
- Continually monitor the patient's SpO_2, $EtCO_2$, ease of ventilation, heart rate, and presence of JVD.
- A complication of endotracheal intubation and / or manual ventilation is a pneumothorax and tension pneumothorax. Refer to the chest decompression procedure if this occurs.
- Only functioning paramedics and AEMT may intubate. AEMT'S may only intubate patients who are apneic.
- Intubation does NOT have to be attempted if their airway can be effectively managed with BVM ventilations.
- Have tube placement confirmed immediately upon entering the ER by a Physician prior to moving patient to ER bed.

BOUGIE ASSISTED INTUBATION

1. Prepare patient as described above for standard orotracheal intubation.
2. Use laryngoscope to lift mandible and displace tongue as normal.
3. Use the gum rubber bougie with the bent end up in place of an ETT.
4. Pass the bougie through the cords, this works as a place keeper to an ETT can be slide over the Bougie and into the trachea.
5. Pass a generously lubricated tube over the Bougie and into the trachea. Do not use force to advance the tube past the vocal cords.
6. Pull the Bougie out once the tube has been passed to the desired depth, inflate the ETT cuff, and verify tube placement using all standard methods.

VIDEO LARYNGOSCOPY - OTHER DEVICES

Video laryngoscopes are permitted to be substituted for standard laryngoscopes during intubation procedures. The user must have previous training specific to the make and model of laryngoscope being used and have and must have a standard laryngoscope set available in the event of device failure. Manufacturer's recommendations must be followed on use, sizing, disposal or cleaning, indications and contraindications for the device. A BIAD device must still be available if unable to pass an endotracheal tube with either video or standard laryngoscopy.

PEDIATRIC TUBE SIZING

The size of tube that can be passed easily into most adults is 8.0 mm (id). Therefore this tube should be tried first on the average adult. The size of tube is judged by the size of the adult, not by age.

For children, the proper tube is usually equal to the size of the child's little finger. The following guide will also help in determining the proper size tube:

Premature. .....3mm (id)	18-24 months....5-6mm (id)
14-24 weeks. ...4mm (id)	2-4 years. .....6mm (id)
6-12 months. ....4–5mm (id)	4-7 years. .....6-7mm (id)
12-18 months ...5mm (id)	7-10 years. .....7mm (id)

KEY POINTS

- All the above tube sizes are still dependent on the child's size rather than consideration of age.
- Children before puberty should have a cuffless tube, or if the tube has a cuff it should not be inflated after insertion.

TUBE REMOVAL

If the patient begins to breathe spontaneously and effectively and is resisting the presence of the tube, removal of the tube may be necessary. The following procedures will be followed:

1. Explain procedure to victim.
2. Prepare suction equipment with large-bore catheter and suction secretions from endotracheal tube, mouth and pharynx.
3. The lungs should be completely inflated so that the patient will initially cough or exhale as the tube is taken from the larynx. This is accomplished in 2 ways:
    a. The patient is asked to take the deepest breath they possibly can and, at the very peak of the inspiratory effort, the cuff is deflated and the tube removed rapidly; or
    b. Positive pressure is administered with a hand-held ventilator and, at the end of deep inspiration, the cuff is deflated and the tube rapidly removed.
4. Prepare to suction secretions and gastric content if vomiting occurs.
5. Appropriate oxygen is then administered.
6. The patient's airway is immediately evaluated for signs of obstruction, stridor or difficulty breathing. The patient should be encouraged to take deep breaths and to cough.

KING AIRWAY DEVICE (BIAD)

INDICATIONS

- Emergent airway management of pulseless and apneic patients (EMT Provider)
- Emergent salvage airway management of apneic patients (AEMT and PARAMEDIC Provider)

CONTRAINDICATIONS

- Responsive patients with an intact gag reflex.
- Patients with known esophageal disease. (varices)
- Patients who have ingested caustic substances.

PROCEDURE

1. Hold the King Airway at the connector, using the dominant hand.
2. With non-dominant hand, hold mouth open and apply chin lift.
3. Using a lateral approach, introduce device into corner of mouth.
4. Advance tip behind the base of the tongue, while rotating tube back to midline so that the blue orientation line faces the chin of the patient.
5. Without exerting excessive force, advance tube until base of connector is aligned with teeth or gums.
6. Attach the syringe and inflate the cuffs to the appropriate volume:
    - SIZE 2 = 25-35 ml (LT or LTS-D)
    - SIZE 2.5 = 30-40 ml (LT or LTS-D)
    - SIZE 3 = 40-55 ml (LT or LTS-D)
    - SIZE 4 = 50-70 ml (LT or LTS-D)
    - SIZE 5 = 60-80 ml (LT or LTS-D)
7. Attach a bag-valve device to the connector. While gently bagging the patient to assess ventilation, gently withdraw the tube until ventilation is easy and free flowing (large tidal volume with minimal airway pressure).
8. Adjust cuff inflation, if necessary, to obtain a seal of the airway.
9. After placement, perform standard checks for breath sounds and utilize an appropriate carbon dioxide detection device, as required by protocol.

REMOVAL OF DEVICE (if indicated):

1. Confirm need for removal of the device.
2. Suction above cuffs in the oral cavity.
3. FULLY deflate both cuffs before removal of the device. (may require multiple attempts of air removal with syringe to fully evacuate air)
4. Remove the device when protective reflexes have returned.

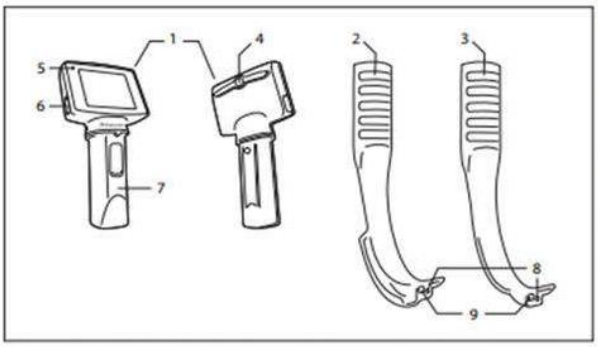
KEY POINTS

1. The key to insertion is to get the distal tip of KING around the corner in the posterior pharynx, under the base of the tongue. Experience has indicated that a lateral approach, in conjunction with a chin lift, facilitates placement of the KING. Alternatively, a laryngoscope or tongue depressor can be used to lift the tongue anteriorly to allow easy advancement of the KING into position.
2. Insertion can also be accomplished via a midline approach by applying a chin lift and sliding the distal tip along the palate and into position in the hypopharynx. In this instance, head extension may also be helpful.
3. As the KING is advanced around the corner in the posterior pharynx, it is important that the tip of the device is maintained at the midline. If the tip is placed or deflected laterally, it may enter the piriform fossa and the tube will appear to bounce back upon full insertion and release. Keeping the tip at the midline assures that the distal tip is placed properly in the hypopharynx / upper esophagus.
4. Depth of insertion is key to providing a patent airway. Ventilatory openings of the KING must align with the laryngeal inlet for adequate oxygenation / ventilation to occur. Accordingly, the insertion depth should be adjusted to maximize ventilation. Experience has indicated that initially placing the KING deeper (proximal opening of gastric access lumen aligned with teeth or gums), inflating the cuffs and withdrawing until ventilation is optimized results in the best depth of insertion for the following reasons:
   - It ensures that the distal tip has not been placed laterally in the piriform fossa (see item #3 above).
   - With a deeper initial insertion, only withdrawal of the tube is required to realize a patent airway. A shallow insertion will require deflation of the cuffs to advance the tube deeper.
   - As the KING is withdrawn, the initial ventilation opening exposed to or aligned with the laryngeal inlet is the proximal opening. Since the proximal opening is closest to and is partially surrounded by the proximal cuff, airway obstruction is less likely, especially when spontaneous ventilation is employed.
   - Withdrawal of the KING with the balloons inflated results in a retraction of tissue away from the laryngeal inlet, thereby encouraging a patent airway.
5. Ensure that the cuffs are not over-inflated. If a cuff pressure gauge is not available, inflate cuffs with the minimum volume necessary to seal the airway at the peak ventilatory pressure employed. (just seal volume)
6. Removal of the KING is well tolerated until the return of protective reflexes. For later removal, it may be helpful to remove some air from the cuffs to reduce the stimulus during wake-up.
7. King Airway Kit Includes:
   - King Airway
   - 60-80 cc Syringe
   - Lubricant
   - Instructions for use

DO NOT GIVE MEDICATIONS DOWN THE KING AIRWAY

Color	Tube Size	Patient Size	Weight	Cuff Volume
Transparent	0	See Weight	< 5 kg	10 ml Ver fy on Tube
White	1	See Weight	5-12 kg	20 ml Verify on Tube
Green	2	35-40 Inches	12-25 kg	25-35 ml Verify on Tube
Orange	2.5	41-51 Inches	25-35 kg	30-40 ml Verify on Tube
Yellow	3	4-5 Feet	NA	40-55 ml Verify on Tube
Red	4	5-6 Feet	NA	50-80 ml Verify on Tube
Purple	5	>6 Feet	NA	60-90 ml Verify on Tube

KING VISION



Reusable Display (Fig. 1, #1)
The reusable component of the King Vision Video Laryngoscope is a durable, high quality, portable, battery operated display with a TFT LCD (Thin Film Transistor Liquid Crystal Display) screen. It incorporates digital technology to receive images from the distal tip of the disposable blade and displays the image on the integrated full color, anti-glare screen. The reusable display has an on/off switch (Fig. 1, #4), a battery indicator light (Fig. 1, #5) and a video-out port (Fig. 1, #6). It incorporates an advanced power management system with automatic gain and exposure control. Power is provided by three AAA batteries housed in the battery compartment (Fig. 1, #7)

STEP 1 – Preparing the King Vision Video Laryngoscope (the Display and Blade combination) for use

Choose the style of Blade (Standard or Channeled) to be used.

Install the Display into the Blade (only goes together one way). Listen for a "click" to signify that the Display is fully engaged with the Blade. Note that the front and back of the parts are color-coded to facilitate proper orientation.

Using The King Vision Channeled Blade	Using The King Vision Standard Blade
The size #3 Channeled blade is designed to be used with standard ETT sizes 6.0 to 8.0. No stylet is needed.	The size #3 Standard blade is used when integral guidance of the ETT is not indicated. In this case, a stylet will-likely be necessary.
Lubricate the ETT, the guiding channel of the Channeled Blade and the distal tip of the Blade using a water soluble lubricant. Take care to avoid covering the imaging element of the blade with lubricant. The ETT may be preloaded into the guiding channel with its distal tip aligned with the end of the channel. Note that the ETT tip should not be evident on the screen when loaded properly. Alternatively, the ETT can be inserted into the channel after the blade has been inserted into the mouth and the vocal cords have been visualized.	Lubricate the distal tip of the Standard Blade using a water soluble lubricant. Take care to avoid covering the imaging element of the blade with lubricant. The ETT and stylet should be lubricated and the stylet pre-loaded into the ETT in the same manner as with other intubations where a stylet is used. User tip: Shaping the ETT with a pre-loaded stylet to match the blade curvature may be helpful.

Step 2 – Powering On
Press the POWER button ⏻ (Fig. 1, #4) on the back of the King Vision Display.
The King Vision Display should turn "ON" immediately AND Display shows a moving image.
Confirm the imaging of the King Vision is working properly. If not, stop and refer to the "Acquiring an Image" section.
IMPORTANT: If the LED Battery indicator light (Fig. 1, #5) in the upper left hand corner of the King Vision Display is FLASHING RED, the battery life remaining is limited and the batteries should be replaced as soon as possible.

Step 3 – Insertion of King Vision Blade into the Mouth
Open the patient's mouth using standard technique.
In the presence of excessive secretions/blood, suction the patient's airway prior to introducing the Blade into the mouth.
Insert the Blade into the mouth following the midline. Take care to avoid pushing the tongue towards the larynx.
As the Blade is advanced into the oropharynx, use an anterior approach toward the base of the tongue. Watch for the epiglottis and direct the Blade tip towards the vallecula to facilitate visualization of the glottis on the Display's video screen. The King Vision Blade tip can be placed in the vallecula like a Macintosh blade or can be used to lift the epiglottis like a Miller blade. For best results, center the vocal cords in the middle of the Display's video screen.
If the lens becomes obstructed (e.g., blood/secretions), remove the Blade from the patient's mouth and clear the lens.
Avoid putting pressure on the teeth with the King Vision Video Laryngoscope.

Step 4 – ETT Insertion

Advance the ETT (Channeled Blade)	Insert the ETT/Stylet (Standard Blade)
After you can see the vocal cords in the center of the King Vision Display, advance the ETT slowly and watch for the cuff to pass through the vocal cords. Note that minor manipulation of the blade may be needed to align the ETT tip with the vocal cords.	After you can see the vocal cords on the King Vision Display, insert the ETT with pre-loaded stylet into the mouth using a lateral approach. Once the ETT tip has reached the posterior pharynx, manipulate the ETT to direct its tip toward the vocal cords. Advance ETT tip just through the cords then retract the stylet prior to advancing the ETT into position in the trachea with the cuff below the cords. Fully remove the stylet.

AIRWAY / BREATHING

NEEDLE CRICOTHYROTOMY (Only if Trained)

INDICATIONS	SIGNS AND SYMPTOMS	COMPLICATIONS
・Management of an obstructed airway when standard airway procedures cannot be accomplished or have failed. ・Unable to intubate by another route. ・Cervical spine injuries ・Maxillo facial trauma ・Laryngeal trauma / edema	Airway obstruction from: ・Edema from infection, caustic ingestion, allergic reaction, and / or inhalation injuries ・Foreign body ・Mass lesion	・Post procedure bleeding ・Cellulitis of neck ・Subcutaneous emphysema ・Voice change ・Feeling of lump in throat ・Persistent stoma ・Obstructive problems ・Misplacement of the airway

PARAMEDIC Intervention

This procedure buys TIME only. It is not a definitive airway. It will provide OXYGENATION only, not appropriate VENTILATION.

PROCEDURE

1. If time permits, prep with appropriate antiseptic solution.
2. Have suction supplies available and ready.
3. Locate the cricothyroid membrane utilizing anatomical landmarks (in the midline between thyroid cartilage and cricoid cartilage).
4. Secure larynx laterally between thumb and forefinger.
5. Relocates the cricothyroid membrane.
6. Using the a syringe attached to a short 10 to 14 gauge catheter-over-needle device if needed, insert the needle through the cricothyroid membrane at a 45 to 60 degree angle caudally (towards feet).
7. Confirm entry of needle in trachea by aspirating air through the syringe.
8. If air is present, change the angle of insertion to 60 degrees.
9. Advance the catheter to the level of the hub.
10. Carefully remove the needle and syringe.
11. Secure the cannula to patient.
12. Attach the cannula to a 15 mm adapter. (3.0 – 3.5 pediatric ET tube adapter)
13. Attach a BVM to the airway adapter and begin oxygenation.
14. Make certain ample time is used not only for inspiration but expiration as well.
15. If unable to obtain an adequate airway, resume basic airway management and transport the patient as soon as possible.
16. Regardless of success or failure of needle cricothyrotomy, notify the receiving hospital at the earliest possible time of a surgical airway emergency.
17. Document procedure on the patient care record (PCR).

KEY POINTS

- Use needle cricothyrotomy as a bridge to more invasive surgical airways. (Tracheotomy, surgical cricothyrotomy)
- If placement is required due to foreign body obstruction, removal attempts should continue after performing needle cric procedure.
- Use procedure early to prevent ongoing hypoxia if foreign body is not easily removed.
- QuickTrach device provides a better airway and ventilation if device is available and provider has undergone specific training for that device. See Cricothyrotomy / QuickTrach Procedure.

AIRWAY / BREATHING

CRICOTHYROTOMY – QUICKTRACH (Only if trained)

INDICATIONS	SIGNS AND SYMPTOMS	COMPLICATIONS
・Management of an obstructed airway when standard airway procedures cannot be accomplished or have failed ・Unable to intubate by another route ・Cervical spine injuries ・Maxillo facial trauma ・Laryngeal trauma / edema	Airway obstruction from: ・Edema from infection, caustic ingestion, allergic reaction, and / or inhalation injuries ・Foreign body ・Mass lesion	・Post procedure bleeding ・Cellulitis of neck ・Subcutaneous emphysema ・Voice change ・Feeling of lump in throat ・Persistent stoma ・Obstructive problems ・Misplacement of the airway

PARAMEDIC Intervention

This procedure will provide OXYGENATION and life sustaining VENTILATION in an emergency.

PROCEDURE

1. If time permits, prep with appropriate antiseptic solution.
2. Have suction supplies available and ready.
3. Locate the cricothyroid membrane utilizing anatomical landmarks.
4. Secure larynx laterally between thumb and forefinger.
5. Relocate the cricothyroid membrane (in the midline between thyroid cartilage and cricoid cartilage).
6. Using the syringe and the finder needle supplied in the QuickTrach kit, insert the needle through the cricothyroid membrane at a 45 to 60-degree angle caudally (toward the feet).
7. Confirm entry of needle in trachea by aspirating air through the syringe.
8. If air is present, change the angle of insertion to 60 degrees.
9. Advance the device to the level of the stop guide.
10. Remove the stop guide and slide the plastic cannula along the needle into the trachea until the flange rest against the neck.
11. Carefully remove the needle and syringe.
12. Secure the cannula with the provided anchoring device.
13. Attach the connecting tube to the 15mm connection.
14. Attach a BVM to the connecting tube.
15. Confirm placement by auscultation and observing patient for adequate chest rise. Make certain ample time is used not only for inspiration but expiration as well.
16. If unable to obtain an adequate airway, resume basic airway management and transport the patient as soon as possible.
17. Regardless of success or failure of the placement of QuickTrach, notify the receiving hospital at the earliest possible time of a surgical airway emergency.
18. Document procedure on the patient care record (PCR).

KEY POINTS

Guidelines for Sizing

- Adult (4.0 mm) QuickTrach: Any patient greater than 100 pounds (45kg) and greater than 8 years in age.
- Use a scalpel to make a *VERTICLE MIDLINE* incision over the cricothyroid membrane if the landmarks are difficult to identify. Once identified, use the QuickTrach as noted above.

AIRWAY / BREATHING

NEEDLE CHEST DECOMPRESSION

INDICATIONS	SIGNS AND SYMPTOMS	PRECAUTIONS
• Tension pneumothorax with significant dyspnea	• Tachypnea / tachycardia • Hyperresonance • Absent breath sounds on the affected side • Possibly diminished breath sounds on the unaffected side. • Cyanosis • Hypotension • Distended neck veins • Chest pain • Extreme anxiety • Altered LOC/coma	• Insufficient training

PARAMEDIC Intervention

AEMT Intervention

PROCEDURE

1. Confirm presence of a tension pneumothorax or identify strong clinical evidence in a rapid deteriorating patient in the setting of major trauma. Consider in the setting of refractory PEA / traumatic arrest.
2. Locate the insertion site at the second intercostal space at the midclavicular line on the affected side of the chest.
3. Prep the insertion site. Use sterile gloves and utilize aseptic procedure to the fullest extent possible under the circumstances.
4. Remove rear cap of IV catheter.
5. Insert the 3 – 3.25 inch, 12 - 14 gauge IV catheter (1 inch, 18 gauge IV catheter in patients less than 8 years) by directing the needle just over the top of the third rib (2nd intercostal space) to avoid intercostal nerves and vessels which are located on the inferior rib borders.
6. Advance the catheter 1 - 2 inches (3/4 - 1 inch in patients less than 8 years) through the chest wall. Tension should be felt until the needle enters the pleural space. A pop or give may also be felt. Do not advance the needle any further.

In a tension pneumothorax, air under pressure should be released when the needle enters the pleural cavity. This will be heard as a rush of air through an open catheter-over-the-needle. If you are using a syringe attached to the catheter-over-the-needle you should be able to withdraw air by pulling out on the barrel of the syringe.

7. Withdraw the needle and advance the catheter until flush with the skin. Listen for a gush or hiss of air which confirms placement and diagnosis. This is frequently missed due to ambient noise.
8. Dispose of the needle properly and never reinsert into the catheter.
9. Once the presence of a tension pneumothorax has been confirmed:
    a. Remove the needle, leaving the catheter in place.
    b. Tape the catheter in place.
10. Secure the catheter and rapidly transport the patient providing appropriate airway assistance.
3. Be prepared to re-needle the chest next to original site if catheter kinks or becomes occluded.

KEY POINTS

- A tension pneumothorax can occur in any situation in which a simple pneumothorax occurs.
- Some patients who are at risk of developing a tension pneumothorax; include those receiving positive pressure ventilation, or any patient with blunt or penetrating trauma, and those with pre-existing lung diseases such as COPD.
- Cover all penetrating chest trauma with an occlusive dressing taped on three sides.
- In some cases of penetrating chest trauma, placing an occlusive dressing on the wound will convert an open pneumothorax to a closed tension pneumothorax. In these cases, treatment consists of removing the dressing and converting the wound back to an open pneumothorax. This may be the only treatment needed.
- DO NOT perform a chest decompression, if the patient is not in significant respiratory distress and is otherwise stable.
- Major trauma victims should have catheter-over-the-needles placed on both sides of the chest, if all of the following are present:
    1. Obvious chest trauma
    2. Difficulty bagging, and absent breath sounds on one / both sides
    3. Hypotensive or pulseless
- Needle decompression is a temporary lifesaving procedure only. Patients requiring decompression will require chest tube placement for long term maintenance.
- Catheters may kink or become occluded, always be prepared to re-needle the chest next to the original site. BE ALERT FOR SIGNS OF CONTINUEING OR RECURRING TENSION PNEUMOTHORAX.

AIRWAY / BREATHING

PULSE OXIMETERY

INDICATIONS	SIGNS AND SYMPTOMS	PRECAUTIONS
• Patients with suspected hypoxemia. • All cases of respiratory distress • For the treatment of primary respiratory or cardiac disease • All cases of altered or depressed level of consciousness • Drug overdoses • Any patient requiring intubation or BVM support • Major trauma • Smoke Inhalation (may not be accurate due to CO) • Any patient on home oxygen, home ventilator, or BiPAP	• Dyspnea • Tachypnea • Tachycardia • Bradycardia (late sign in adults) • Altered mental status • Pallor, cyanosis • Diaphoresis • Prolonged capillary refill • Accessory muscle use • Abnormal breath sounds	• Poor perfusion; must be applied with good perfusion • Patients with history of anemia • Patients with suspected high carboxyhemoglobin / methemyglobin (CO poisoning, smoke inhalation, heavy cigarette smokers)

PROCEDURE

1. Turn the machine on and allow for self-tests.
2. Apply probe to patient's finger or any other digit as recommended by the device manufacturer.
3. Allow machine to register saturation level.
4. Record time and initial saturation percent on room air if possible on the patient care report (PCR).
5. Verify pulse rate on machine with actual pulse of the patient.
6. Monitor critical patients continuously until arrival at the hospital. If recording a one-time reading, monitor patients for a few minutes as oxygen saturation can vary.
7. Document percent of oxygen saturation every time vital signs are recorded and in response to therapy to correct hypoxemia.
8. In general, normal saturation is 97 - 99%. Below 94%, suspect a respiratory compromise.
9. Use the pulse oximetry as an added tool for patient evaluation. Treat the patient, not the data provided by the device.
10. The pulse oximeter reading should never be used to withhold oxygen from a patient in respiratory distress or when it is the standard of care to apply oxygen despite good pulse oximetry readings, such as chest pain.
11. Factors which may reduce the reliability of the pulse oximetry reading include:
    - Poor peripheral circulation. (blood volume, hypotension, hypothermia)
    - Excessive pulse oximeter sensor motion.
    - Fingernail polish. (may be removed with acetone pad or sensor turned 90 degrees)
    - Carbon monoxide bound to hemoglobin.
    - Irregular heart rhythms. (atrial fibrillation, SVT, etc.)
    - Jaundice.
    - High ambient light. (washes out the sensors light)

All patients who require vital signs to be taken should have oxygen saturation measured and recorded as part of the vital signs.

Measure oxygen saturation before applying oxygen and repeat the measurement after oxygen has been applied. Do not delay oxygen administration in patients experiencing severe respiratory distress.

TREATMENT GUIDELINES		
SPO2 READING	INTERPRETATION	ACTION
>94%	Ideal Range	No supplemental oxygen is needed if no distress noted
93% TO 90%	Mild to Moderate Hypoxemia	Check airway start oxygen therapy via nasal cannula @ 2 - 6 lpm
90% TO 85%	Severe Hypoxemia	Check airway start aggressive oxygen therapy, high flow oxygen via nonrebreather mask @ 15 lpm. Consider bag valve mask ventilation with 100% oxygen if the patient does not have adequate ventilations. Consider CPAP if indicated.
85% OR LESS	Respiratory Failure	Prepare to intubate or assist ventilations with 100% oxygen and bag valve mask

KEY POINTS

- 100% oxygen should be administered to all patients despite a good SpO2 if they are hypoxic.
- Make sure that all dirt and nail polish or any obstructive covering is removed to prevent the unit from giving a false reading.
- Attempt to obtain a room air reading and a reading with supplemental oxygen.
- DO NOT read while BP being taken. May give false readings.
- Oxygen saturation measurements must routinely be recorded as part of the run report. Include those measurements taken as part of routine vital signs and those measurements taken before and after oxygen administration.
- Although the pulse oximeter displays the heart rate, the unit should not be used in place of a physical assessment of the heart rate.
- Oxygen saturation readings may be inaccurate in any situation where the flow of blood through the finger is impaired, such as:
    - Hypotension or shock with poor peripheral perfusion
    - Peripheral vascular disease
    - Extremity injury with restriction of peripheral perfusion
    - Cold extremities
- Oxygen saturation readings may be incorrectly high in situations such as carbon monoxide poisoning.
- Many patients with COPD have chronic low oxygen readings and may lose their respiratory drive if administered prolonged high oxygen therapy. Routinely assess pulse oximetry as well as respiratory drive when administering oxygen to these patients. Do not withhold oxygen from any patient that requires it.
- The room air pulse oximetry reading is NOT required if the patient has been placed on supplemental oxygen prior to EMS arrival.
- Pulse oximetery is NOT and indicator of myocardial or cerebral perfusion.

AIRWAY / BREATHING

SUCTIONING

INDICATIONS	SIGNS AND SYMPTOMS	PRECAUTIONS
• Any patient who is having trouble maintaining an airway and fluid is noted in the oropharynx, endotracheal tube, or tracheotomy • Tracheal suctioning should also be performed when rhonchi is heard in the intubated patient or tracheotomy patients	• Obstruction of the airway (secondary to secretions, blood, or any other substance) in a patient currently being assisted by an airway adjunct such as a naso-tracheal tube, endotracheal tube, tracheostomy tube, or a cricothyrotomy tube	• The patient must be well oxygenated before attempting this procedure

PROCEDURES

ORAL SUCTIONING

1. Body substance isolation procedures must be used.
2. Assess the need for suctioning.
3. Oxygenate the patient for 30 seconds prior to suctioning.
4. Select an appropriate size suction catheter.
    a. A soft flexible suction catheter or a “whistle tip” can be used if only fluids need to be removed.
    b. A yankauer or “tonsil tip” should be used for thick fluids, small particles, or large volumes.
5. Prepare a cup of sterile water or saline to flush the catheter after suctioning and in between attempts.
6. Quickly insert the catheter into the patient’s mouth until it is at the desired depth.
7. Apply suction and withdraw the catheter. Suction no more than 15 seconds per attempt.
8. Immediately after each suction attempt, oxygenate the patient for thirty seconds with 100% oxygen.
9. Repeat this procedure as needed until the airway is clear.

TRACHEAL SUCTIONING (Trach tube or endotracheal tube)

1. Body substance isolation procedures must be used.
2. Assess the need for suctioning.
3. Oxygenate the patient prior to suctioning.
4. Select an appropriate size suction catheter.
    a. A soft flexible suction catheter or a “whistle tip” should be used.
    b. A yankauer or “tonsil tip” should NOT be used.
5. Prepare a cup of sterile water or saline to flush the catheter after suctioning and in between attempts.
6. While maintaining aseptic technique, quickly insert the catheter into the endotracheal or tracheal tube until it is at the desired depth.
7. Apply suction and withdraw the catheter using a gentle rotating motion. Suction no more than 15 seconds per attempt.
8. Immediately after each suction attempt, oxygenate the patient for thirty seconds with 100% oxygen.
9. Repeat this procedure as needed until the airway is clear.

KEY POINTS

- General
- To maintain aseptic technique, keep the distal end of the catheter in the wrapper when not being used.
- If the suction catheter needs to be set down between suction attempts, place it back inside its wrapper.
- Patients who require assisted ventilations should be hyperventilated before and after every suction attempt.
- DO NOT suction for more than 15 seconds per attempt.
- DO NOT insert farther than the desired depth.
- If a backboarded patient vomits, turn the board on its side and then suction.

- Oral Suctioning
- If using a soft flexible suction catheter, determine the length by holding it against the patient's face. Measure from the edge of the patient's mouth to the tip of the ear lobe.
- Patients with clenched teeth may need to be suctioned via the naso-tracheal route. Use a soft suction catheter only.

- Tracheal Suctioning
- Even though endotracheal tubes isolate the trachea, if there is fluid present in the lower airway, oxygenation will be reduced.
- There are many patients at home with tracheotomy tubes. These tubes tend to become obstructed because the patient cannot cough normally. EMS is often called when these tubes become obstructed.
- This procedure should be performed with aseptic technique. Use an unopened sterile catheter for every patient.
- Use the largest sized suction catheter that will fit down the endotracheal tube.
- Estimate the length by looking at the distance between the end of the tube and the sternal notch. This approximates the level of the carina.
- If tracheal secretions are extremely thick and unable to be removed, administer 2 - 3 ml of saline followed by 2 BVM ventilations and then perform suctioning.

AIRWAY / BREATHING

TRANSPORT VENTILATION DEVICES

Inclusion: This procedure applies to CONTROL only resuscitative ventilators for use during cardiac arrest

INDICATIONS	SIGNS AND SYMPTOMS	CONTRAINDICATIONS
• Transport of an intubated or tracheostomy patient	• Pt. currently breathing with ventilation device	• Insufficient training

PROCEDURE

1. Confirm the placement of tube as per airway protocol.
2. Ensure adequate oxygen delivery to the ventilator device.
3. Pre - oxygenate the patient as much as possible with BVM.
4. Remove BVM and attach ventilation device.
5. Per instructions of device, set initial respiration values; respiratory rate and volume.
6. Assess breath sounds. Allow for adequate expiratory time. Adjust ventilator setting as clinically indicated.
7. If any worsening of patient condition, decrease in oxygen saturation, or any question regarding the function of the ventilator, remove and resume bag-valve ventilations.
8. Document time, complications, and patient response on the patient care report (PCR).

IF THERE IS EVER ANY QUESTION ABOUT WHETHER OR NOT THE DEVICES IS VENTIALTING CORRECTLY, REMOVE IT AND VENTILATE MANUALLY

USERS MUST RECEIVE TRAINING REGARDING THEIR SPECIFIC VENT DEVICE

KEY POINTS
• Transportation ventilators may be used on patients according to the manufacturer's directions. • It must be noted that this is a short-term adjunct, which must be monitored at all times to prevent tube displacement. If the patient begins to show any signs of further deterioration, the entire airway must be re-evaluated, and a bag-valve-mask should be used until the airway can be successfully stabilized.

Automatic CPR Device (LUCAS)

PURPOSE

This procedure describes the appropriate methods to apply, operate, and discontinue the LUCAS CPR device in patients > 12 years of age requiring mechanical chest compression related to cardiac arrest.

INDICATIONS

1. The LUCAS may be used in patients 12 years of age and older who have suffered non-traumatic cardiac arrest, where manual CPR would otherwise be used.

CONTRAINDICATIONS

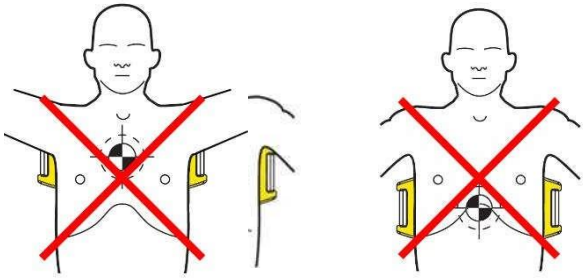
1. Patients < 12 years of age.
2. Patients suffering traumatic cardiac arrest or patients with obvious signs of traumatic injury.
3. Patients who do not fit within the device.
    a. Patients who are too large and with whom you cannot press the pressure pad down 2 inches.
    b. Patients who are too small and with whom you cannot pull the pressure pad down to touch the sternum

PLACEMENT

1. All therapies related to the management of cardiac arrest should be continued as currently defined in protocol
2. Initiate typical resuscitative measures
    a. Early defibrillation should be considered and provided as indicated based on clinical presentation.
    b. Manual chest compressions should be initiated *immediately* while the LUCAS device is being placed on the patient.
    c. Limit interruptions in chest compressions to 10 seconds or less.
    d. Do not delay manual CPR for the LUCAS. Continue manual CPR until the device can be placed.
3. While resuscitative measures are initiated, the LUCAS device should be removed from its carrying device and placed on the patient in the following manner;

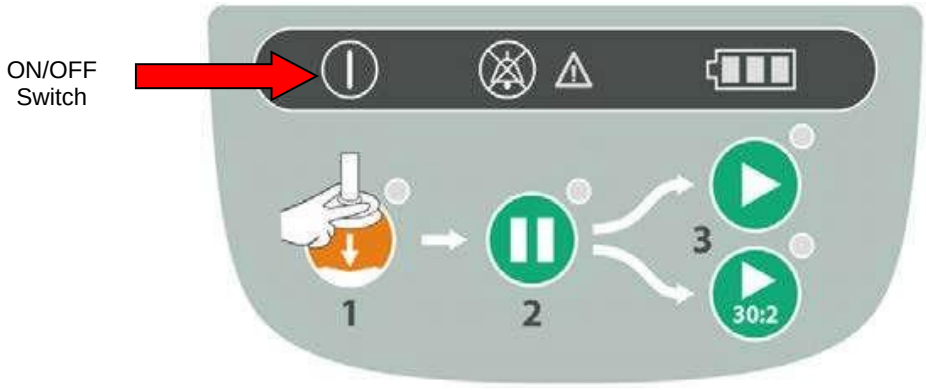
Backplate Placement

- The backplate should be centered on the nipple line and the top of the backplate should be located just below the patient's armpits. Placement should occur during a scheduled discontinuation of compressions [e.g., after five cycles of 30:2 or two minutes of uninterrupted compressions]).



Position the Compressor

- Turn the LUCAS Device on (the device will perform a 3 second self-test).

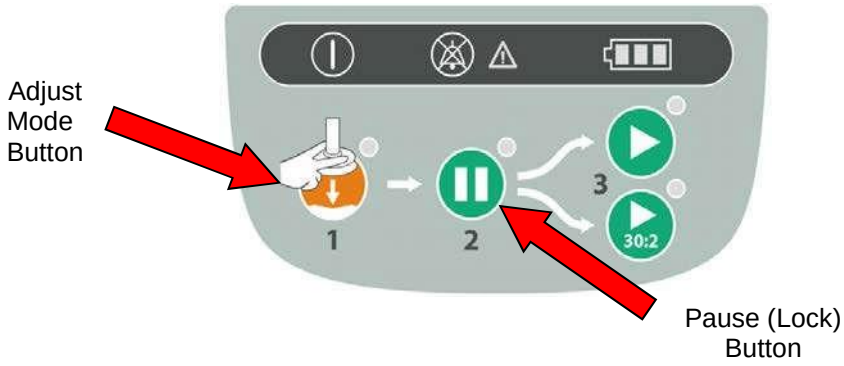


- Remove the LUCAS device from its carrying case using the handles provided on each side.

- With the index finger of each hand, pull the trigger to ensure the device is set to engage the backplate. Once this is complete, you may remove your index finger from the trigger loop.
- Approach the patient from the side opposite the person performing manual chest compressions.
- Attach the claw hook to the backplate on the side of the patient opposite that where compressions are being provided.
- Place the LUCAS device across the patient, between the staff member's arms who is performing manual CPR.
- At this point the staff member performing manual CPR stops and assists attaching the claw hook to the backplate on their side.
- Pull up once to make sure that the parts are securely attached.

Adjust the Height of the Compression Arm

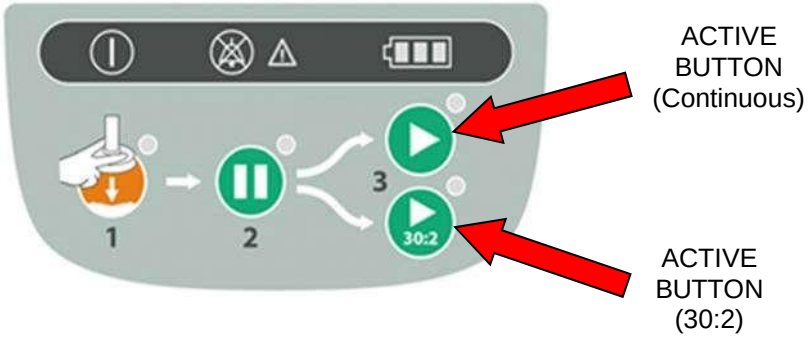
- Use two fingers (V pattern) to make sure that the lower edge of the Suction Cup is immediately above the end of the sternum. If necessary, move the device by pulling the support legs to adjust the position
- Press the Adjust Mode Button on the control pad labeled #1 (This will allow you to easily adjust the height of the compression arm).



- To adjust the start position of the compression arm, manually push down the SUCTION CUP with two fingers onto the chest (without compressing the patient's chest)
- Once the position of the compression arm is satisfactory, push the green PAUSE button labeled #2 (This will lock the arm in this position), then remove your fingers from the SUCTION CUP.
- If the position is incorrect, press the ADJUST MODE BUTTON and repeat the steps.

Start Compressions

- If the patient is not intubated and you will be providing compression to ventilation ratio of 30:2 push ACTIVE (30:2) button to start
- If the patient is intubated and you will be providing continuous compressions push ACTIVE (continuous) button



Patient Adjuncts

- Place the neck roll behind the patient's head and attach the straps to the LUCAS device.
  - This will prevent the LUCAS from migrating toward the patient's feet.
- Place the patients arms in the straps provided.

USING THE LUCAS DURING RESUSCIATION

Defibrillation

- Defibrillation can and should be performed with the LUCAS device in place and in operation
- One may apply the defibrillation electrodes either before or after the LUCAS device has been put in position
  - The defibrillation pads and wires should not be underneath the suction cup
  - If the electrodes are already in an incorrect position when the LUCAS is placed, you must apply new electrodes
- Defibrillation should be performed according to the joint ems protocols and following the instructions of the defibrillator manufacturer.
- If the rhythm strip cannot be assessed during compressions, one may stop the compressions for analysis by pushing the PAUSE BUTTON (The duration of interruption of compressions should be kept as short as possible and should not be > 10 seconds. There is no need to interrupt chest compressions other than to analyze the rhythm).
- Once the rhythm is determined to require defibrillation, the appropriate ACTIVE BUTTON should be pushed to resume compressions while the defibrillator is charging and then the defibrillator should be discharged.

Pulse Checks / Return of Spontaneous Circulation (ROSC)

- Pulse checks should occur intermittently while compressions are occurring
- If the patient moves or is obviously responsive, the LUCAS Device should be paused and the patient evaluated.
- If there is a change in rhythm, but no obvious indication of responsiveness or ROSC, a pulse check while compressions are occurring should be undertaken. If the palpated pulse is asynchronous, one may consider pausing the LUCAS Device. If the pulse remains, reassess the patient. If the pulse disappears, one should immediately restart the LUCAS Device.

Disruption or Malfunction of Lucas Device

- If disruption or malfunction of the LUCAS device occurs, immediately revert to Manual CPR.

Care of the LUCAS Device after use

- Remove the Suction cup and the Stabilization Strap (if used, remove the Patient Straps).
- Clean all surfaces and straps with a cloth and warm water with an appropriate disinfectant agent
- Replace the used Battery with a fully-charged Battery.
- Remount (or replace) the Suction Cup and straps
- Repack the device into the carrying bag
- Make sure that the Charging Cord is plugged into the LUCAS Device.

CIRCULATION / SHOCK

PERIPHERAL INTRAVASCULAR ACCESS (IV)

INDICATIONS	SIGNS AND SYMPTOMS	CONTRAINDICATIONS
• Any patient where intravenous access is indicated (significant trauma or mechanism, emergent or potentially emergent medical condition)	• Dehydration • Hypovolemia • Need for drug therapy	• Hypersensitivity to IV catheter

PARAMEDIC Intervention

AEMT Intervention

PROCEDURES

1. Universal precautions. Gloves.
2. Prepare equipment.
3. Inspect the IV solution for expiration date, cloudiness, discoloration, leaks, or the presence of particles.
4. Connect IV tubing to the solution in a sterile manner. Fill the drip chamber half full and then flush the tubing bleeding all air bubbles from the line.
5. Place a tourniquet around the patient's extremity to restrict venous flow only.
6. Select a vein and an appropriate gauge catheter for the vein and the patient's condition.
7. Prep the skin with an antiseptic solution.
8. Insert the needle with the bevel up into the skin in a steady, deliberate motion until the blood flashback is visualized in the catheter.
9. Advance the catheter into the vein. Never reinsert the needle through the catheter.
10. Dispose of the needle into the proper container without recapping.
11. Draw blood samples when appropriate.
12. Remove the tourniquet and connect the IV tubing or saline lock.
13. Open the IV to assure free flow of the fluid and then adjust the flow rate as per protocol or as clinically indicated.
14. Secure IV using appropriate measures to insure stability of the line.
15. Check for signs of infiltration.
16. Adjust flow rate.
17. Document the procedure, time and result on the patient care report (PCR).

Attempt to draw labwork on all patients when the IV is started, unless the draw will compromise the access site or the patient is in extremis.
Label all blood draws with patient name and DOB

KEY POINTS

- IVs will be started by the Advanced EMT and / or the Paramedic as allowed by each patient care protocol.
- IV placement must not delay transport of any critical patient involved in trauma.
- Generally, no more than two (2) attempts or more than two minutes should be spent attempting an IV. If unable to initiate IV line, transport patient and notify hospital IV was not able to be started.
- IVs may be started on patients of any age providing there are adequate veins and patient's condition warrants an IV.
- Use 1000 ml bags of normal saline for trauma patients and 500 - 1000 ml bags of normal saline for medical patients.
- Any prehospital fluids or medications approved for IV use may be given through intraosseous access.
- All IV rates should be at KVO (minimal rate to keep vein open) unless administering fluid bolus.
- Extreme care should be made to discard of all IV sharps in the appropriate sharps container immediately after cannulation. No sharps should be found on patient / sheets after transport to the hospital.
- Any venous catheter which has already been accessed prior to EMS arrival may be used.
- Upper extremity IV sites are preferable to lower extremity sites.
- Lower extremity IV sites are relatively contraindicated in patients with vascular disease or diabetes.
- In post-mastectomy patients, avoid IV, blood draw, injection, or blood pressure in arm on affected side.
- Use IV catheters appropriately sized for the patient and their condition.

PROCEDURE FOR STARTING SALINE LOCK

1. Prepare equipment: Flush saline lock with saline (approx. 1 ml) leave saline syringe attached device.
2. The initial attempt should be the dorsum of hand. Further attempts should proceed to the forearm; the antecubital fossa should not be used for saline locks.
3. Apply tourniquet.
4. Cleanse site with alcohol.
5. Use appropriately sized catheter for all saline locks. Perform venipuncture.
6. Attach IV tubing and push remaining saline through tubing and catheter. Remove syringe.
7. Secure IV using appropriate measures to insure stability of the line.
8. Check for signs of infiltration.

KEY POINTS

- Saline lock is preferred for patients who do not need immediate IV medication or fluids.
- Saline locks can be used whenever a patient requires an IV primarily for medication administration, or for any patient where the IV would be run at a TKO rate.
- A saline lock should not be used with a 14 -16 gauge IV unless attached to IV tubing and a bag or normal saline.
- Extreme care should be made to discard of all IV sharps in the appropriate sharps container immediately after cannulation. No sharps should be found on patient or in sheets after transport to the hospital.
- External jugular. (> 12 years of age).

Blood Draws

- Blood specimen drawing should be performed whenever the patient has a medical condition requiring an IV.
- Blood draws are not required if the IV site may become compromised, trauma, or the patient's condition dictates otherwise.
- Blood tubes should be labeled with the patient's name and initialized by the drawer of the specimen, and placed in a biohazard bag.
- If the tube does not draw a vacuum, discard tube and try another of the same color.
- Tube should be rotated upright, not shaken, when mixing additives and blood.

CIRCULATION / SHOCK

EXTERNAL JUGULAR INTRAVASCULAR (IV)

INDICATIONS	SIGNS AND SYMPTOMS	CONTRAINDICATIONS
• External jugular vein cannulation is indicated in a critically ill patient > 8 years of age who requires intravenous access for fluid or medication administration and in whom an extremity vein is not obtainable • External jugular cannulation can be attempted initially in life threatening events where no obvious other peripheral site is noted	• Dehydration • Hypovolemia • Need for drug therapy	• Only (1) attempt per pt. • Start IV Away from head, towards feet

PARAMEDIC Intervention

AEMT Intervention

PROCEDURE

1. Place the patient in a supine head down position. This helps distend the vein and prevents air embolism.
2. Turn the patient's head toward the opposite side if no risk of cervical injury exists.
3. Position yourself at patient's head.
4. Locate external jugular vein.
5. Select IV catheter.
6. Prep the site as per peripheral IV site.
7. Align the catheter with the vein and aim toward the same side shoulder.
8. "Tourniqueting" the vein lightly with one finger above the clavicle, puncture the vein midway between the angle of the jaw and the clavicle and cannulate the vein in the usual method.
9. Attach the IV and secure the catheter avoiding circumferential dressing or taping.
10. Secure IV using appropriate measures to insure stability of the line.
11. Check for signs of infiltration.
12. Adjust flow rate.
13. Document the procedure, time, and result on the patient care report (PCR).

ONLY (1) ATTEMPT SHOULD BE MADE DURING EXTERNAL JUGULAR IV
DO NOT ATTEMPT AN IV ON THE OTHER SIDE OF THE NECK

KEY POINTS
• Hypotensive patients may not produce a good "flash" from their EJ vein. • May use a syringe to aspirate blood on the back of the IV catheter to help establish patency. • Flow a bolus of saline through EJ IV catheter to assure solid patency prior to administering medications through the line, especially dextrose or vasopressors.

CIRCULATION / SHOCK

INTRAOSSEOUS INFUSION

PARAMEDIC Intervention

AEMT Intervention

ADULT INTRAOSSEOUS INFUSION:

INDICATIONS	SIGNS AND SYMPTOMS	CONTRAINDICATIONS
• Unable to access peripheral IV	• Altered level of consciousness • Arrhythmias • Burns • Cardiac / respiratory arrest • Dehydration • Head Injury • Hypotension • Seizures • Traumatic Injuries / shock • Other medical conditions when immediate vascular access is required	• Fracture of the tibia or humerus • Previous orthopedic procedures • Pre-existing medical condition • Infection at the insertion • Inability to locate landmarks • Excessive tissue over the insertion site

PROCEDURE: EZ IO Adult Device: (For providers trained in technique)

1. Select site:
2. Humoral head, outer aspect (use the 45 mm yellow needle) OR Tibia medial to the tibial tuberosity on flat plane of tibia (use 25mm blue or 45 mm yellow).
3. Locate the anatomical site and prep with betadine and / or alcohol.
4. Load the needle onto the driver.
5. Firmly stabilize the leg near (not under) the insertion site.
6. Firmly press the needle against the site at a 90^0 angle and operate the driver. Use firm, gentle pressure.
7. As the needle reaches the bone, stop and be sure that the 5 mm marking on the needle is visible; if it is, continue to operate the driver.
8. When a sudden decrease in resistance is felt and the flange of the needle rests against the skin, remove the driver and remove the stylet from the catheter.
9. Do not attempt to aspirate bone marrow. (may clog needle and tubing)
10. Use a syringe to infuse 0.9% normal saline.
11. If no S/S of infiltration are found, attach the IV line and infuse fluids and medications as normal. (IV bag will need to be under pressure)
12. Secure the needle and dress the site.
13. Manage IO pain with LIDOCAINE (XYLOCAINE) through the IO 20 – 40 mg. Allow to dwell in IO space. Approved for AEMT

Consider use of 45 mm length IO needle for patients with excessive tissue over the insertion site. *Use the 45 mm needle for all humeral head insertions.*

PROCEDURE: Adult IO Manual Placement:

1. Expose the lower leg.
2. Identify the tibial tubercle (bony prominence below the knee cap) on the proximal tibia.
3. The insertion location will be 1 - 2 cm (2 finger widths) below this and medially.
4. Prep the site as per peripheral IV site.
5. Insert needle at 90-degree angle to the skin surface, approximately one to two finger breadths distal to the tibial tuberosity. With a straight steady push and / or rotary motion, push needle through subcutaneous tissue and bone until a drop or pop is felt.
6. Remove the trocar and attach the IV.
7. Once the needle has reached the bone marrow, saline should be injected via syringe to clear needle.
8. Observe for signs of subcutaneous infiltration.
9. The needle should feel firm in position and stand upright without support.
10. Stabilize and secure the needle.
11. Infusion via this route is the same as venous access without limit to rate of administration, drugs pushed or fluid type infused, pressure infuser may be necessary to facilitate flow.
12. Document the procedure, time, and result (success) on the patient care report (PCR).
13. Manage IO pain with LIDOCAINE (XYLOCAINE) through the IO 20 – 40 mg. Allow to dwell in IO space. Approved for AEMT

PEDIATRIC INTRAOSSEOUS INFUSION:

PARAMEDIC Intervention

AEMT Intervention

INDICATIONS	SIGNS AND SYMPTOMS	CONTRAINDICATIONS
• Life threatening illness or injury in a child	• Unresponsive • Cardiopulmonary arrest • Decompensated shock • This procedure is indicated primarily in children less than 8 years old	• A pediatric patient who is conscious or responsive to pain • A pediatric patient who is 7 years old or older • Gross infection, osteomelitis, or cellulitis at the intended site (use the other leg if possible) • Fracture at or above the intended site (use the other leg if possible) • Unsuccessful IO attempt (use the other leg if possible)

PROCEDURE: May use manual IO Device or EZ IO Pediatric Device

1. Select site.
2. Identify the tibialtubercle (bony prominence below the knee cap) on the proximal tibia or the humeral head. The insertion location will be 1-2 cm (2 finger widths) below this and medially.
3. Prep the site as per peripheral IV site.
4. Stabilize leg / shoulder as needed.
5. Needle insertion varies between 70- and 90-degree angle to the skin surface, approximately one to two finger breadths distal to the tibial tuberosity. With a straight steady push and / or rotary motion, push needle through subcutaneous tissue and bone until a drop or pop is felt.
6. Remove the trocar and attach the IV.
7. Once the needle has reached the bone marrow, saline should be injected via syringe to clear needle
8. Observe for signs of subcutaneous infiltration.
9. The needle should feel firm in position and stand upright without support.
10. Stabilize and secure the needle.
11. Infusion via this route is the same as venous access without limit to rate of administration, drugs pushed or fluid type infused, pressure infuser may be necessary to facilitate flow.
12. Document the procedure, time, and result on the patient care report (PCR).
13. Manage IO pain with LIDOCAINE (XYLOCAINE) through the IO 0.5 mg / kg, not to exceed 40 mg. Allow to dwell in IO space. Approved for AEMT

KEY POINTS
• An IO can administer any medication or fluid that can be administered by an IV. • Consider using a three-way stopcock, and a syringe with the IV tubing. Use the “pull-push” method to infuse fluid for small bolus in infants / children. • A blood pressure cuff or pressure infuser may have to be used to apply pressure to the IV bag to maintain an adequate flow rate. • An IO may be attempted prior to attempting an IV if the patient is in cardiac arrest or is in decompensated shock and requires immediate access. • If attempt unsuccessful remove needle and apply pressure to site for 5 minutes. • Introssesous infusions of fluids may cause subcutaneous infiltration, osteomyelitis, or subcutaneous infections if not placed properly.

INTRAOSSEOUS INFUSION – Humeral Head

	Adult or Pediatric Place the patient's hand over the abdomen (elbow adducted and humerus internally rotated) Place your palm on the patient's shoulder anteriorly • The area that feels like a "ball" under your palm is the general target area • You should be able to feel this ball, even on obese patients, by pushing deeply
	Place the ulnar aspect of one hand vertically over the axilla Place the ulnar aspect of the opposite hand along the midline of the upper arm laterally.
	Place your thumbs together over the arm. • This identifies the vertical line of insertion on the proximal humerus
	Palpate deeply as you climb up the humerus to the surgical neck. • It will feel like a golf ball on a tee – the spot where the "ball" meets the "tee" is the surgical neck • The insertion site is on the most prominent aspect of the greater tubercle, 1 to 2 cm above the surgical neck
	Insertion: • Prepare the site by using antiseptic solution of your choice • Use a clean, "no touch" technique • Remove the needle cap • Point the needle set tip at a 45-degree angle to the anterior plane and posteromedial • Push the needle tip through the skin until the tip rests against the bone • The 5mm mark must be visible above the skin for confirmation of adequate needle length • Gently drill into the humerus 2cm or until the hub reaches the skin in an adult. o The hub of the needle set should be perpendicular to the skin • Hold the hub in place and pull the driver straight off • Continue to hold the hub while twisting the stylet off the hub with counter clockwise rotations o The needle should feel firmly seated in the bone (1st confirmation of placement) • Place the stylet in a sharps container • Place the EZ-Stabilizer™ dressing over the hub • Attach a primed EZ-Connect® extension set to the hub, firmly secure by twisting clockwise • Pull the tabs off the EZ-Stabilizer dressing to expose the adhesive, apply to the skin • Aspirate for blood/bone marrow (2nd confirmation of placement) • Secure the arm in place across the abdomen

ResQPOD Impedance Threshold Device

ResQPOD Circulatory Enhancer:

Conventional CPR provides 15% of normal blood flow to the heart and blood flow to the brain is 25% of normal.

The ResQPOD is an impedance threshold device that prevents unnecessary air from entering the chest during the decompression phase of CPR. When air is prevented from rushing into the lungs as the chest wall recoils, the vacuum (negative pressure) in the thorax pulls more blood back to the heart, resulting in a:

1. Doubling of blood flow to the heart.
2. 50% increase in blood flow to the brain.
3. Doubling of systolic blood pressure.

Indications:

Cardiopulmonary arrest 12 years and older (medical etiology)

Contraindications:

Patients under 12 years of age

Cardiopulmonary arrest related to trauma

Procedure:

Confirm absence of pulse and begin CPR immediately. Assure that chest wall recoils completely after each compression.

Using the ResQPOD on a facemask:

Connect ResQPOD to the facemask.

Connect ventilation source (BVM) to top of ResQPOD. If utilizing a mask without a bag, connect a mouthpiece.

Establish and maintain a tight face seal with mask throughout chest compressions. Use a two-handed technique or head strap.

Do not use the ResQPODs timing lights during CPR utilizing a facemask for ventilation.

Perform ACLS interventions as appropriate.

Prepare for endotracheal intubation.

Using the ResQPOD on an endotracheal tube, LMA or King Airway:

1. Place airway and confirm placement.
2. Move the ResQPOD from the facemask to the advanced airway and turn on timing assist lights (remove clear tab).
3. Continue CPR with minimal interruptions:
   a. Provide continuous (no pauses) chest compressions (approximately 10 per light flash) and ventilate asynchronously over 1 second when light flashes (10 / min).
4. Perform ACLS interventions as appropriate.
5. If a pulse is obtained, remove the ResQPOD and assist ventilations as needed.

Special Notes:

A. Always place $EtCo_2$ device between the ResQPOD and ventilation source.
B. Do not interrupt CPR unless absolutely necessary.
C. If a pulse returns, discontinue CPR and the ResQPOD. If the patient rearrests, resume CPR with the ResQPOD.
D. Do not delay compressions if the ResQPOD is not readily available.

ResQPump / ACD-CPR

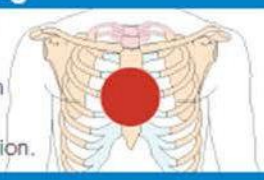
For Trained and Supplied Departments

ResQPUMP® ACD-CPR Device

The ResQPUMP further enhances the effect of the ResQPOD by allowing the user to actively re-expand the chest, rather than relying on it to passively recoil. It also promotes proper compression rates (80/min), and helps guide compression and lifting forces.

Rescuer and ResQPUMP Positioning

Kneel close to the patient's side with shoulders directly over the patient's chest. Place the ResQPUMP in the middle of the chest (between the nipples) and above the xiphoid process. Shaving is rarely needed to achieve good suction.



Compress

Compress to recommended depth (e.g. 2" or 5 cm). Observe the force required to achieve that depth, as it will vary according to how compliant the chest is. The tip of the red arrow indicates the force being applied. The approximate amount of force required to compress the chest 2 inches is as follows:

- 30 kg: soft/supple chest
- 40 kg: chest of average compliance
- 50 kg: stiff/rigid chest

Once the amount of force required is known, use that target as a guide for continued compressions.

Arms should be straight with shoulders directly over the sternum. Bend at the waist and compress, using the entire upper body and large thigh muscles. Compress at a rate of 80/min using the metronome (push button) as a guide. This slightly slower rate allows for more filling time. Compress on one tone, lift on the other tone.

Lift

To fully achieve the benefits of ACD-CPR, actively pull up until the tip of the red arrow on the force gauge registers ≈10 kg. Lift using the upper body and large thigh muscles, and bending at the waist. If the suction cup dislodges, then pull up slightly less. It is not necessary to lift with more than 10 kg of force. The ResQPUMP is the only device that allows rescuers to deliver true ACD-CPR.

Performing High Quality ResQCPR

1. Confirm absence of pulse and send for AED.
2. Begin chest compressions with ResQPUMP.
3. Attach the ResQPOD to a facemask, using a 2-handed technique to maintain a tight facemask seal and airway position. Move it to the advanced airway once intubated, and turn on lights to guide ventilations.
4. Begin using both devices as soon as possible so that the patient receives the benefit of ResQCPR at the earliest opportunity.
5. Perform chest compressions at the recommended compression to ventilation ratio. Use a 50% duty cycle, spending equal time compressing and lifting. Avoid interruptions.
6. Use the force gauge to monitor forces and rescuer fatigue. Rotate ACD-CPR duties every two minutes (or more often) to avoid fatigue.
7. If the patient has a return of spontaneous circulation (ROSC) use of both devices should be discontinued. If the patient re-arrests, resume ResQCPR immediately.
8. NOTE: Signs and symptoms of improved cerebral blood flow (e.g. eye opening, gagging, spontaneous breathing, limb or body movement) have been reported in patients without a pulse who are undergoing ResQCPR. If these occur, check quickly to see if a pulse has returned. If the patient remains in cardiac arrest, continue ResQCPR and contact your medical control authority for guidance on managing these signs and symptoms in an arrested patient. If ROSC occurs, discontinue ResQCPR and support ventilations as indicated.

ResQGARD Impedance Threshold Device

The ResQGARD is an impedance threshold device (ITD) that provides therapeutic resistance to inspiration in spontaneously breathing patients. During inspiration, a negative pressure (created from expansion of the thorax) draws air into the lungs. When inspiratory impedance is added to the ventilation circuit, it enhances the negative pressure (vacuum) in the chest, which pulls more blood back to the heart, resulting in increased preload and thus, enhanced cardiac output on the subsequent cardiac contraction.

Indications for Use:
Spontaneously breathing patients who are experiencing symptoms of low blood circulation (e.g. diaphoresis, tachycardia, weak radial pulses, cold, clammy skin, tachypnea) or hypotension (e.g. < 90 mm Hg [adults]; per age & weight and as directed by a physician [children]), which can be secondary to a variety of causes such as; Anaphylaxis, Blood loss (traumatic or medical etiology) or blood donation, Burns, Dehydration, Dialysis, Drug overdose, Heat shock, Orthostatic intolerance, Pregnancy, Sepsis / toxins, and Spinal shock.

2. Permissive Hypotension: in cases (e.g. hemorrhage due to a trauma-related injury) in which a lower than normal blood pressure (BP) is desired to assist in the blood-clotting process, the ResQGARD may still be a reasonable therapy to help maintain "permissive hypotension."

Contraindications:
1. Flail chest
2. Shortness of breath or respiratory insufficiency
3. Chest pain
4. Dilated cardiomyopathy
5. Congestive heart failure (Cardiogenic Shock)
6. Pulmonary hypertension
7. Aortic stenosis
8. Penetrating chest trauma

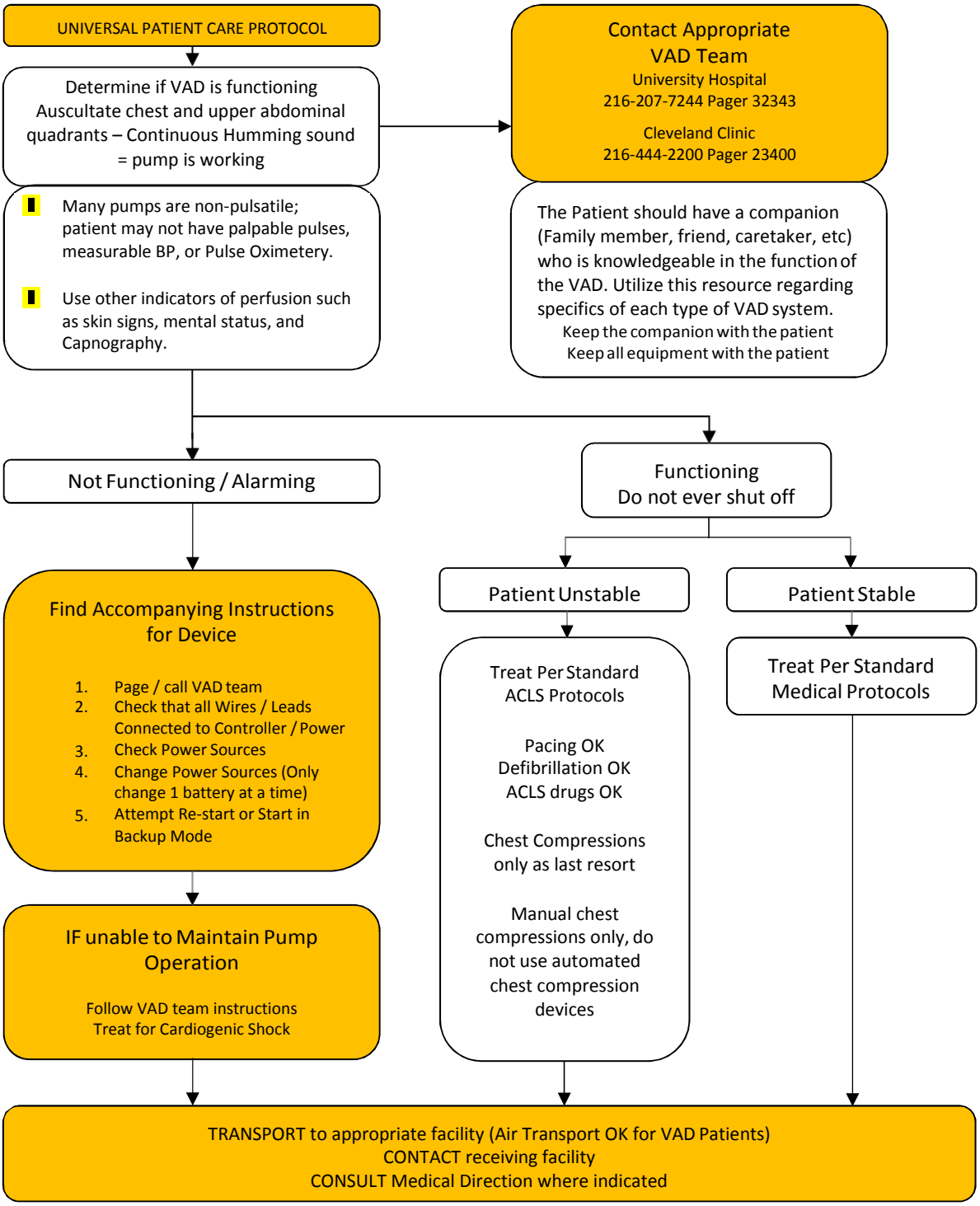
Precautions:
1. Children under 25 lbs may not be cooperative enough to tolerate use of the ResQGARD.
2. The safety and effectiveness in persons suffering from arterial stenosis or asthma has not been established.
3. If respiratory distress develops during use of the ResQGARD, immediately discontinue use.
4. Do not leave the ResQGARD in the hands of untrained healthcare providers.
5. Nausea / Vomiting

Procedure for Use:
1. Identify the need for ResQGARD application (assess indication for use).
2. Reassure patient and position as appropriate.
3. Obtain baseline vital signs (pulse, respirations, blood pressure and oxygen saturation) and monitor cardiac rhythm.
4. Explain to the patient that the device will make it slightly more difficult to breathe, but that the resistance is what may make them feel better.
i. Gently (but firmly) hold the ResQGARD over the nose and mouth (or have the patient hold), establishing and maintaining a tight face seal with facemask. The head strap (e.g. ResQStrap) may be used if the patient does not want to hold the ResQGARD in place.
6. Have patient breathe in slowly (over 2 - 3 seconds) and deeply; exhale normally. Breathe at a rate of 10 –16/minute.
7. If supplemental oxygen is used, attach the tubing to the oxygen port on the ResQGARD and deliver up to 15 lpm, but do not exceed 15 lpm.
8. If end tidal carbon dioxide ($EtCO_2$) monitoring is desired, attach the sensor to the exhalation port of the ResQGARD.
9. Reassess vital signs often (every 3 - 5 minutes).
10. Once the patient's blood pressure has stabilized and risen to an acceptable level it is recommended that you continue ResQGARD treatment for approximately 5 minutes before discontinuing its use. Reapply if necessary if the blood pressure drops again.
11. Document ResQGARD therapy on patient care report (e.g. time initiated and discontinued, vital sign response).

Special Patient Considerations:
1. In a patient without intravenous (IV) access, applying the ResQGARD may make it easier to establish an IV because of the improvement in blood pressure.
2. The ResQGARD may be used in conjunction with other indicated treatments for hypotension (e.g. fluids, vasopressors, patient positioning).
3. In cases where the rate of blood loss is unclear, the recommendation is to use the ResQGARD as you would a fluid challenge in the field (i.e. if a fluid challenge is indicated, then the ResQGARD may be too).

Ventricular Assist Devices (LVAD, RVAD, BiVAD)

Ventricular assist device patients (VAD) are special care situations. Unless these patients are in cardiac arrest they need to be transported to their VAD implantation center. Local or regional hospitals are not equipped to handle these patients.



AUTOMATED EXTERNAL DEFIBRILATOR (AED)

INDICATIONS	SIGNS AND SYMPTOMS	CONTRAINDICATIONS
• Non-traumatic cardiac arrest in patients > 8 years of age	The patient must meet ALL of the following criteria: • Unresponsive • Apneic • Pulseless • Weighs greater than 55 lbs • Pediatric patients >8 years	• If patient is found in water, remove from water and dry patient thoroughly. Do not use an AED in an explosive atmosphere, extremely wet atmosphere, or on a metal surface • If a medication patch is found, remove patch and wipe clean before applying defibrillation pads • Do not place defibrillation pads directly over patient's implanted defibrillator • Patients < 8 years of age require specific pediatric defibrillation equipment

PROCEDURE

Establish that the patient is pulseless and apneic.

1. Perform CPR for (2) minutes.
2. Attach the defibrillation pads to the patient's chest and connect the cables to the AED.
3. The sternum pad is to be attached to the patient's upper right chest, to the right of the sternum on the mid-clavicular line.
4. The apex pad is to be attached to the patient's lower left rib cage, laterally and beneath the left nipple.
5. Turn the unit ON and follow the voice prompts.
6. Rhythm analysis:

   Do not have any patient contact while the AED analyzes.
   Rhythm analysis should take approximately 9 - 13 seconds.
7. If the AED unit's voice prompts advise that "no shock advised":
   Check for a pulse, if no pulse, continue CPR.
8. Visually check that no one is in contact with the patient and announce CLEAR.
9. Press the SHOCK button when advised to by the unit's voice prompts:
10. Continue CPR for 2 minutes.
11. If the patient's pulse has returned:

    Insure that the patient has a patent airway and treat accordingly.
12. If the patient remains pulseless, continue use of CPR and AED.

KEY POINTS

- Do not use the AED in cases of traumatic or hypovolemic cardiac arrest (unless driver involved in MVA is in cardiac arrest and is suspected of having an acute MI while driving).
- Resuscitation should be withheld in all cases where such efforts would be futile. Patients should be considered DOA and resuscitation should not be attempted in the following situations:
  - Refer to the Dead-on Arrival (DOA) Policy.
  - A valid (within the last 2 years) Do Not Resuscitate (DNR). Refer to the Advanced Directives – Do Not Resuscitate (DNR) Policy.
- Defibrillation cables should be inspected for damage and / or wear.
- Defibrillation pads should be routinely inspected to assure that they are within their expiration and are not opened.
- Assure that batteries are charged, and spares are available.

CARDIAC DEFIBRILLATION (MANUAL)

INDICATIONS	SIGNS AND SYMPTOMS	CONTRAINDICATIONS
• Cardiac arrest with ventricular fibrillation or pulseless ventricular tachycardia	The patient must meet ALL of the following criteria • Unresponsive • Apneic • Pulseless	• If patient is found in water, remove from water and dry patient thoroughly. Do not use an AED in an explosive atmosphere, extremely wet atmosphere, or on a metal surface • If medication patch found, remove patch and wipe clean before applying defibrillation pads • Do not place defibrillation pads directly over patient's implanted defibrillator • Pediatric patients < 8 years of age require specific pediatric monitoring equipment

PARAMEDIC Intervention

AEMT Intervention

PROCEDURES

1. Establish that the patient is pulseless and apneic.
2. Provide (2) minutes of CPR.
3. Attach defibrillation pads and cables. Plug cable into EKG monitor.
4. Recognize EKG findings as ventricular fibrillation or pulseless ventricular tachycardia.
5. Charge the device to 360 J or recommended charge.
6. Visually check that no one is in contact with the patient and announce CLEAR.
7. Press the SHOCK button and deliver the shock.
8. Resume CPR for (2) minutes.
9. Check monitor for changes in rhythm. Check pulse.
10. If no change in rhythm repeat steps 5 - 8.
11. If EKG reveals change in findings, treat with the appropriate ACLS Protocol.

Double Sequential Defibrillation

For situations where a second defibrillator is immediately available and AT LEAST 4 previous defibrillations have failed.

1. Apply 2 defibrillators per typical measures.
2. One set of pads standard apex / sternum placement.
3. One set of pads anterior / posterior placement.
4. Charge BOTH defibrillators to highest joule setting.
5. ONE PERSON clears patient and SIMULTANEOUSLY presses shock buttons on BOTH defibrillators.

CARDIAC / ACLS

12 - LEAD CARDIAC MONITORING

INDICATIONS	SIGNS AND SYMPTOMS	CONTRAINDICATIONS
• Suspected cardiac patient • Suspected tricyclic overdose • Electrical injuries	• Any complaint of pain or discomfort between the nose and the navel • Chest pain / tightness • Chest discomfort • Chest discomfort relieved prior to arrival • Pulmonary edema • Palpitations • Irregular heartbeat • Syncope • Dizziness • Unexplained diaphoresis • Dyspnea • Weakness / numbness • HR< 50 or > 120 • Hypotension / hypertension	• Insufficient training

Placement of the "V" Leads
LEFT SIDE EKG

V1: 4th ICS – right of the sternum
V2: 4th ICS – left of the sternum
V3: Between V2 and V4
V4: 5th ICS midclavicular LEFT
V5: Between V4 and V6
V6: Even with V4 midaxillary

Placement of the "V" Leads
RIGHT SIDE EKG

V1: 4th ICS – right of the sternum
V2: 4th ICS – left of the sternum
V3: Between V2 and V4
RV4: 5th ICS midclavicular RIGHT
V5: Between V4 and V6
V6: Even with V4 midaxillary

1. Follow the Universal Patient Care Protocol.
2. Place the patient in a position of comfort and explain the procedure.
3. Apply the Limb and V Leads to the patient, protecting patient privacy.
4. Enter patient information.
5. Avoid patient movement and disturbance of EKG Leads.
6. Press 12 – LEAD button. Allow monitor to analyze, interpret, and print rhythm strip.
7. Make appropriate connections to transmission device and press TRANSMIT button to send EKG rhythm strip to hospital.

KEY POINTS

- A 12-Lead EKG should be performed on any patient with a complaint that may be cardiac in origin.
- Protect the patient's modesty.
- The 12-Lead ECG should be acquired prior to medication administration (except oxygen) and extrication of the patient.
- If the patient is having an acute MI, contact the receiving hospital as soon as possible.
- The paramedic should give one copy of the12-Lead EKG to the ED physician / nurse immediately upon your arrival, and attach a second copy to the run report.
- EKG adhesive patches should remain on the patient for consistent lead placement with follow up EKGs, but should be removed before defibrillation patches are applied if necessary.
- The monitor should remain on the patient for continuous cardiac monitoring enroute.

TREATMENT DECISIONS ARE NOT TO BE BASED ON COMPUTERIZED EKG INTERPETATIONS

Any adult medical patient or patients of any age with a cardiac history, irregular pulse, unstable blood pressure, dyspnea, chest pain, medication administration, or venous access *must* be placed on a cardiac monitor, a 12 lead obtained, and transmitted to the emergency department. The transmission must include the patient's last name.

EMTS AND AEMTS ARE EXPECTED TO PLACE LEADS ON THE PATIENT TO OBTAIN AND TRANSMIT A 12-LEAD EKG TO THE HOSPITAL IN THE ABSENCE OF A PARAMEDIC.
EMT AND AEMTS ARE NOT PERMITTED TO INTERPET THE EKG.

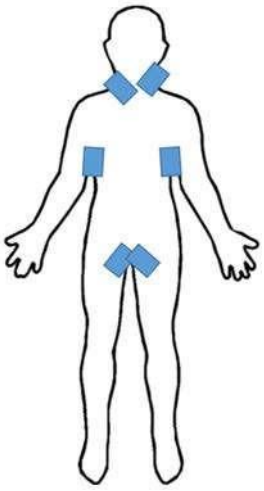
CARDIAC / ACLS

INDUCED HYPOTHERMIA (IH)

INDICATIONS	SIGNS AND SYMPTOMS	CONTRAINDICATIONS
・Patents who have experienced ROSC after Vfib, Vtach, or witnessed asystole	・Post cardiac arrest	・Pregnancy ・Traumatic Arrest ・Preexisting Hypothermia ・Known Hypovolemia

Patient is to be cooled by direct application of cooling devices to the patient.
Active cooling with cold saline is not permitted.

CHEMICAL COLD PACKS OR ICE PACKS
Place cold packs on the groin are on top of bilateral femoral circulation
Place cold packs in the axilla bilaterally
Place cold packs on neck bilaterally or cooling collar



CRYOCOLLAR
The Cryo Cooling System is a, single use device to induce mild cerebral therapeutic hypothermia. This system is composed of a unique collar with a specialized door that works in conjunction with the Excel Cryo Cooling Elements, properly aligning the Excel Cryo Cooling Element with the patient's carotid triangle. Heat is extracted from the blood as it passes through the arteries inducing mild hypothermia.

PROCEDURE
1. Place the collar on the person neck as you would any other C-Collar
2. Once the collar is properly placed on the patient, the Excel Cryo Cooling Element must be activated. (Manufacture supplied cold pack)
3. Once activated, open the collar door and insert the Excel Cryo Cooling Element
4. The Excel Cryo Cooling Element should be replaced every 20 minutes.
5. Cooling should be maintained throughout transport of the ROSC patient

CARDIAC / ACLS

SYCHRONIZED CARDIOVERSION (MANUAL)

INDICATIONS	SIGNS AND SYMPTOMS	CONTRAINDICATIONS
• Unstable patient with a tachydysrhythmia • Patient is not pulseless	• Symptomatic narrow complex tachycardia • Symptomatic wide complex tachycardia • Grossly symptomatic atrial fibrillation • Grossly symptomatic atrial flutter	• A pulseless patient

PARAMEDIC Intervention

PROCEDURE

1. Apply limb leads
2. Consider sedation with versed or valium prior to administering synchronized cardioversion.
3. Attach defibrillation pads to the patient and monitor.
4. Push the SYNC button.
5. Observe the EKG rhythm. Confirm that the triangle sense marker appears near the middle of each QRS complex.
6. If the sense markers do not appear or they are displayed in the wrong location adjust the EKG size or select another lead.
7. The location of the sense marker may vary slightly with each QRS complex.
8. Rotate the ENERGY SELECT dial and select the proper setting as required by protocol.
9. Push the CHARGE button.
10. Make sure that everyone is clear of the patient.
11. After confirming that the monitor is still in SYNC mode, push and hold the SHOCK button until it discharges.
12. Reassess the patient and the cardiac rhythm. Repeat steps 4 - 9 as indicated by the protocol.

KEY POINTS

- When attempting to cardiovert, double check to make sure that the SYNC button is ON.
- Monitor the patient for ventricular fibrillation.
- If the patient converts into ventricular fibrillation or pulseless ventricular tachycardia, reassess the patient. Immediately defibrillate the patient at and refer to the Ventricular Fibrillation / Pulseless Ventricular Tachycardia Protocol and treat accordingly.
- If the SHOCK button is not pushed, the energy will be internally removed. It will be necessary to recharge to the indicated energy setting.
- When synchronized cardioverting a patient, there may be a delay from when the button is depressed to when the shock is delivered.
- Use EXTREME caution in patients with rapid atrial fibrillation or atrial flutter. Cardioversion of these patients is associated with high risk of embolus. Prehospital cardioversion of these patients is reserved for life-threating situations only.

CARDIAC / ACLS

TRANSCUTANEOUS PACING

INDICATIONS	SIGNS AND SYMPTOMS	CONTRAINDICATIONS
• Patients with symptomatic bradycardia after no response to atropine or primary treatment if unable to start an IV • Pediatric patients requiring external transcutaneous pacing require the use of pads appropriate for pediatric patients per the manufacturer's guidelines	• Adult bradycardia with severe hemodynamic compromise. • Symptomatic bradycardia that is refractory to pharmacological intervention. • Symptomatic 2nd or 3rd degree heart block	• Hypothermia • Pediatric bradycardia

PARAMEDIC Intervention

PROCEDURE

1. Apply limb leads
2. Consider sedation with Midazolam (Versed) or Lorazepam (Ativan) prior to administering transcutaneous pacing.
3. Attach defibrillation / pacing pads to the patient and monitor.
4. Place the defibrillation / pacing pads anterior-posterior or anterior-lateral.
5. Do not place the pacing patches over the sternum, spine or nipple.
6. Push the PACER button.
7. Push the RATE button.
8. Push the CURRENT button and increase the milliamps until you reach electrical and mechanical capture (assess the carotid or femoral pulses to confirm mechanical capture).
9. Hold the PAUSE button to stop the pacing so you can assess the patient's underlying rhythm.
10. Push the EVENT button to quick log CPR, medication administration, ETT placement etc.

Start at pacing rate of 60 beats per min (PPM on device).
Increase milliamps until electrical capture, verify mechanical capture with femoral or radial pulses, blood pressure, and capnography.
Increase milliamps a minimum of 10 to maintain capture during transport.

KEY POINTS
• The pacing will begin immediately once the pacer is turned on. • Monitor the patient for ventricular fibrillation.

MEDICAL

BLOOD GLUCOSE ANALYSIS

INDICATIONS	SIGNS AND SYMPTOMS	CONTRAINDICATIONS
• Patients with suspected hypoglycemia (diabetic emergencies, change in mental status, bizarre behavior, etc.) • Medical alert tags • Drug / toxic ingestion	• Decreased mental status • Change in baseline mental status • Bizarre behavior • Hypoglycemia (cool, diaphoretic skin) • Hyperglycemia (warm, dry skin; fruity breath; Kussmaul breathing; signs of dehydration)	• Insufficient training

PROCEDURE

1. Gather and prepare equipment.
2. Blood samples for performing glucose analysis shall be obtained from finger stick.
3. Place correct volume of blood in / on the glucometer per the manufacturer's instructions.
4. Time the analysis as instructed by the manufacturer.
5. Document the glucometer reading and treat the patient as indicated by the analysis and protocol.
6. Repeat glucose analysis as indicated for reassessment after treatment and as per protocol.

KEY POINTS
• Exam: Mental Status, HEENT, Skin, Heart, Lungs, Abdomen, Back, Extremities, Neuro • Be aware of AMS as presenting sign of an environmental toxin or Haz-Mat exposure and protect personal safety. • It is safer to assume hypoglycemia than hyperglycemia if doubt exists. • Do not let alcohol confuse the clinical picture. Alcoholics frequently develop hypoglycemia. • Low glucose (< 70), normal glucose (70 - 120), high glucose (> 250) • Consider restraints if necessary for patient's and / or personnel's protection per the restraint procedure. • Glucometers must be calibrated and coded for the appropriate glucose strips following manufacturer and department recommendations or policies. • Know the read range of the device you are using. “LO” and “HI” values vary between manufactures.

MEDICAL

MEDICATION INJECTIONS

INDICATIONS	SIGNS AND SYMPTOMS	CONTRAINDICATIONS
• When medication administration is necessary and the medication must be given via the SQ or IM route or as an alternative route in selected medications	• Determined per protocol	• Allergy to medication per protocol • Aspiration of blood

INTRAMUSCULAR – EMT MAY PROVIDE IM INJECTION BY APPROVED AUTOINJECTOR ONLY

PROCEDURE

1. Receive and confirm medication order or perform according to standing orders.
2. Prepare equipment and medication expelling air from the syringe.
3. Explain the procedure to the patient and reconfirm patient allergies.
4. The possible injection sites for intramuscular injection include the arm, buttock and thigh. Injection volume should not exceed 1 ml for the arm and not more than 2 ml in the thigh or buttock.
5. The thigh should be used for injections in pediatric patients and injection volume should not exceed 1 ml.
6. Expose the selected area and cleanse the injection site with alcohol.
7. Hold intramuscular syringe at 90 degree angle, with skin pinched and flattened.
8. Insert the needle into the skin with a smooth, steady motion.
9. Aspirate for blood.
10. Inject the medication.
11. Withdraw the needle quickly and dispose of properly without recapping.
12. Apply pressure to the site.
13. Monitor the patient for the desired therapeutic effects as well as any possible side effects.
14. Document the medication, dose, route, and time on the patient care report (PCR).

SUBCUTANEOUS

PARAMEDIC Intervention

AEMT Intervention

PROCEDURE

1. Receive and confirm medication order or perform according to standing orders.
2. Prepare equipment and medication expelling air from the syringe.
3. Explain the procedure to the patient and reconfirm patient allergies.
4. The most common site for subcutaneous injection is the arm. Injection volume should not exceed 1 ml.
5. The thigh should be used for injections in pediatric patients and injection volume should not exceed 1 ml.
6. Expose the selected area and cleanse the injection site with alcohol.
7. Hold subcutaneous syringe at 45-degree angle.
8. Insert the needle into the skin with a smooth, steady motion.
9. Aspirate for blood.
10. Inject the medication.
11. Withdraw the needle quickly and dispose of properly without recapping.
12. Apply pressure to the site.
13. Monitor the patient for the desired therapeutic effects as well as any possible side effects.
14. Document the medication, dose, route, and time on the patient care report (PCR).

MEDICAL PROCEDURES

MUCOSAL ATOMIZATION DEVICE (MAD)

INDICATIONS

- Used for atomizing topical solutions across the nasophyrangeal and oropharyngeal mucous membranes.
- For use when administering the following medications:

  - Lorazepam (Ativan) for seizures / sedation – AEMT / PARAMEDIC USE ONLY
  - Midazolam (Versed) for seizures / sedation - AEMT / PARAMEDIC USE ONLY
  - Naloxone (Narcan) for opiate overdoses – APPROVED FOR EMT USE
  - Fentanyl (Sublimaze) for analgesia - AEMT / PARAMEDIC USE ONLY

PROCEDURE

1. Disconnect MAD from the included syringe and/or retrieve a needless syringe.
2. Attach needle to syringe.
3. Fill syringe with the desired volume of solution and eliminate remaining air.
4. Remove needle and dispose of appropriately.
5. Connect the MAD to the syringe.
6. Place the MAD tip in the nostril or oropharyngeal cavity.
7. Compress the syringe plunger to spray atomized solution into the nasal or oropharyngeal cavity.
8. Re-use the MAD on the same patient as needed, then discard.

KEY POINTS

The following are some of the benefits of IN (Atomized) drug delivery for the patient and provider:

- Eliminated the risk of a contaminated needlestick to the EMS provider.
- Simple and convenient for the EMS provider.
- Less frightening for children.
- Disposable.
- Discomfort is minimized for the patient.
- Serum levels of many IN administered medications are comparable to injected medications and much improved over rectal and oral routes.

Studies have shown that the most effective method to deliver a medication through the IN route is to atomize it across the nasal mucosa. Atomized particles (10 to 50 microns) adhere to the nasal mucosa over a large surface area, preventing waste and improving absorption of the medication. Administer half the dose in each nostril to increase the surface area, and further improve absorption.

MEDICAL

ORTHOSTATIC BLOOD PRESSURE MEASUREMENT

INDICATIONS	SIGNS AND SYMPTOMS	CONTRAINDICATIONS
• Patient situations with suspected blood / fluid loss / dehydration • Patients > 8 years of age, or patients larger than the Broselow tape	• Abdominal Pain • Dizziness • Pregnancy • Syncope	• Prepare for patient being unsteady on feet

PROCEDURE

1. Assess the need for orthostatic blood pressure measurement.
2. Obtain patient's pulse and blood pressure while supine.
3. Have patient stand for one minute.
4. Obtain patient's pulse and blood pressure while standing.
5. If pulse has increased by 20 BPM or systolic blood pressure decreased by 20 mmHg, the orthostatic measurements are considered positive.
6. If patient is unable to stand, orthostatic measurements may be taken while the patient is sitting with feet dangling.
7. If positive orthostatic changes occur while sitting, DO NOT continue to the standing position.
8. Document the time and vital signs for supine and standing positions on the patient care report.
9. Determine appropriate treatment based on protocol.

MEDICAL

PAIN ASSESSMENT

INDICATIONS	SIGNS AND SYMPTOMS	CONTRAINDICATIONS
• Injury or illness requiring pain management.	• Abdominal pain • Chest pain secondary to infarction or angina • Acute urinary retention • Fractures • Severe burns • Kidney stones • Musculoskeletal trauma	• Altered level of consciousness • Head injuries • Chest injuries (blunt or penetrating) • Intoxication • Maxillofacial injuries • Psychiatric problems • Pediatric patients under 12 years of age • Pregnancy • Respiratory distress / failure

PROCEDURE

1. Initial and ongoing assessment of pain intensity and character is accomplished through the patient's self-report.
2. Pain should be assessed and documented during initial assessment, before starting pain control treatment, and with each set of vitals.
3. Pain should be assessed using the appropriate approved scale.
4. Two pain scales are available: the 0 - 10 and the Wong - Baker "faces" scale.
5. 0 - 10 Scale: the most familiar scale used by EMS for rating pain with patients. It is primarily for adults and is based on the patient being able to express their perception of the pain as related to numbers. Avoid coaching the patient; simply ask them to rate their pain on a scale from 0 to 10, where 0 is no pain at all and 10 is the worst pain ever.
6. Wong - Baker Faces scale: this scale is primarily for use with pediatrics but may also be used with geriatrics or any patient with a language barrier. The faces correspond to numeric values from 0-10. This scale can be documented with the numeric value or the textual pain description.

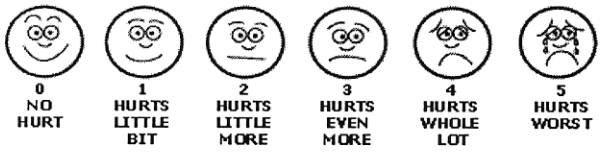
SEVERE PAIN MANAGEMENT

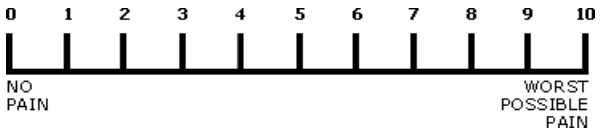
KEY POINTS

- Pain is an unpleasant sensory and emotional experience associated with actual or potential tissue damage.
- Pain is subjective (whatever the patient says it is).

The Wong-Baker Faces Pain Rating Scale

Designed for children aged 3 years and older, the Wong-Baker Faces pain rating scale is also helpful for elderly patients who may be cognitively impaired. If offers a visual description for those who don't have the verbal skills to explain how their symptoms make them feel.





To use this scale, you should explain that each face shows how a person in pain is feeling. That is, a person may feel happy because he or she has no pain (hurt), or a person may feel sad because he or she has some or a lot of pain.

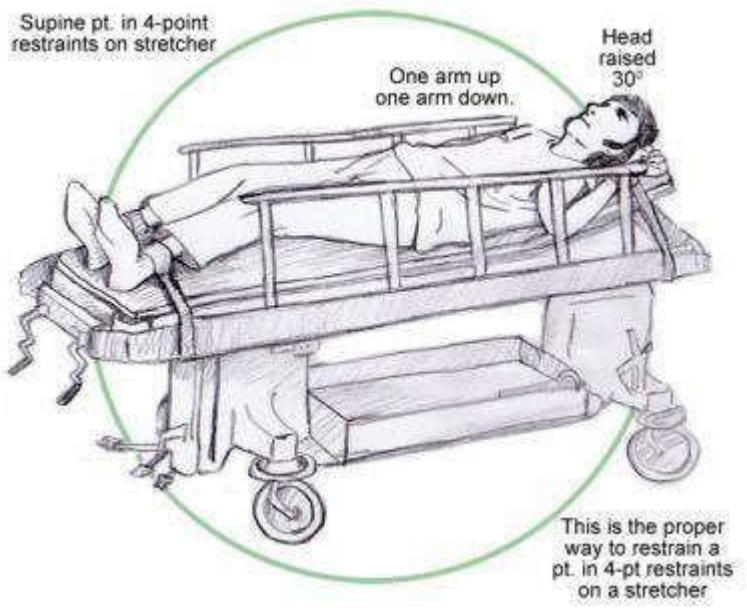
A Numerical Pain Scale

A numerical pain scale allows you to describe the intensity of your discomfort in numbers ranging from 0 to 10 (or greater, depending on the scale). Rating the intensity of sensation is one way of helping your doctor determine treatment. Numerical pain scales may include words or descriptions to better label your symptoms, from feeling no pain to experiencing excruciating pain. Some researchers believe that this type of combination scale may be most sensitive to gender and ethnic differences in describing pain.

MEDICAL

PATIENT RESTRAINT

INDICATIONS	SIGNS AND SYMPTOMS	CONTRAINDICATIONS
• Patient out of control and may cause harm to self or others. • Necessary force required for patient control without causing harm • Immobilization of an extremity for transport to secure medically necessary devices such as intravenous catheters	• Head Trauma • Alcohol / drug related problems • Metabolic disorders (i.e., hypoglycemia, hypoxia, etc.) • Psychiatric/stress related disorders	• None if warranted



KEY POINTS

- Soft restraints are to be used only when necessary in situations where the patient is potentially violent and may be of danger to themselves or others. EMS providers must remember that aggressive violent behavior may be a symptom of medical conditions.
- Patient heath care management remains the responsibility of the EMS provider. The method of restraint shall not restrict the adequate monitoring of vital signs, ability to protect the patient's airway, compromise peripheral neurovascular status or otherwise prevent appropriate and necessary therapeutic measures. It is recognized that evaluation of patient vital parameters requires patient cooperation and thus may be difficult or impossible.
- All restraints should have the ability to be quickly released, if necessary.
- Restraints applied by law enforcement (i.e., handcuffs) require a law enforcement officer to remain available to adjust restraints as necessary for the patient's safety. This policy is not intended to negate the need for law enforcement personnel to use appropriate restraint equipment to establish scene control.
- Patients shall not be transported in a face down prone position to endure adequate respiratory and circulatory monitoring and management.
- Restrained extremities should be monitored for color, nerve and motor function, pulse quality and place mask on patient for body secretion protection. May use TB mask, or non-rebreather if patient needs oxygen.
- Use supine or lateral positioning ONLY.
- Neurovascular checks are required every 15 minutes.
- DOCUMENT all methods used.

MEDICAL

NORMAL CHILDBIRTH

INDICATIONS	SIGNS AND SYMPTOMS	CONTRAINDICATIONS
• Imminent delivery with crowning	• Urge to push • Visible crowning	• See Gynecological Emergencies Protocol

PROCEDURE

1. Delivery should be controlled to allow a slow controlled delivery of the infant. This will prevent injury to the mother and infant.
2. Support the infant's head as needed.
3. Check the umbilical cord surrounding the neck. If it is present, slip it over the head. If unable to free the cord from the neck, double clamp the cord and cut between the clamps.
4. Suction the airway with a bulb syringe. Mouth then nose.
5. Grasping the head with hands over the ears, gently pull down to allow delivery of the anterior shoulder.
6. Gently pull up on the head to allow delivery of the posterior shoulder.
7. Slowly deliver the remainder of the infant.
8. Clamp the cord 2 inches from the abdomen with 2 clamps and cut the cord between the clamps.
9. Record APGAR scores at 1 and 5 minutes.
10. Follow the Neonatal Resuscitation Protocol for further treatment.
11. The placenta will deliver spontaneously, within 5-15 minutes of the infant. Do not force the placenta to deliver. Contain all tissue in plastic bag and transport.
12. Massaging the uterus may facilitate delivery of the placenta and decrease bleeding by facilitating uterine contractions.
13. Continue rapid transport to the hospital.

MEDICAL

STROKE TELEMEDICINE

FOR DEPARTMENTS EQUIPPED TO PROVIDE TELEMEDICINE

SUSPECTED STROKE BASED ON INITIAL ASSESMENT

BLOOD GLUCOSE PROCEDURE

COMPLETE STROKE ASSESSMENT PER STROKE / CVA PROTOCOL

Consider Alternate Diagnosis

Positive INITIAL Stroke Screen

Treat Per STROKE / CVA

Have Information Available

- Blood Glucose Level
- Vital Signs
- Last Known Normal
- Patient Name, Age, DOB
- Any Known TPA Exclusions

INITIATE VIDEO CALL WITH RECEIVING HOSPITAL
ACTIVATE STROKE ALERT
This Will Be Your Patient Report

Demonstrate Findings
MEND EXAM

Continue Treatment Per Protocol or Medical Direction

Negative INITIAL Stroke Screen

Have Information Available

- Blood Glucose Level
- Vital Signs
- Last Known Normal
- Patient Name, Age, DOB
- Any Known TPA Exclusions

INITIATE VIDEO CALL WITH RECEIVING HOSPITAL
This Will Be Your Patient Report

Demonstrate Findings
MEND EXAM

ACTIVATE STROKE ALERT
IF POSITIVE MEND EXAM

Continue Treatment Per Protocol or Medical Direction

Transport to Primary Stroke Center or Comprehensive Stroke Center

DEVICE USEAGE

Cincinnati Pre-Hospital Stroke Assessment Conducted on Scene Move Patient to Ambulance

Initiate Video Call Select CISCO JABBER App from Home Screen

Select receiving hospital from contacts

Hold Tablet Vertical and with Screen Toward Patient, Camera UP

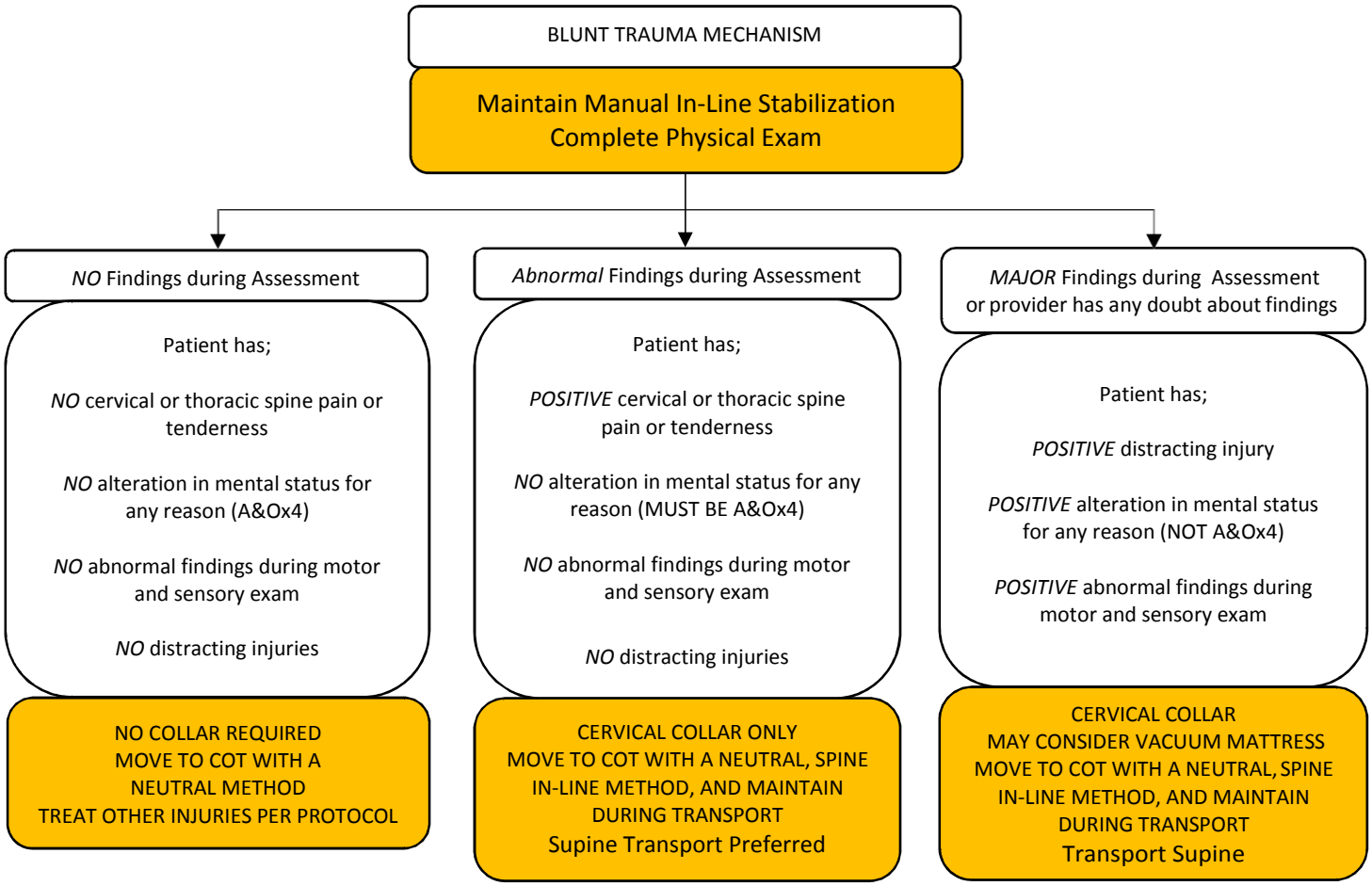
When Call is Answered, A Small Box Appears in the Lower Corner. This is the View the Hospital Sees. Direct Tablet and Viewer(s) to Area

Being Assessed. When Completed with Assessment and ETA, End Video Call

If video call dropped or unavailable, make hospital contact by standard radio or telephone methods

EMT Intervention | AEMT Intervention | PARAMEDIC Intervention | MED CONTROL Consult

SPINAL MOTION RESTRICTION – ADULT *AND* PEDIATRIC



KEY POINTS

- Vacuum mattresses may be used for major findings patients, but backboards alone may be harmful. Neutral placement on a cot mattress or a Reeves stretcher with a cervical collar is sufficient if a vacuum mattress unavailable.
- Backboards and KED's can still be used for extrication.
- If a backboard is used for extrication, the patient may be left on the board during transport as situationally required.
- If a vacuum mattress is used, place a sheet over the mattress prior to placement of the patient on the device.
- If a vacuum mattress is used, a backboard may be used underneath to provide additional support as required.
- Never leave patients alone if they are collared and supine. Be prepared to turn the patient while maintaining manual in line stabilization of the spine if the patient begins to vomit to maintain their airway.
- Penetrating trauma does not require cervical motion restriction unless there is evidence of focal neurological deficits.
- Document thoroughly the decision process and the assessment findings for treatment decision(s).
- Patients shall not be aided to stand then sit on a backboard during extrication. Non-ambulatory patients shall be properly extricated to a backboard or with the use of a KED.
- Mental Status (AVPU), Glasscow Coma Scale (GCS), and thorough documentation of Motor, Sensory, and Pulses (MSP'S) are required to support treatment decisions.
- Mental status defects despite origin will be treated as equal, whether drug, alcohol, traumatic, chronic brain dysfunction, or otherwise

TRAUMA

HELMET REMOVAL

REMOVAL OF HELMET	LEAVE HELMET IN PLACE
• Inability to access, assess and maintain airway and breathing • Improperly fitted helmet allowing for excessive head movement within helmet • Proper C-spine alignment and immobilization cannot be achieved • Cardiac arrest • EMTs are trained in technique	• Helmet fits well with little or no movement of head in helmet • No impending airway or breathing problems • Removal may cause further injury • Proper C-spine alignment and immobilization can be achieved with helmet in place • There is no interference with the ability to assess and reassess airway and breathing

KEY POINTS

Helmet Types:

1. Sport (Football, Ice Hockey, Field Hockey, Fencing, Baseball)
    - Typically open anteriorly
    - Easier to access airway
    - If shoulder pads are used in conjunction with helmet and helmet is removed, then shoulder pads need to be removed simultaneously for proper C-spine alignment.

2. Motorcycle / Bike / Skateboarding
    - When full-faced, airway is harder to access and maintain.
    - Face shield may be removed for airway access.

SPORTS HELMETS PROCEDURE:

1. Most fit athlete tightly, especially football. They should be left in place.
2. All are equipped to have face piece removed separate from helmet. In most cases, removal of facemask is all that is needed, as the alignment of c-spine can be done with shoulder pads and helmet in place.
3. Removal of facemask may be done by cutting snubber straps that hold it in place to access airway.

Removal:

- If helmet must be removed due to unusual circumstances, at least 4 people are needed.
- Shoulder pads need to simultaneously be removed. (When shoulder pads are involved is to use forearms to stabilize helmet and place hands at base of neck grasping the shoulder area).
- While maintaining manual c-spine, Helmet's inside face pads may be loosened by use of a tongue blade to unsnap them with a twisting motion. Then cut the shoulder pads laces and straps and all shirts and jerseys from end of sleeve to center to allow for quick removal.
- Lift patient flat up for removal of equipment. Helmet should be grasped and tilted slightly to remove – DO NOT SPREAD SIDES OR BACK EDGE OF HELMET, WILL IMPINGE UPON NECK.
- At same lift, pull off shoulder pads and clothing.
- Lower patient down and apply c-collar.

MOTORCYCLE / BIKE / SKATEBOARDING HELMETS PROCEDURE:

1. Usually do not fit tightly and may allow movement of head inside helmet.
2. If head can move, no c-spine immobilization is possible.
3. Some have separate face piece that can be moved for airway access.
4. Some have full face design that is not moveable where chin section is a rigid continuation of the helmet.
5. C-spine alignment difficult due to no shoulder padding. Must create pad to form straight alignment.
6. If unable to secure c-spine of airway, the helmet should be removed at the scene.

Removal:

- Take eyeglasses off before removal of the helmet.
- One EMT stabilizes the helmet by placing hands on each side of the helmet with fingers on mandible to prevent movement.
- Second EMT removes any straps by cutting them.
- Second EMT places one hand on the mandible at the angle of the jaw and the other hand posteriorly at the occipital region.
- The EMT holding the helmet pulls the sides of the helmet outwards away from the head and gently slips the helmet halfway off and stops.
- The EMT maintaining stabilization of the neck repositions hold by sliding the posterior hand superiorly to secure to head from falling back after complete helmet removal.
- Helmet is then completely removed.

BLEEDING / HEMORRHAGE CONTROL

TOURNAQUET

INDICATIONS

- The tourniquet is a device which is used for life threatening appendage hemorrhage that cannot be controlled with direct pressure and conventional bandaging techniques.

PROCEDURE

1. Place the device around the injured appendage above the level of bleeding. Place two tourniquets around lower extremities, one above the other.
2. Pull strap tight.
3. Turn windlass rod or knob to tighten to control bleeding.
4. Monitor the site, distal pulses should be absent if properly tightened.

1

Apply tourniquet proximal to the bleeding site. Route the band around the limb and pass the tip through the inside slit of the buckle. Pull the band tight.

2

Pass the tip through the outside slit of the buckle. The friction buckle will lock the band in place.

3

Pull the band very tight and securely fasten the band back on itself.

4

Twist the rod **until bright red bleeding has stopped and the distal pulse is eliminated.**

5

Place the rod inside the clip; locking it in place. **Check for bleeding and distal pulse.** If bleeding is not controlled, consider additional tightening or applying a second tourniquet proximal side by side to the first and reassess.

6

Secure the rod inside the clip with the strap. **Prepare the patient for transport and reassess.** Record the time of application.

KEY POINTS

- Apply directly to the skin 2-3 inches above wound.
- A distal pulse check should be accomplished. If a distal pulse is still present, consider additional tightening of the tourniquet or the use of a second tourniquet side by side and proximal to the first, to eliminate the distal pulse.
- Apply two tourniquets to lower extremity wounds. Tighten both.
- Expose and clearly mark all tourniquet sites with the time of tourniquet application.
- Use tourniquets to control life-threatening external hemorrhage that is possible to apply a tourniquet to for any traumatic amputation.

BLEEDING / HEMORRHAGE CONTROL

iT CLAMP

INDICATIONS

- The ITClamp50 device is indicated for use as an acute skin closure device for short-term soft tissue approximation to inhibit severe bleeding in trauma wounds, lacerations, junctional bleeds, or surgical incisions.

PROCEDURE

1. Open the package by pulling forward on the outer tabs.
2. Remove the device from the package by lifting, taking care not to close the device until it has been applied to the wound.
3. If the device has inadvertently closed, push the side buttons inward with one hand, and pull the device open with the other hand.
4. Locate the wound edges (fig 1).
5. Align the device parallel to the length of wound edge. Position the needles about 1-2 cm (0.5-1 in.) from the wound edge on either side (fig 2).
6. Press the arms of device together to close the device. Device seal will break with pressure (fig 3).
7. Ensure the entire wound is sealed and bleeding stops (fig 4).
8. A gauze or compression wrap can be placed around the device on the wound to protect the device and increase pressure on the wound to limit hematoma expansion.

NOTE: More than one device may be required.

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FIGURE 1

FIGURE 2

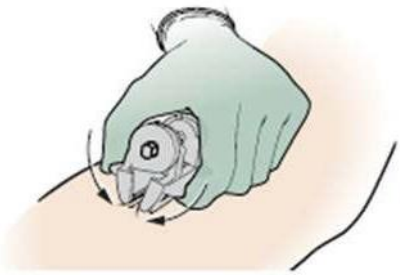


FIGURE 3

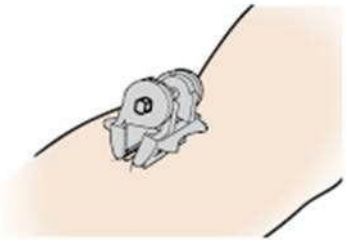


FIGURE 4

REMOVAL

(Two-handed operation):

1. Holding the device by the arms, press the device closed (fig 5).

FIGURE 5

2. While maintaining pressure on the arms, press the release buttons with your other hand (fig 6).

FIGURE 6

3. While pressing the release buttons, pull the arms to open the device and rotate the needles out of the wound (fig 7 and 8).

FIGURE 7

FIGURE 8

BLEEDING / HEMORRHAGE CONTROL

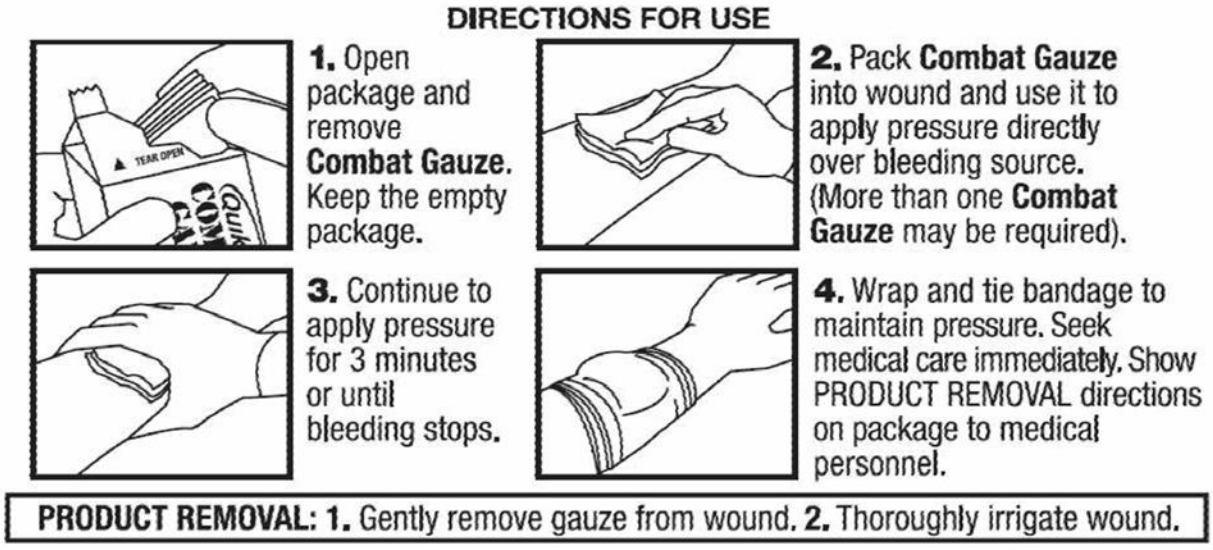
HEMOSTATIC GAUZE

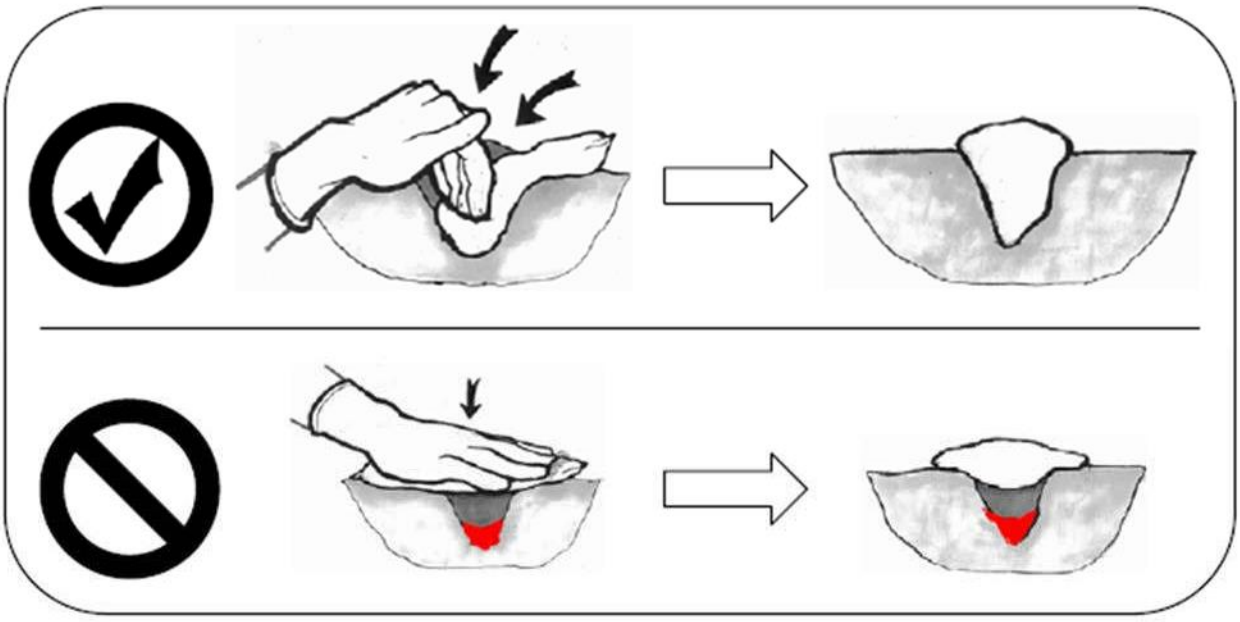
INDICATIONS

- Hemostatic gauze is indicated for supplemental bleeding control in addition to direct pressure where other methods of hemorrhage control are unable to be utilized due to location and direct pressure with standard gauze product has or is likely to fail.

PROCEDURE

1. Open hemostatic gauze package
2. Pack wound with contents
3. Apply pressure for at least 3 minutes
4. Apply standard bandaging over hemostatic gauze to maintain pressure
5. Take hemostatic gauze package with instructions for removal to ER



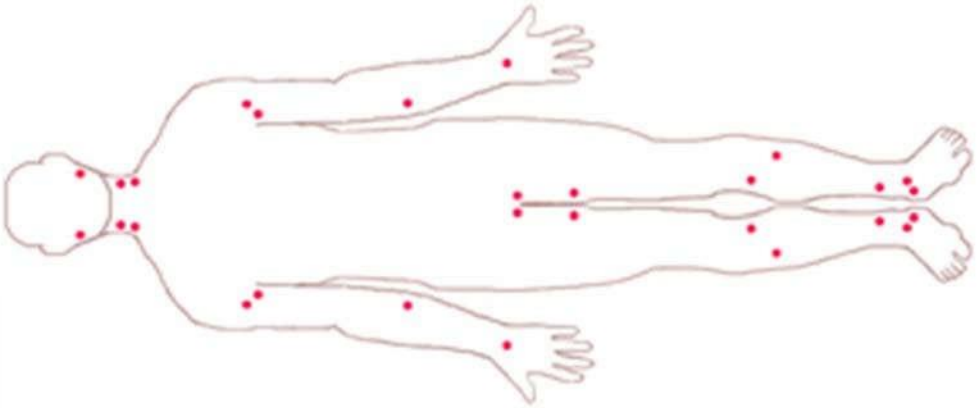


BLEEDING / HEMORRHAGE CONTROL

Direct pressure / Gauze

Placing pressure on the wound will constrict the blood vessels manually, helping to stem any blood flow. When applying pressure, the type and direction of the wound may have an effect, for instance, a cut lengthways on the hand would be opened up by closing the hand into a fist, whilst a cut across the hand would be sealed by making a fist. A patient can apply pressure directly to their own wound, if their consciousness level allows. Direct pressure can be used with some foreign objects protruding from a wound; padding is applied from each side of the object to push in and seal the wound - objects are never removed. Use available gauze products to cover wounds and roll gauze products and / or tape to provide continued pressure to wounds

Pressure points



The arterial pressure points

In situations where direct pressure and elevation are either not possible or proving ineffective the use of pressure points to constrict the major artery which feeds the point of the bleed is indicated. This is usually performed at a place where a pulse can be found, such as in the femoral artery. There is particularly high danger if constricting the carotid artery in the neck, as the brain is sensitive to hypoxia and brain damage can result within minutes of application of pressure. Pressure on the carotid artery can also cause vagal tone induced bradycardia, which can eventually stop the heart. Other dangers in use of a constricting method include rhabdomyolysis, which is a buildup of toxins below the pressure point, which if released back into the main bloodstream may cause renal failure.

Wound Packing

Step 1: Stop the bleeding. Now! Immediately apply direct pressure to the wound, using gauze, clean cloth, elbow, knee-whatever it takes to slow or stop the hemorrhage-until you have time to get out your wound packing supplies.

Step 2: Pack the wound with gauze. Tightly! Your goal is to completely and tightly pack the wound cavity to stop hemorrhage. Begin packing the gauze into the wound with your finger, while simultaneously maintaining pressure on the wound.

When no more gauze can be packed inside the wound, hold direct pressure on the wound for 3 minutes
It's critical that the gauze be packed as deeply into the wound as possible to put the gauze into direct contact with the bleeding vessel.

Step 3: Keep packing! The key to successful wound packing is that the wound be *very* tightly packed, applying as much pressure as possible to the bleeding vessel. This pressure against the vessel is the most important component of hemorrhage control. This explains why plain gauze (without an impregnated hemostatic agent), when tightly packed, is also quite effective.

Step 4: Apply very firm pressure to the packed wound for 3 minutes. This step pushes the packing firmly against the bleeding vessel and aids in clotting.

Step 5: Secure a snug pressure dressing and transport. After applying pressure for 3 minutes, place a snug pressure dressing over the wound. You may consider splinting or immobilizing the area, if possible because movement during transport can dislodge the packing and allow hemorrhage to restart.

PELVIC STABILIZATION DEVICE

INDICATIONS

- Suspected adult pelvic fractures and dislocations.

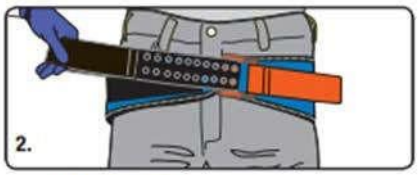
PROCEDURE

1. Unfold Pelvic Sling with white surface facing up.
2. Place white side of Pelvic Sling beneath patient at level of buttocks.
3. Firmly close Pelvic Sling by placing black Velcro side of flap down on the black Velcro strip (fold material and center at midline).
4. Grab orange handle on outer surface of flap and release from flap by pulling upward.
5. Firmly pull both orange handles in opposite directions to tighten the Pelvic Sling.
6. Keep pulling free handle until you feel or hear the buckle click.
7. As soon as the buckle clicks, maintain tension and firmly press orange handle onto the black Velcro strip.

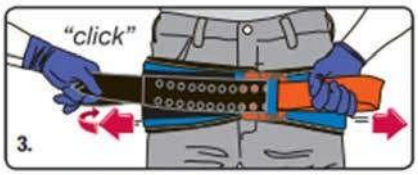
TO REMOVE PELVIC SLING

1. Lift orange free handle away from flap by pulling upward. Maintain tension and slowly allow Pelvic Sling to loosen.

Remove objects from patient's pocket or pelvic area. Place SAM Pelvic Sling II black side up beneath patient at level of trochanters (hips).



Place **BLACK STRAP** through buckle and pull completely through.



Hold **ORANGE STRAP** and pull **BLACK STRAP** in opposite direction until you hear and feel the buckle click. Maintain tension and immediately press **BLACK STRAP** onto surface of SAM Pelvic Sling II to secure. You may hear a second click as the sling secures.

KEY POINTS

1. Of 120,000 pelvic fractures reported in the U.S. in a typical year, 21,000 were pelvic ring fractures.
2. The mortality rate of pelvic fractures is reported to be more than 25%.
3. The combination of pelvic ring fractures with other injuries increases the mortality rate.
4. Stabilizing pelvic fractures reduces blood loss.
5. Victims are often confused or unconscious making it difficult to diagnose pelvic fractures without X-rays or CT scans. Physical examination is inaccurate approximately 90% of the time.
6. Trauma surgeons and emergency department physicians have recognized the benefits of circumferential pelvic compression.
7. At the time of initial evaluation, the exact type of facture is usually unknown. In some cases, too little force will not close or stabilize the fracture, in others, too much force can collapse the pelvic ring.
8. Because of the potentially devastating hemorrhage associated with pelvic fractures, standard first aid protocol has included applying some type of circumferential binder around the victim's hips.
9. Cannot be over-tightened. The force applied is safe and correct.
10. Standard size fits 95% of the population without cutting or trimming.

NOT RECOMMENDED FOR USE ON CHILDREN

PHARMACOLOGY

NITROUS OXIDE ADMINISTRATION

INDICATIONS	SIGNS AND SYMPTOMS	CONTRAINDICATIONS
• Injury requiring pain management • Patient able to self-administer	• Chest pain secondary to infarction or angina • Acute urinary retention • Fractures • Severe burns • Kidney stones • Musculoskeletal trauma	• Altered level of consciousness • Head injuries • Chest injuries (blunt or penetrating) • Intoxication • Maxillofacial injuries • Psychiatric problems • COPD (because of the 50% oxygen mixture) • Pediatric patients under 12 years of age • Pregnancy • Respiratory distress • Abdominal pain

PARAMEDIC Intervention

AEMT Intervention

PROCEDURE

1. Instruct patients to administer nitrous oxide to themselves by placing the mask tightly against their face and breathing deeply and slowly
2. Allow mask to fall away from face spontaneously when effects are felt
3. Check blood pressure, as nitrous oxide may cause BP to drop in some cases

KEY POINTS
• Nitrous oxide is a self-administered analgesic gas containing a mixture of 50% oxygen and 50% nitrous oxide. • Nitrous oxide is supplied in a carrying case containing two cylinders, one of nitrous oxide and one containing oxygen, with a mixing valve and supply tubing. These agents are mixed on administration to deliver a 50% concentration of each to the patient. • Nitrous oxide should be given to any patient who is alert and complaining of severe pain. • Only self-administration by the patient is to be used. • Upon administration of nitrous oxide, constantly monitor patient to see he does not fall asleep with mask in place. • The side effects of nitrous oxide, in addition to analgesia, include light-headedness, drowsiness, and very occasionally nausea and vomiting. Changes in heart rate and respiratory rate are minimal. • Nitrous oxide and oxygen are both non-flammable gases, but both support combustion. For this reason, do not use nitrous oxide in areas where there is a combustion hazard.

There is an increased risk of liver cancer and birth defects to individuals who are exposed repeated applications of nitrous oxide. For this reason nitrous oxide should be used in a well-ventilated environment.

SPECIAL PROCEDURES

TASERED PATIENT

ALL PATIENTS SUBJECTED TO TASER USE MUST BE TRANSPORTED TO THE HOSPITAL FOR MEDICAL EVALUATION.

INDICATIONS

- Any patient that was subjected to taser use.

PROCEDURE

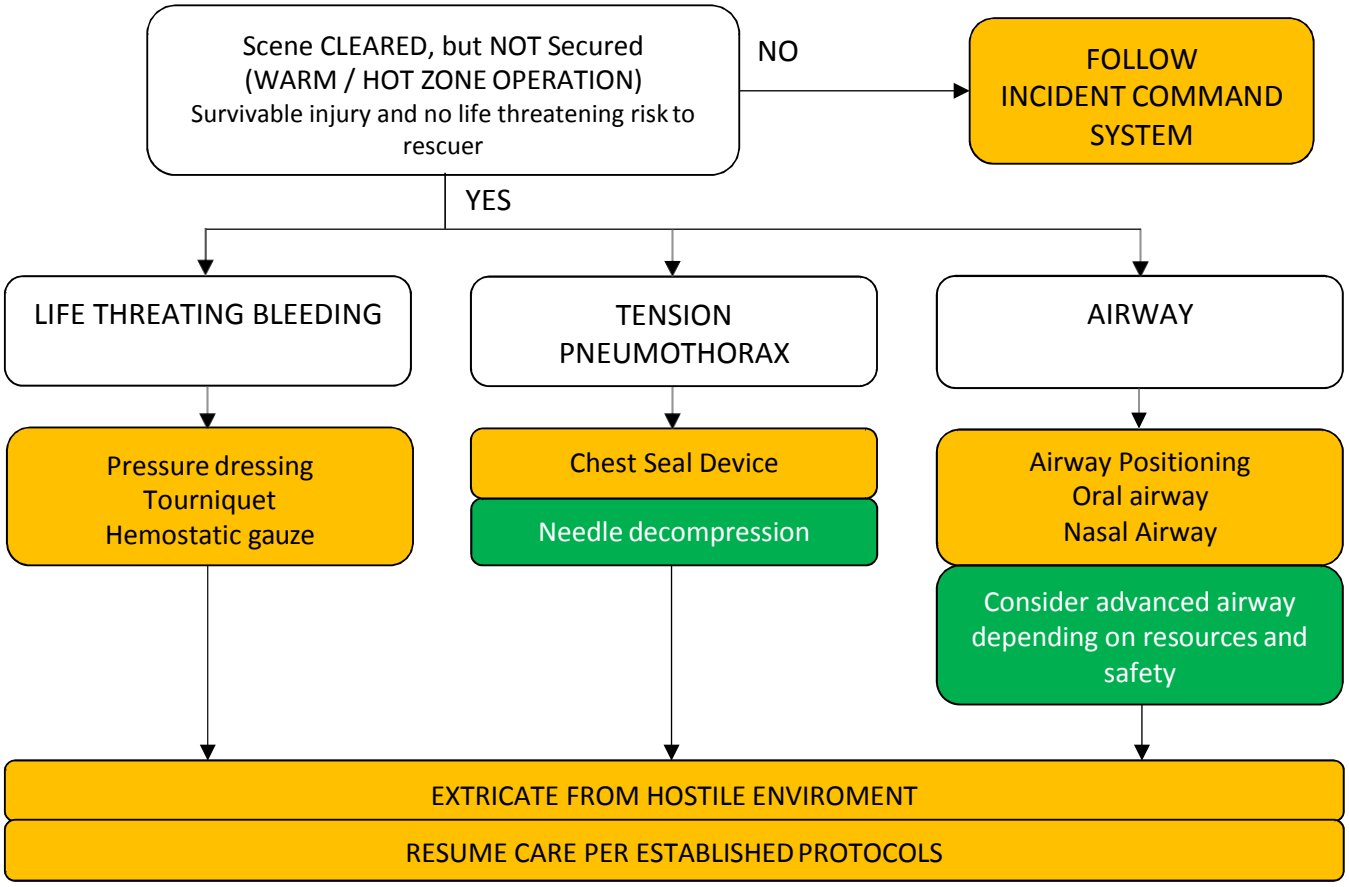
1. Follow Universal Patient Care Protocol.
2. Confer with law enforcement officer regarding the patient's behavior prior to EMS arrival.
3. Refer to the appropriate medical protocol if the patient has a life-threatening injury or medical illness or continues to be combative.
4. Determine the location of the Taser probes. Do not remove probes unless they interfere with patient care.
5. Perform a 12-Lead EKG and continuously monitor the patient's EKG. If the patient has a dysrhythmia, refer to the appropriate protocol.

KEY POINTS

- With the increased use and deployment of TASERs by our area's local law enforcement agencies, EMS providers must be aware of the appropriate medical assessment of the tasered patient. The TASER is designed to transmit electrical impulses that temporarily disrupt the body's central nervous system. Its Electro-Muscular Disruption (EMD) Technology causes an uncontrollable contraction of the muscle tissue, allowing the TASER to physically debilitate a target regardless of pain tolerance or mental focus.
- All patients subjected to taser use must be assessed for trauma and medical causes for the combative behavior.
- Always apply the cardiac monitor and obtain a strip for patients with irregular / abnormal pulse, elderly, pacer, AICD, known CAD, and excited delirium.
- The patient's vital signs must be reassessed every 5 minutes.
- Determine if the patient used any mind altering drugs, has a cardiac history, and the date of their last tetnus shot.
- The cord or wire may be cut, but leave the probes embedded in the patient.
- Removal of the probe. (Remove one at a time).
- Stabilize the skin surrounding the puncture site by placing one hand by where the probe is embedded.
- Pull the probe straight out from the puncture site in one fluid motion.
- TASER barbs that do penetrate the skin and are removed in the field are to be treated as "contaminated sharps" and are to be placed in an appropriate sharps container. Use small single use containers as law enforcement may wish to hold custody of the barbs after removal.

SPECIAL OPERATIONS

ACTIVE SHOOTER / DIRECT THREAT PROTOCOL



KEY POINTS

- To be used in direct threat when scene has been cleared but not secured (Warm Zone).
- Priority is to intervene on immediate life-threatening conditions.
- Direct Threat Care is the care rendered by the medical provider while the provider and the patient are still within an effective hostile environment. These protocols are intended to be a guideline to medical intervention and cannot replace sound judgment and situational awareness. Providers are also cautioned not to rely on these protocols as a sole source of information about patient care, but rather to tailor their therapy to the clinical situation.
- Expedite removal to indirect threat environment.
- There is no need to immobilize the cervical spine with only penetrating trauma to the extremities or trunk. Consider cervical immobilization for penetrating neck trauma.
- Once scene secured, return to standard protocols.
- Warm / Hot Zone terminology should be considered the same as Inner Ring terminology for the purpose of this protocol.

SPECIAL OPERATIONS

PATIENT DECONTAMINATION

INDICATIONS	SIGNS AND SYMPTOMS	PRECAUTIONS
• Any patient who may have been exposed to significant hazardous materials, including chemical, biological, or radiological weapons.	• Ambulatory / Non-Ambulatory • Exposure to toxic substances (dry, liquids, fumes) • Irritants • Emergent / Non- Emergent	• Dry chemicals must be wiped off prior to wet decontamination • Clothing must be removed • Maintain patient privacy as needed. • Gross Decon (Primary) • Fine Decon (Secondary)

PROCEDURE

1. In coordination with Hazardous Materials and other Emergency Management personnel, establish hot, warm and cold zones of operation.
2. Ensure that personnel assigned to operate within each zone have proper personal protective equipment.
3. In coordination with other public safety personnel, assure each patient from the hot zone undergoes appropriate initial decontamination. This is specific to each incident; such decontamination may include:
    - Removal of patients from Hot Zone
    - Simple removal of clothing
    - Irrigation of eyes
    - Passage through high-volume water bath (e.g., between two fire apparatus) for patients contaminated with liquids or certain solids. Patients exposed to gases, vapors, and powders often will not require this step as it may unnecessarily delay treatment and/or increase dermal absorption of the agent(s).
4. Initial triage of patients should occur after step #3. Immediate life threats should be addressed prior to technical decontamination.
4. Assist patients with technical decontamination (unless contraindicated based on #3 above). This may include removal of all clothing and gentle cleansing with soap and water. All body areas should be thoroughly cleansed, although overly harsh scrubbing which could break the skin should be avoided.
5. Place triage identification on each patient. Match triage information with each patient's personal belongings, which were removed during technical decontamination. Preserve these personnel affects for law enforcement.
6. Monitor all patients for environmental illness.

8. Transport patients per local protocol.

Notify Hospital EARLY of contaminated patients; assure time for mobilization of Hospital Emergency Response Team (H.E.R.T) or other resources.

NERVE AGENT EXPOSURE KIT

ENSURE SCENE SAFETY AND PROPER PPE

UNIVERSAL PATIENT CARE PROTOCOL

Obtain history of exposure
Observe for specific toxidromes
Initiate triage and / or decontamination as indicated

Assess for presence of major or minor symptoms

MINOR SYMPTOMS
(Self Treatment)
Salivation
Lacrimation
Visual Disturbances

DuoDote x 1 – 2 sets
IM Rapidly

Monitor for appearance of major symptoms

SLUDGEM
SALVIATION
LACRIMATION
URINATION
DEFICATION
GASTROINTESTINAL DISTRESS
EMESIS
MUSCLE TWITCHING

MAJOR SYMPTOMS
(Buddy Treatment)
Altered LOC
Seizures
SOB
Respiratory Arrest

DuoDote x 3 sets
IM Rapidly

If Seizures:
DIAZEPAM (VALIUM)
Auto-Injector IM

If Continued Seizures:
LORAZEPAM (ATIVAN)
1 - 2 mg IV / IO / IN / IM
Or
MIDAZOLAM (VERSED)
2 mg IV / IO or 5 mg IN / IM

If Continued SLUDGEM Symptoms:
ATROPINE
2 mg IV / IM
q 5 minutes until symptoms resolved

TRANSPORT to appropriate facility
CONTACT receiving facility
CONTACT Medical Direction where indicated

SPECIAL OPERATIONS

NERVE AGENT EXPOSURE KIT

INDICATIONS	SIGNS AND SYMPTOMS	CONTRAINDICATIONS
• Nerve agent exposure (e.g., VX, Sarin, Soman, etc.) • For use of Fire, EMS, and Police personnel only	• Visual disturbances • Headache • Nausea / vomiting • Salivation • Lacrimation • Respiratory distress • Diaphoresis • Seizure activity • Respiratory arrest	• Vesicant exposure (e.g., Mustard Gas, etc.) • Respiratory irritant exposure (e.g., hydrogen sulfide, ammonia, chlorine, etc.)

KEY POINTS

- If Triage / MCI issues exhaust supply of Mark 1 kits or DuoDotes, use Atropine. Give 2 mg IM dose for patients greater than 90 pounds (>40kg).
- Follow local HAZMAT protocols for decontamination and use of personal protective equipment.
- For patients with major symptoms, there is no limit for atropine dosing.
- Carefully evaluate patients to ensure they not from exposure to another agent. (e.g., narcotics, vesicants, etc.)
- Each DuoDote auto injector contains both 600 mg of pralidoxime (2-PAM) and 2.1 mg of atropine
- Each valium auto injector contains 10 mg of valium
- If the presence of a nerve agent is suspected by presentation of symptoms of large numbers of patients, personnel should immediately contact dispatch to notify other responding units and command staff.
- The patient and / or crew must be decontaminated prior to transport. DO NOT transport a contaminated patient to a treatment facility.
- SLUDGEM: Salivation, Lacrimination, Urination, Gastrointestinal upset, Emesis, Muscle twitching.
- When the nerve agent has been ingested, exposure may continue for some time due to slow absorption from the lower bowel, and fatal relapses have been reported after initial improvement.
- If dermal exposure has occurred, decontamination is critical and should be done with standard decontamination procedures. Patient monitoring should be directed to the same signs and symptoms as with all nerve or organophosphate exposures.
- Continued medical monitoring and transport is mandatory.

BLOOD COLLECTION FOR EVIDENCE (OHIO SENATE BILL 58)

PARAMEDIC Intervention

AEMT Intervention

Ohio Senate Bill 58 became Law in September 2010.

The Law includes provisions for EMS providers to withdraw blood for evidence collection in cases involving allegations of operating watercraft or vehicles under the influence.

The language of the bill states that drawing blood "may" not "shall" be done for evidence collection "in the course of" providing emergency medical treatment.

- You CANNOT be dispatched or called by the police for the sole purpose of performing phlebotomy when the person does not require emergency medical treatment.
- The Paramedic/AEMT in charge can refuse law enforcements request to draw the blood if doing so would interfere with lifesaving patient care or outcome.
- The patient must consent to the collection of blood for evidence purposes.
  (If unconscious, Implied Consent applies)
- The Police Officer making the request must always be present during the draw and must provide the Paramedic/AEMT with the evidence collection kit.
- EMS Providers MUST use the evidence kit provided by law enforcement to obtain the blood samples for evidence.

APPENDIX #3: MEDICAL CONTROL

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Regional Protocol Participation

These protocols have been designed and reviewed by the Northeast Ohio Regional EMS Protocol advisory board. This protocol is intended to attempt to standardize, as much as possible, EMS care for the participating agencies despite hospital affiliation or locality.

The individual Medical Director for each participating agency reserves the right to allow whatever level of participation in this protocol they choose. Supply of medications and equipment is also at the discretion of the medical director and the EMS agency. EMS providers that have protocol for a situation, but do not have a therapy or intervention noted within at the election of the Medical Director, are not in violation of the protocol.

EMS LEVELS OF CERTIFICATION

These protocols recognize that there is a role for all levels of Emergency Medical Technician Certification. Not every function defined by the State of Ohio is approved under specific hospital Medical Directors. Patient care should always be delivered at the highest level of EMS available. All Provider levels must function within the State of Ohio EMS Scope of Practice for their Provider level. Every EMS Provider must be aware of the State of Ohio requirements for recertification, and each individual is responsible for personally fulfilling these requirements. Those seeking to fulfill National Registry of Emergency Medical Technician (NREMT) requirements may do so under their own individual responsibility.

Continuing Education certifications must be received through an approved Continuing Education site with a valid accreditation number noted and must be filed properly. Each EMS Provider must maintain his / her own personal records and be responsible for his / her own Continuing Education status.

EMS Provider problems will be addressed promptly and documented by the Medical Director in conjunction with the EMS Coordinator, Fire / EMS Chief. A plan to resolve identified problems will be implemented. The Medical Director has the right to remove an EMS Provider from actively functioning under their Medical Control, either temporarily or permanently.

EMS RECERTIFICATION REQUIREMENTS

Refer to the State EMS website for current requirements

EMT	ADVANCED EMT	PARAMEDIC
40 hours of CE which includes: ・ 6 hours of pediatric education ・ 2 hours of geriatric education ・ 8 hours of trauma training ・ 2 hours of trauma triage protocol / issues training (2 of the 8 hrs must be dedicated to local / issues training) *OR* State approved Refresher Course (including pediatric, geriatric and trauma requirements) *OR* Current NREMT Renewal Requirements ・ Current registration as an EMT with the NREMT on the expiration date of your Ohio certification will be recognized as having met the CE requirements for renewal. If opting for National Registry Renewal, all that is required is: ・ 2 hours of trauma / triage / issues training *OR* Exam in Lieu of CE (for all levels) This exam is similar to the exam for initial certification and can be taken during the last six months of your certification cycle. Contact the Division of EMS to obtain information on registering for this exam.	60 hours of CE which includes: ・ 8 hours of pediatric education ・ 4 hours of geriatric education ・ 8 hours of trauma training ・ 2 hours of trauma triage protocol / issues training (2 of the 8 hrs must be dedicated to local / issues training) *OR* State approved Refresher Course which satisfies 40 of the required 60 hours PLUS 20 additional hours of CE. *OR* Current NREMT Renewal Requirements ・ Current registration as an Advanced EMT with the NREMT on the expiration date of your Ohio certification will be recognized as having met the CE requirements for renewal. If opting for National Registry Renewal, all that is required is: ・ 2 hours of trauma / triage issues training *OR* Exam in Lieu of CE (for all levels) This exam is similar to the exam for initial certification and can be taken during the last six months of your certification cycle. Contact the Division of EMS to obtain information on registering for this exam.	86 hours of CE which includes: ・ 12 hours of pediatric education ・ 4 hours of geriatric education ・ 8 hours of trauma training ・ 2 hours of trauma triage protocol / issues training (2 of the 8 trauma hrs must be dedicated to trauma triage) *PLUS* 6 hours on emergency cardiac care; which may be satisfied by ACLS certification or equivalent course approved by EMS Board *OR* Forty-eight (48) hours Paramedic Refresher Course *PLUS* Forty-four (38) additional hours of CE *OR* Current National Registry Paramedic Renewal Requirements ・ Current registration as a Paramedic with the NREMT on the expiration date of your Ohio certification will be recognized as having met the CE requirements for renewal. If opting for National Registry Renewal, all that is required is: ・ 2 hours of trauma / triage / issues training. *OR* Exam in Lieu of CE (for all levels) This exam is similar to the exam for initial certification and can be taken during the last six months of your certification cycle. Contact the Division of EMS to obtain information on registering for this exam.

These numbers reflect Ohio State Requirements. Individual Medical Controls / Directors reserve the right to mandate additional educational hours and / or how the hours are obtained for functioning status in their system.

MEDICAL CONTROL / OVERVIEW

EMS COMMUNICATIONS

Direct communication by EMS with the receiving hospital is required to insure continuity of care and the accurate reporting of the incoming patient's condition, history, and treatment. A member of the prehospital care team must contact the receiving hospital at the earliest time that is conducive to good patient care.

If patient treatment advice is needed or if Medical Command orders are required per the protocol, Medical Command should be contacted. Medical Command will provide advice and any protocol orders deemed necessary in the care of the patient. If transporting the patient to another facility, EMS will then contact the receiving hospital as stated above.

PURPOSE

- To provide the receiving hospital and accurate, updated report of the patient's presentation and condition throughout prehospital care and transport.
- To allow the receiving hospital the opportunity to prepare for receiving the patient and continue necessary medical treatment.

PROCEDURE

1. Contact the receiving facility and provide the following information:
   - Type of Squad: EMT, Advanced EMT, Paramedic
   - Age and Sex of Patient
   - Type of Situation: Injury and / or Illness
   - Specific Complaint: Short and to the point (i.e., chest pain, skull fracture)
   - Mechanism: MVA / MCA / Fall
   - Vital Signs: B/P / Pulse / Resp. / LOC / EKG
   - Patient Care: Airway Management, Circulatory Support, Drug Therapy
   - General Impression: Stable / Unstable
   - Destination ETA

KEY POINTS

- When calling in a report it should begin by identification of the squad calling, and the level of care that can be provided to the patient (EMT, AEMT, Paramedic) and the nature of the call (who you need to talk with, physician or nurse).
- Whenever possible, the EMS provider responsible for the highest level of direct patient care should call in the report.
- Although all EMS Providers have been trained to give a full, complete report, this is often not necessary and may interfere with the physician's duties in the Emergency Department. Reports should be as complete but concise as possible to allow the physician to understand the patient's condition.
- It is not an insult for the physician to ask questions after the report is given. This is often more efficient than giving a thorough report consisting mostly of irrelevant information.
- If multiple victims are present on the scene, it is advisable to contact Medical Control with a preliminary report. This should be an overview of the scene, including the number of victims; seriousness of the injuries, estimated on-scene and transport times to the control hospital or possible other nearby facilities. This allows preparation for receiving the victims and facilitates good patient care.

EMS DOCUMENTATION

- An EMS patient care report form (PCR) will be completed accurately and legibly to reflect the patient assessment, patient care and interactions between EMS and the patient, for each patient contact which results some assessment component.
- Every patient encounter by EMS will be documented. Vital signs are a key component in the evaluation of any patient and a complete set of vital signs is to be documented for any patient who receives any assessment component.

PURPOSE

To document total patient care provided including:

- Care provided prior to EMS arrival.
- Exam of the patient as required by each specific complaint-based protocol.
- Past medical history, medications, allergies, living will / DNR, and personal MD.
- All times related to the event.
- All procedures / medications administered and their associated time and patient response.
- Notation of treatment authorization if any deviation from protocol / narcotic use.
- Reason for inability to complete or document any above item.
- A complete set of vital signs.

PROCEDURE

1. The patient care report should be completed as soon as possible after the time of the patient encounter.
2. All patient interactions are to be recorded on the patient care report form or the disposition form (if refusing care).
3. The patient care report form must be completed with the above information.
4. A copy of the patient care report form should be provided to the receiving medical facility.
5. A copy of the patient care report form is to be maintained by the EMS entity.
6. A copy of the patient care report shall be given to the Medical Director per his or her order.

KEY POINTS

- Document the contact and any on-line medical direction that is given. If you are not able to reach Medical Control, document attempts and cause for failure. Always describe the circumstances of the call. It is very important to document the mental status of the patient who refuses transport. Any refusal call should also note the contact of Medical Control.
- The times vitals are taken must be noted. Vitals should be repeated every five minutes or following any medical treatments. Vitals should be completely recorded. If a part of the set of vitals is omitted, the reason should be clearly given.
- Use accepted medical abbreviations and terminology. Do not make them up.
- Try to spell correctly. Become familiar with the correct spelling of commonly used words.
- The name, dose, route, time and effect should be documented for all medications.
- When standards are followed such as in a full arrest; every step should be documented. To write "ACLS protocols followed" is NOT SATISFACTORY.
- When providing copies of the run report for the Emergency Department and the Medical Director, be sure to include the EKG strips and second sheets.
- A complete set of times must be recorded on every report.

Documentation of Vital Signs:

1. An initial complete set of vital signs includes:
    - Pulse rate
    - Systolic AND diastolic blood pressure
    - Respiratory rate
    - Pain / severity (when appropriate to patient complaint)
    - Pulse Oximetry
2. Every attempt should be made to auscultate blood pressures, however if unable to auscultate, a palpated pressure will suffice.
3. If the patient refuses this evaluation, the patient's mental status and the reason for refusal of evaluation must be documented, along with an offer to return and transport. Medical Control contact should be noted.
4. Document situations that preclude the evaluation of a complete set of vital signs.
5. Record the time vital signs were obtained.
6. Any abnormal vital sign should be repeated and monitored closely.
7. All completed run reports should contain a summary statement regarding patient status upon transfer or care and to whom.

EMERGENCY DEPARTMENT RESTRICTIONS

This procedure provides for hospitals to notify the EMS departments of restrictions in their patient care capabilities. EMS departments should honor hospital restrictions unless doing so would endanger the patient.

RESTRICTION EXCEPTIONS

Regardless of what status a hospital has imposed on its facility, there are situations when EMS personnel should be able to transport a patient to the facility. These exceptions apply only to general hospitals having a full-service Emergency Department, and do not apply to specialty facilities. The type of cases that should always be accepted are as follows:

1. Patients in cardiac arrest due to either medical or traumatic causes.
2. Patients whose airways cannot be controlled by the EMS Personnel.
3. Patients felt to be in extremis to the point that diversion to another facility would dangerously delay needed immediate stabilization. This is based on the judgment of the EMS provider in charge.
4. Patients who typically receive their care at the hospital on diversion, and any diversion from that hospital would potentially jeopardize the expedient care of their emergency condition.
5. Unstable Pediatric patients
6. Unstable Obstetric patients
7. If the EMS provider in charge states that they are not comfortable diverting and states that transport must be made to the facility (due to family or physician situation / request).

ADVANCED DIRECTIVES - DO NOT RESUSCITATE (DNR) ORDERS

PURPOSE

- Ideally, any patient presenting to the EMS system with a *valid* DNR form shall have the form honored and CPR and ALS therapy withheld in the event of cardiac arrest.
- To honor the end of life wishes of the patient
- To prevent the initiation of unwanted resuscitation

PROCEDURE

Ohio's DNR Comfort Care is the only law encompassing EMS. For any other type of DNR documents, you must contact Medical Control and describe your circumstances to a Physician. The Physician will then decide if EMS should honor the DNR document or begin resuscitation of the patient. This includes the Ohio Living Will or any other document to this effect.

A DNR order for a patient of a healthcare facility shall be considered current in accordance with the facility's policy. A DNR order for a patient outside a healthcare facility shall be considered current unless discontinued by the patient's attending physician / CNP / CNS or revoked by the patient. EMS personnel are not required to research whether a DNR order that appears to be current has been discontinued.

STATE OF OHIO DNR COMFORT CARE GUIDELINES

Under its DNR Comfort Care Protocol, the Ohio Department of Health has established two standardized DNR order forms.

DNR Comfort Care – Terminally ill condition and in effect always.

DNR Comfort Care – Arrest – In effect in the event of a cardiac or respiratory arrest.

When completed by a doctor (or certified nurse practitioner or clinical nurse specialist, as appropriate), these standardized DNR orders allow patients to choose the extent of the treatment they wish to receive at the end of life. Ohio DNR Comfort Care can be identified by the original / copy of the State of Ohio DNR Comfort Care Form with official DNR logo, a DNR Comfort Care necklace, bracelet, or card with official DNR Comfort Care logo, the form must be completed with effective date and signed by the patient's physician. To enact the DNR Comfort Care, the patient must be experiencing a terminal event. EMS is not required to search for a DNR identification but should make a reasonable attempt to identify that the patient is the person named in the DNR Comfort Care form. Only the patient may request reversal of the DNR – Comfort Care.

CARE to be provided by EMS:

- Suction the airway
- Administer oxygen (Including CPAP and BiPap)
- Position for comfort
- Splint of immobilize
- Control bleeding
- Provide pain medication
- Provide emotional support
- Contact other appropriate health care providers (hospice, home health, attending physician or certified nurse)

Care NOT to be provided by EMS:

- Administer chest compressions
- Insert artificial airway
- Administer resuscitative drugs
- Defibrillate or cardiovert
- Provide respiratory assistance (other than described above)
- Initiate resuscitative IV
- Initiate cardiac monitoring

START BLS CARE AND CALL MEDICAL CONTROL IF PRESENTED WITH ANY DNR OR TREATMENT LIMITING PAPERWORK THAT DOES NOT FEATURE THIS LOGO

KEY POINTS

- The DNR order addresses your current state of health and the kind of medical treatment you and your physician decide is appropriate under current circumstances.
- A DNR order for a patient of a health care facility shall be considered current in accordance with the facility's policy. A DNR order for a patient outside a health care facility shall be considered current unless discontinued by the patient's attending physician / CNP / CNS or revoked by the patient. EMS personnel are not required to research whether a DNR order that appears to be current has been discontinued.
- It is imperative that a copy of or the original DNR / Comfort Care orders and identification accompany the patient wherever the patient goes. This will help to alleviate any confusion between health care givers at multiple sites.
- Be careful to check the patient's DNR order or DNR identification to determine if DNR - CC or DNR - CC Arrest.
- EMS is not required to search a person to see if they have DNR identification. If any of the DNR identifiers are in the possession of the patient, EMS must make a reasonable attempt to identify the patient by patient's name given by patient, family, caregiver or friend, health care worker who knows the patient, ID band from health care institution, driver's license or another picture I.D. If identification cannot be verified, the protocol should be followed.
- The patient may request resuscitation even if he / she is a DNR Comfort Care or DNR Comfort Care-Arrest Patient and / or the DNR Comfort Care Protocol has already been activated. The patient's request for resuscitation amounts to a revocation of any or all DNR Comfort Care Status and resuscitative efforts must be activated.
- If EMS has responded to an emergency by initiating any of the "will not perform actions" prior to confirming that the DNR Comfort Care Protocol must be activated, discontinue them when you activate the protocol. You may continue respiratory assistance, IV medications, etc., that have been part of the patient's ongoing course of treatment for their underlying condition or disease.
- If the patient's family or bystanders request or demand resuscitation for a patient for whom the DNR Comfort Care Protocol has been activated, do not proceed with resuscitation. Provide "will perform actions" as outlined above and try to help them understand the dying process the patient's initial choice not to be resuscitated.
- For EMS - The Ohio DNR Comfort Care law is the only one you (EMS) can honor on your own. For any other types of DNR documents, you must contact Medical Control and describe your circumstances to a Physician. The Physician will decide if you should honor the DNR document or begin resuscitation of the patient.
- Your living will document specifies in advance the kind of medical treatment you would want when you have a terminal illness or are in a permanently unconscious state and are no longer able to state your own wishes. It may not protect you from receiving CPR or other heroics. It *only* takes effect if you are in a certifiably terminal or permanently unconscious state, and emergency squad personnel cannot determine if you meet these conditions.
- A Health Care Power of Attorney is a document that names another person (usually a spouse, child, or other relative, and preferably someone who can understand your health status and make hard decisions on your behalf, if necessary) to make health care decisions for you whenever you are unable to do so yourself. It is not a DNR order, though it ordinarily would permit the person you appoint to agree to a DNR order for you, if you are unable to express your wishes at the time.
- The General Power of Attorney usually does not address health care issues and ends if you become disabled. You may have given your general power of attorney to someone to manage your financial affairs while you were on vacation or in the hospital. If you want a *general* power of attorney to continue, even if you become disabled, the document must state that it is a *durable,* or continuing, power of attorney. A health care power of attorney is a *durable* power; it continues even after you become disabled and appoints someone to carry out your health care wishes.

AEROMEDICAL TRANSPORT

Helicopter / Hospital Intercepts

If the patient requires specialized care, i.e. trauma center, and conditions allow for rapid transport to the nearest facility, a helicopter/hospital intercept can be initiated. When a helicopter / hospital intercept is initiated, the receiving hospital will be contacted, advised of request for helicopter intercept and minimum patient information of nature of call / chief complaint, and then the receiving hospital will direct the appropriate personnel to call for the helicopter.

Scene Flights

Scene flights will be organized with the cooperation of the responding EMS, fire, and law enforcement agencies. The following defines how the on-scene Incident Command (IC) should request an Air Ambulance to the scene of an emergency incident due to the mixture of public fire, EMS and private EMS systems.

- Recognize that it is safer to transport a patient from a well - lit, specially designed helipad than it is from an accident scene. EMS must be aware of the potential danger presented by poor lighting and potential scene hazards such as electrical wires or fire. Limit helicopter scene loading to the few cases where it is essential.
- Patient transportation via ground ambulance will not be delayed waiting for helicopter transportation. If the patient is packaged and ready for transport and the helicopter is not on the ground, or within a reasonable distance, the transportation will be initiated by ground ambulance.
- Time estimation should be made from the time the patient is ready for transport to arrival at the medical facility / the most appropriate trauma center. This should include aircraft response to the scene.
- The helicopter crew shall use their best judgment, at the suggestion of On - Line Medical Direction, and / or prior guidelines agreed to with Off - Line Medical Direction to determine the destination hospital.
- EMS should request aeromedical transport of the patient to the closest most appropriate hospital, based upon location, patient or family request, and the capabilities of the hospitals (i.e.: Trauma Center, OB Unit, etc.).

A request for aeromedical service response may be initiated when one or more of the following conditions exists:

- The patient's airway, breathing, or hemorrhage / circulation cannot be controlled by conventional means and the estimated arrival time of the air medical service is less than the time re- quired for ground transport to the nearest hospital.
- High priority patient with > 20-minute transport time.
- Entrapped patients > 10-minute estimated extrication time.
- Access hard to reach victims for whom the helicopter will have a special advantage.
- When enough other Mutual Aid resources are not available.
- Transport assistance in dispersing multiple, serious victims to more distant hospitals. It is recognized that in major emergency incidents, the local Emergency Management Plan permits no direct communications by squads with On-Line Medical Direction.
- To bring a physician and equipment resources to a patient who specifically needs these on the scene. (Physician not available on all helicopter services).
- Multiple casualty incident with red / yellow tag patients.
- Multi-trauma or medical patient requiring life-saving treatment not available in prehospital environment (i.e., blood transfusion, invasive procedure, operative intervention).
-

If a potential need for air transport is anticipated, but not yet confirmed, an air medical transport ser- vice can be placed on standby.

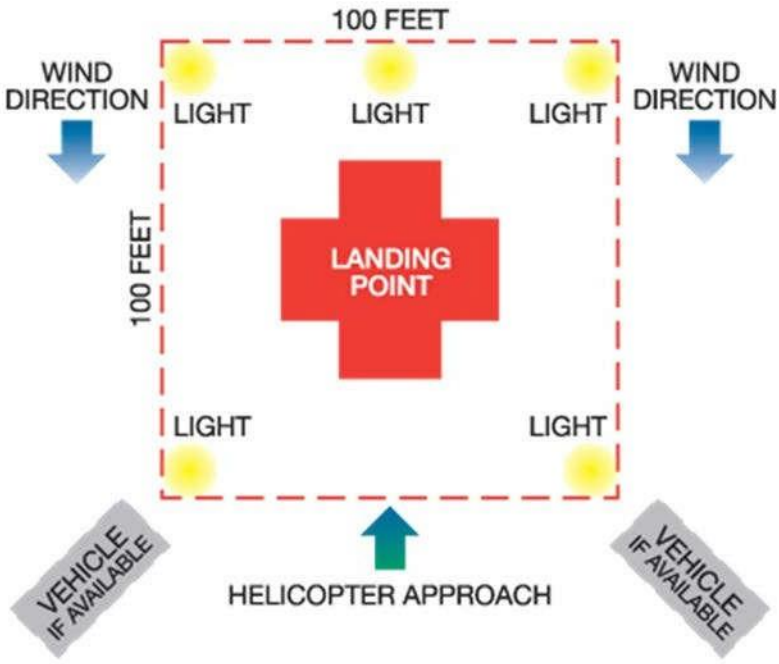
If the scene conditions or patient situation improves after activation of the air medical transport ser- vice and air transport is determined not to be necessary, paramedic or administrative personnel may cancel the request of air transport.

The minimum information which should be provided to the air medical transport service include:

a. Number of patients
b. Age of patients
c. Sex of patients
d. Mechanism of injury or complaint (MVC, fall, etc.)

AEROMEDICAL LANDING ZONE (LZ) SET UP PROCEDURE

1. LZ area should be free of obstructions. Eliminate these hazards:
   - Wires (surrounding the landing area and High-Tension power lines within 1/2 mile)
   - Towers (TV, Radio, Cellular within 1/2 mile)
   - Trees
   - Signs and Poles
   - Buildings
   - Vehicles
   - People
2. LZ area should be 100' X 100' if possible.
3. LZ should have as little of a slope as possible (less than 5 degrees).
3. LZ area should be a hard surface (concrete, asphalt, gravel, lawns, etc.).
4. LZ corners should be marked with highly visible devices (cones, flairs, strobes).
5. No debris on landing surface and within 100' of landing area.
6. Land the helicopter(s) a safe distance from the scene / patient.
7. Never point bright lights directly at the aircraft!
8. Maintain security of LZ while helicopter is present.
9. Landing Zone Briefing.
10. Type of LZ surface and size
11. How LZ is marked (cones, flairs, strobes, etc.).
12. All noted obstructions (see list above).



NEVER ASSUME A FLIGHT CREW WILL SEE A HAZARD
NEVER APPROACH A HELICOPTER UNLESS DIRECTED BY FLIGHT CREW

ALTERNATIVE TRANSPORT GUIDELINES

- Under the auspices of each individual EMS jurisdiction and the Medical director, this protocol provides an alternative transportation option for use by EMS personnel for patients that do not require emergent ambulance transportation.

PURPOSE

- To provide a suggested alternative transportation option to non-emergent patients who do not require emergent ambulance transportation.

PROCEDURE

Before advocating other means of transportation, EMS personnel must perform ALL the following:

1. Appropriate medical exam, including vital signs.
2. Obtain pertinent patient information.
3. Contact Medical Control

ALTERNATIVE TRANSPORT GUIDELINES

Patient complaints for which EMS personnel may recommend other means of transportation to medical care are limited to the following:

- Ear pain with no apparent object in ear
- Minor extremity lacerations with no gross loss of function
- Pain or burning on urination
- Penile discharge
- Minor vaginal discharge unless the patient is obviously pregnant or suspects she is pregnant
- Toothache without swelling or radiating jaw pain. Pt must be transported if evident of impending airway compromise
- Minor sore throats and colds
- Prescription refills
- Scheduled clinic appointments

KEY POINTS

EMS personnel MAY NOT decline transport, or in any way suggest alternative means of transportation for any of the following patients, complaints, or situations:

1. Less than 18 years of age
2. Suicide Attempt
3. Intoxication
4. Abuse or negligence of adult or child
5. Any situation where the crew's best judgement indicates transport

- Whenever presented with a medical complaint other than those listed in the Alternative Transport Guidelines section follow the appropriate treatment protocol for patient care as authorized in these protocols or contact Medical Control

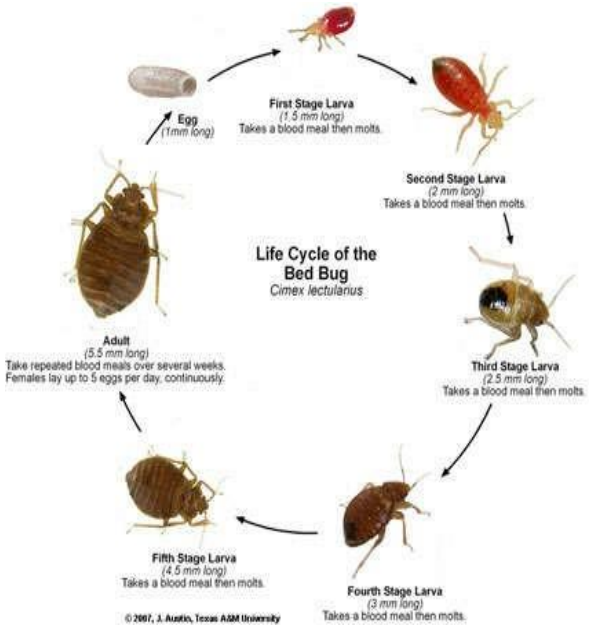
DO NOT DEVIATE FROM THE GUIDELINES SET FORTH IN THE ALTERNATIVE TRANSPORT POLICY

BED BUGS

PURPOSE:
To provide personal protection recommendations to EMS providers who are presented with a patient in a known or suspected bed bug infestation.

PROCEDURE:

- Take universal precautions.
- Take only needed equipment into the area of infestation to minimize exposure.
- Seal equipment in plastic bags when necessary to prevent exposure.
- Avoid sitting on beds or furniture. If you have to sit, do so on a hard surface.
- If you feel you have been infested, shower and seal clothes in a plastic bag.
- Place potentially exposed clothing in a hot dryer for 10 minutes to kill the bugs.
- Footies, caps, and gloves should be worn if available during care.
- Remove these items before entering the vehicle and place in a plastic bag.
- Dispose of trash bags containing used PPE equipment in sealed containers.
- Keep patients wrapped during transport as much as possible to prevent transfer of bed bugs to the ambulance, or locations other than the hospital room the patient is put into.
- Clean and disinfect the vehicle as soon as possible.
- Notify the receiving facility as soon as possible regarding potential for bed bug exposure.



CHILDREN WITH SPECIAL HEALTCHCARE NEEDS

GENERAL CONSIDERATIONS

1. Treat the ABC's first. Treat the child, not the equipment. If the emergency is due to an equipment malfunction, manage the child appropriately using your own equipment.

2. Children formerly cared for in hospitals or chronic care facilities are often cared for in homes by parents or other caretakers. These children may have self-limiting or chronic diseases. There are multitudes of underlying medical conditions that may categorize children as having special needs. Many are often unstable and may frequently involve the EMS system for evaluation, stabilization, and transport. Special needs children include technology-assisted children such as those with tracheostomy tubes with or without assisted ventilation, children with gastrostomy tubes, and children with indwelling central lines. The most serious complications are related to tracheostomy problems.

3. Children with Special Healthcare Needs (CSHCN) have many allergies. Children with spina bifida are often allergic to latex. Before treating a patient, ask the caregivers if the children are allergic to latex or have any other allergies. Stock latex-free equipment. (Some regularly used equipment that contains latex includes gloves, oxygen masks, IV tubing BVM, blood pressure cuff, IV catheters, etc.)

4. Knowing which children in a given area have special needs and keeping a logbook is encouraged.

5. Parents and caretakers are usually trained in emergency management and can be of assistance to EMS personnel. Listen carefully to the caregiver and follow his / her guidance regarding the child's treatment.

6. Children with chronic illnesses often have different physical development from well children. Therefore, their baseline vital signs may differ from normal standards. The size and developmental level may be different from age-based norms and weight / length-based resources used to calculate drug dosages. Ask the caregiver if the child normally has abnormal vital signs. (i.e. a fast heart rate or a low pulse oximeter reading)

7. Some CSHCN may have sensory deficits (i.e. they may be hearing impaired or blind) yet may have age-appropriate cognitive abilities. Follow the caregivers' lead in talking to and comforting a child during treatment and transport. Do not assume that a CSHCN is developmentally delayed.

8. When moving a special needs child, a slow careful transfer with two or more people is preferable. Do not try to straighten or unnecessarily manipulate contracted extremities as it may cause injury or pain to the child. Certain medical conditions will require special care. Again, consult the child's caregiver.

9. Caregivers of CSHCN often carry "go bags" or diaper bags that contain supplies to use with the child's medical technologies and additional equipment such as extra tracheostomy tubes, adapters for feeding tubes, suction catheters, etc. Before leaving the scene, ask the caregivers if they have a "go bag" and carry it with you.

10. Caregivers may also carry a brief medical information form or card. The child may be enrolled in a medical alert program whereby emergency personnel can get quick access to the child's medical history. Ask the caregivers if they have an emergency information form or some other form of medical information for their child.

11. Caregivers of CSHCN often prefer that their child be transported to the hospital where the child is regularly followed or the "home" hospital. When making the decision as to where to transport a CSHCN, take into account: local protocols, the child's condition, capabilities of the local hospital, caregivers' request, ability to transport to certain locations.

CHILD / ADULT / ELDER - DOMESTIC VIOLENCE / SEXUAL ASSAULT / TRAFFICKING

- Domestic violence is physical, sexual, or psychological abuse and / or intimidation, which attempts to control another person in a current or former family, dating, or household relationship. The recognition, appropriate reporting, and referral of abuse is a critical step to improving patient safety, providing quality health care, and preventing further abuse.
- Elder abuse is the physical and / or mental injury, sexual abuse, negligent treatment, or maltreatment of a senior citizen by another person. Abuse may be at the hand of a caregiver, spouse, neighbor, or adult child of the patient. The recognition of abuse and the proper reporting is a critical step to improve the health and well - being of senior citizens.
- Child abuse is the physical and mental injury, sexual abuse, negligent treatment, or maltreatment of a child under the age of 18 by a person who is responsible for the child's welfare. The recognition of abuse and the proper reporting is a critical step to improving the safety of children and preventing child abuse.

PURPOSE

Assessment of an abuse case based upon the following principles:

- Protect the patient from harm, as well as protecting the EMS team from harm and liability.
- Suspect that the patient may be a victim of abuse, especially if the injury / illness is not consistent with the reported history.
- Respect the privacy of the patient and family.
- Collect as much information and evidence as possible and preserve physical evidence.

PROCEDURE

1. Assess the / all patient(s) for any psychological characteristics of abuse, including excessive passivity, compliant or fearful behavior, excessive aggression, violent tendencies, excessive crying, behavioral disorders, substance abuse, medical non-compliance, or repeated EMS requests. This is typically best done in private with the patient.
2. Assess the patient for any physical signs of abuse, especially any injuries that are inconsistent with the reported mechanism of injury. The back, chest, abdomen, genitals, arms, legs, face, and scalp are common sites for abusive injuries. Defensive injuries (e.g. to forearms), and injuries during pregnancy are also suggestive of abuse. Injuries in different stages of healing may indicate repeated episodes of violence
3. Assess all patients for signs and symptoms of neglect, including inappropriate level of clothing for weather, inadequate hygiene, absence of attentive caregiver(s), or physical signs of malnutrition.
4. Assess all patients for signs of sexual abuse, including torn, stained, or bloody underclothing, unexplained injuries, pregnancy, or sexually transmitted diseases.
5. Immediately report any suspicious findings to the receiving hospital (if transported). If an elder or disabled adult is involved, also contact the Department of Social Services (DSS). After office hours, the adult social services worker on call can be contacted by the 911 communications center. EMS should not accuse or challenge the suspected abuser. This is a legal requirement to report, not an accusation. In the event of a child fatality, law enforcement must also be notified.

KEY POINTS

SEXUAL ASSAULT:

- A victim of a sexual assault has experienced an emotionally traumatic event. It is imperative to be compassionate and non-judgmental. Be sensitive to the victim. Expect a wide range of response to such an assault, depending upon social, cultural, and religious background.
- An abbreviated assessment may be indicated based on the patient's mental state.
- Your responsibility is patient care and *not detective work*. Questioning of the patient should be limited, because there is no need for the EMS provider to attempt to get a detailed description of the assault. That type of questioning by EMS can harm the investigation and should be left up to professional investigators. However, carefully document verbatim anything the patient says about the attack. DO NOT paraphrase. Based upon the patient's mental state, the following questions may be asked and documented: (Do not persist with questions.)
- What happened? (A brief description is acceptable)
- When did the attack occur?
- Did the patient bathe or clean up after the attack?
- If the patient changed his / her clothes, attempt to bring the clothes in a brown paper bag. DO NOT use a plastic bag.
- If the patient did not change his / her clothes, have the patient bring a change of clothes to the hospital (if possible).
- Transport the patient to an appropriate medical facility. Some hospitals can provide additional sexual assault care (SANE Program).

RED FLAGS TO CHILD ABUSE:
The presence of a red flag does not necessarily mean maltreatment. The suspicion of maltreatment is also based upon the EMS provider's observations and assessment.

Signs that parents may display may include (not all inclusive):

- Parent apathy
- Parent over reaction
- A story that changes or that is different when told by two different "witnesses"
- Story does not match the injury
- Injuries not appropriate for child's age
- Unexplained injuries

Signs that the child may display may include (not all inclusive):

- Pattern burns (donuts, stocking, glove, etc.)

- Child abuse / neglect are widespread enough that nearly all EMS providers will see these problems at some time. The first step in recognizing abuse or neglect is to accept that they exist and to learn the signs and symptoms.
- Initiate treatment as necessary for situation using established protocols.
- If possible remove child from scene, transporting to hospital even if there is no medical reason for transport.
- If parents refuse permission to transport, notify law enforcement for appropriate disposition. If patient is in immediate danger, let law enforcement handle scene.
- Advise parents to go to hospital. AVOID ACCUSATIONS as this may delay transport. Adult with child may not be the abuser.

AREAS FOR CONCERN

Please refer to the list below to see if any of the following apply to your patient. Also, look for changes or extremes in behavior.

Communication	Physical Condition	Social Condition	Condition of Home
~ Confused	~ Walks with difficulty	~ Lives alone	~ Needs repair
~ Disoriented	~ In wheelchair	~ Isolated from others	~ Bad odor
~ Forgetful	~ Dirty clothes	~ May be abused	~ Pets neglected
~ Can't hear well	~ Uncombed hair	~ May be exploited	~ Yard neglected
~ Can't speak well	~ Unshaven	~ May be neglected	~ Rubbish lying about
~ Can't speak English	~ Bruises, cuts, sores		

Economic Condition	Emotional Condition	
~ Confused about finances	~ Excessive reminiscing	~ Appears withdrawn
~ Has difficulty paying bills	~ Doesn't eat well	~ Appears depressed / cries easily
~ Can't afford food	~ Doesn't sleep well	
~ Can't afford medicine	~ Recent death in family	
~ Can't afford transportation	~ Appears nervous	

Substance abuse
~ Alcohol
~ Other drugs

CONCEALED WEAPONS GUIDELINES

While the possibility of finding a dangerous weapon on a scene has always existed, EMS personnel must be aware of current issues, which impose unique hazards upon them while performing their duties. These dangers present in many different ways, regardless of jurisdiction or call volume. Though not all accidents can be prevented, awareness must be made regarding the State of Ohio Concealed - Carry Laws.

Ohio's Concealed - Carry Law permits individuals to obtain a license to carry a concealed handgun in Ohio, including into private businesses if the licensee also carries a valid license and valid identification when carrying the concealed handgun. This law has been in effect since April 8th, 2004. Be aware that all patients may be carrying a dangerous weapon at all times, regardless of whether a permit has or has not been issued.

GUIDELINES

- Upon arrival at the scene, EMS personnel should directly ask patients if they are carrying a weapon prior to performing a physical assessment. If the patient is unable to answer, please proceed with caution.
- If a weapon is present on scene or with a patient, it is recommended that a Law Enforcement official be present to secure the weapon.
- The training of EMS personnel in the safe handling and use of firearms lock boxes in squads is a departmental and municipal decision.
- Caution is advised due to the many types of weapons and the handler's ability to modify them.
- When transporting a patient to the hospital, please inform the receiving facility that a weapon has been found on the patient. This will allow enough time for Security to safely secure the weapon and maintain possession of it until Law Enforcement arrives.

Example of a Standard Warning Sign

CONSENT AND REFUSAL OF CARE GUIDELINES

PURPOSE
To provide:

- Rapid emergency EMS transport when needed.
- Protection of patients, EMS personnel, and citizens from undue risk when possible.
- Method to document patient refusal of care.

PROCEDURES - ADULT Consent:

Two types apply;
Express Consent, where a conscious, oriented (to person, place and time) competent adult (over 18-year-old) gives the EMS provider permission to care for him. This may be in the form of a nod, verbal consent or gesture after the intended treatment has been explained.
Implied Consent occurs when a person is incapable of giving their permission for treatment due to being unconscious or incompetent. It is assumed that their permission would be given for any lifesaving treatments.

Refusal of Treatment:

Capacity: An adult with mental capacity to make informed decisions, may refuse treatment even after calling for help. The person must be informed that they may suffer loss of life, limb or severe disability if they refuse care and transport, and sign a Release indicating that they understand this. If the patient refuses to sign, a witness at the scene, preferably a relative should sign. Documentation of the events must be clearly made. It also must be documented on the run sheet that the person is oriented to person place and time, and a set of vital signs should be obtained if possible. An offer to return and transport them later should be made by EMS. Contact with Medical Control should be made if there is any question about the person's capacity to make decision. If the need for treatment is obvious, speaking directly to the Nurse or Physician may assist in convincing the patient to be transported.

For the purposes of this protocol, capacity will be defined as – Lucid and capable of making an informed decision, alert to Person, Place, Time, and Event.

Without Capacity: While an adult may refuse treatment, in some situations, their refusal may not have basis if they do not have to capacity to make an informed decision. In the following situations, the refusal of treatment may be without capacity.

- Patients showing altered mental status due to head trauma, drugs, alcohol, psychiatric illness, hypotension, hypoxia, or severe metabolic disturbances.
- Violent patients.
- Uncooperative minors.

PROCEDURES – MINORS consent

Consent to treat Minors:

Consent to treat Minors (under the age of 18 years in Ohio), must be obtained from the parent or guardian with two exceptions; there is need for life saving immediate treatment which should be given to the point of it being considered elective; or the Minor is emancipated; ie: married, living on their own, or in the armed forces and may give permission themselves.

Refusal of Treatment:

A minor might refuse to cooperate with the EMS crew, or the minor's parent or guardian may refuse to consent to necessary treatment of the minor. A minor under the age of 18 years may not refuse treatment in Ohio. Transport should be initiated unless the parent or legal guardian refuse treatment on behalf of the minor. A circumstance may occasionally arise where the patient is a minor and there is no illness or injury, yet EMS has been called to the scene. If the responsible person is not able to be at the scene, it is acceptable for contact to be made by telephone. If care and transport is refused by the parent or guardian, TWO witnesses should verify this, and this shall be documented and signed by both witnesses on the run sheet. A request may be made that the person come to the fire station as soon as possible, to sign the release. A second circumstance may occur when the minor patient really needs to be transported and the parent or guardian is refusing transport. In this case, action must be taken in the minor's best interest. This is described in the following section, refusal.

Refusal:

- Parent / guardian refuses to give consent for treating their child when the child's life or limb appears to be at risk.

- Parent / guardian refuses to give consent where child abuse is suspected.

- Suicidal patients – any age.

In all such cases, contact with Medical Control and a Physician is mandatory, as the patient may have a life - threatening problem and is in need of medical care. The involvement of the Police in these situations is often necessary and crucial. They may assist the EMS crew with transport as ordered by the On-line Physician. This is described in the Ohio Revised Code, Section 5122.10.

TRANSPORTATION

Destination Refusal:

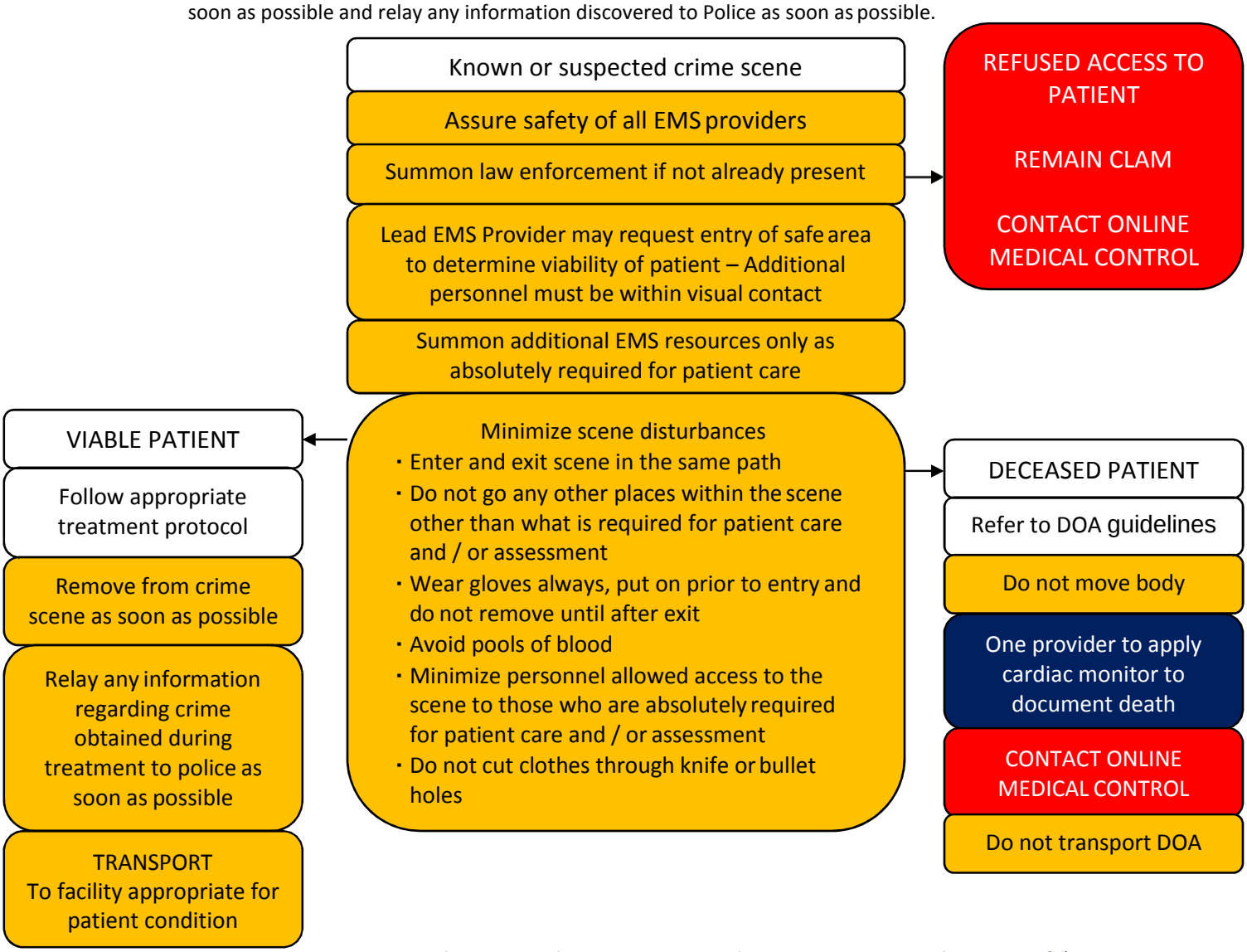
There may be EMS calls where the EMS unit is unable to transport patient to their destination of choice. If the competent patient refuses this, and is in stable condition, a private ambulance may be called to take the patient. The responding EMS unit must stand by until the private EMS providers arrive and assume care of the patient.

CRIME SCENE GUIDELINES

This guideline shall be used when law enforcement personnel advise EMS that they have responded to a crime scene, or EMS determines that a crime scene may exist. The purpose is to ensure the protection of the patient welfare as well as to ensure the ability to conduct an effective and through investigation of the crime.

If a provider finds themselves on a known or suspected crime scene;

- Assure safety of all EMS providers
- Summon Law Enforcement if not already present
- Lead EMS provider may request entry of safe area to determine viability of patient
- Additional personnel must be with visual contact
- Summon additional resources to the patient side only as necessary
- Minimize scene disturbances
- Enter and exit on same path
- Do not go anywhere else on the scene except as necessary for patient care
- Wear gloves always
- Avoid pools of blood
- Minimize personnel to only those required for patient care
- Do not cut through knife / bullet holes in clothing
- Do not go through patient's effects
- If patient is believed to be DOA, one provider to approach and attach cardiac monitor to confirm death
- If patient is believed to be viable, follow appropriate treatment protocol for situation, remove from crime scene as soon as possible and relay any information discovered to Police as soon as possible.



DEAD ON ARRIVAL (DOA)

Some jurisdictions may have special policy on the handling of DOA cases and, among other points, Online Medical Control may not need to be contacted. Refer to organizational policy in these cases if your department participates.

PURPOSE

EMS should not begin to resuscitate if any of the following criteria for death in the field are met for a patient who presents pulseless, apneic and with any one of the following:

- Injury incompatible with life (i.e. decapitated, gross incineration)
- Signs of decomposition, rigor mortis, extreme dependent lividity
- Cardiac arrest, secondary to massive blunt trauma without signs of exsanguination
- Adult: Unwitnessed cardiac arrest >20 minutes, history of absence of vital signs >20 minutes with asystole on the EKG, not secondary to hypothermia or cold-water drowning.
- Ohio DNR Comfort Care order
- Other DNR as validated by on-line physician

PROCEDURE

In all cases, contact with Medical Control should be immediate and well documented. Obtaining an EKG of asystole in two leads may be possible in some cases. When the on - line physician states to do nothing, it should be documented as the pronouncement of death. Once this is done, the police should assume control of the scene, and EMS may go back into service.

KEY POINTS

- If a bystander or first responder has initiated CPR or automated defibrillation prior to an EMS Paramedic's arrival and any of the above criteria (signs of obvious death) are present, the Paramedic may discontinue CPR and ALS therapy. All other EMS personnel levels must communicate with medical control prior to discontinuation of the resuscitative efforts.
- If doubt exists, start resuscitation immediately. Once resuscitation is initiated, continue resuscitation efforts until either:
    - Resuscitation efforts meet the criteria for implementing the Termination of Resuscitative Efforts Protocol, if valid in the EMS jurisdiction.
    - Patient care responsibilities are transferred to the destination hospital staff.
    - When a Dead on Arrival (DOA) patient is encountered, the squad members should avoid disturbing the scene or the body as much as possible, unless it is necessary to do so in order to care for and assist other victims. Once it is determined that the victim is, in fact, dead the squad members should move as rapidly as possible to transfer responsibility or management of the scene to the Police Department of EMS should not pronounce enroute.
    - Pregnant patients estimated to be 20 weeks or later in gestation should have standard resuscitation initiated and rapid transport to a facility capable of providing an emergent c-section. Paramedics CANNOT perform a c-section even with Medical Control permission.
    - Victims of lightning strike, drowning, or a mechanism of injury that suggested non-traumatic cause for cardiac arrest should have standard resuscitation initiated.
    - If the patient is pronounced on scene, leave the ETT, IV, and other interventions in place.

Health Insurance Portability and Accountability Act - HIPAA

What does HIPAA stand for?

- The Health Insurance Portability and Accountability Act. Enacted in 1996, this federal law regulates health insurance and insurance benefit programs.

What is HIPAA's privacy rule?

- The privacy rule is a set of laws created to protect the privacy of a patient's health information, including medical records.

Why was HIPAA created?

- Before this rule was created, it was possible for patient information to be easily accessible without the patient's authorization and for reasons that had nothing to do with medical treatment. For example, a patient's medical information might be passed to a bank or lender, who might deny or approve a loan requested by the patient.

Who has to follow the rule?

- The privacy rule directly relates to healthcare providers (such as ambulance services, hospitals, physicians, and home health agencies), health plans and insurance companies, and healthcare clearing houses (such as companies that bill for healthcare services).

What if you don't comply?

- The penalty for one violation is $100, with a limit of $25,000 per year for any single organization that fails to comply with multiple requirements. The authority to impose penalties is carried out by the Department of Health and Human Services. In cases involving grossly flagrant and intentional misuse of patient information, violators may be socked with criminal penalties up to $250,000, ten years in jail, or both - depending on the circumstances.

What should I do at the scene?

- Exercise confidentiality on the scene by:
  - ➢ Not sharing information with bystanders.
  - ➢ Limiting radio transmissions that identify patients.
  - ➢ Avoid disclosure of unnecessary information to police (appropriate info includes patient's name, DOB, and destination hospital.)
  - ➢ Protecting patient's privacy whenever possible.
  - ➢ Don't volunteer patient medical information with people at the scene.

Hospital Contact and EMS

The relationship of the hospital and EMS are not really affected by HIPAA. The process of Performance Improvement is an important element of patient care that is worked on at each department under Medical Control and then the issues are addressed by the Medical Director during Run Reviews at each station. Information about the patient may be given to the Emergency Department by radio, phone, fax, or electronically. The information is needed for treatment of the patient and becomes part of the medical record.

Following the privacy policy along with common sense regarding your patient's right will assure that no HIPAA rules are violated.

NEWBORN ABANDOMENT

Ohio law provides that a parent may drop off a newborn baby within the first 30 Days after birth at any law enforcement agency, hospital, or emergency medical service. Should this occur, the first priority is to care for the infant's health and safety. Notification should then be made to the Public Children's Services agency for that county. If possible, obtain any medical information that may be available. If it appears that the infant has suffered any type of physical harm, attempts should be made to detain the person who delivered the child.

PURPOSE

To provide:

- Protection to infants that are placed into the custody of EMS under this law
- Protection to EMS systems and personnel when confronted with this issue

PROCEDURE

1. Initiate the Pediatric Assessment Procedure.
2. Initiate other treatment protocols as appropriate.
3. Keep infant warm.
4. Contact Medical Control as soon as infant is stabilized.
5. Transport infant to medical facility as per local protocol.
6. Assure infant is secured in appropriate child restraint device for transport.
7. Document protocols, procedures, and agency notifications.

MEDICAL CONTROL / PROCEDURES

OBESE PATIENTS

All individuals served by the EMS system will be evaluated, furnished transportation (if indicated) in the most timely and appropriate manner for each individual situation.

PURPOSE

To provide:

- Rapid emergency EMS transport when needed.
- Appropriate medical stabilization and treatment at the scene when necessary.
- Protection of patients, EMS personnel, and citizens from undue risk when possible.

PROCEDURE

1. Each situation may dictate its own procedure for the transport of morbidly obese patients.
2. It is the responsibility of EMS personnel at the scene to provide the most appropriate medical care, including the protection of the patient, EMS personnel, and bystanders, while transporting morbidly obese patients.
3. Utilization of additional resources may be required, at the discretion of the on - scene EMS personnel.

KEY POINTS

In any community there may be one or more individuals who fall into this extreme. As patients, these individuals are frequently classed as high risk because of the increased medical complications associated with their excess weight. In the EMS system they present the additional problem of movement and transportation. These individuals have the right to expect prompt and expert emergency medical care. Therefore, in order to facilitate the care of these individuals without risking the health of EMS workers, the following protocol is established.

- In managing a patient with weight over 300 lbs., at no time should the patient be moved without at least sufficient manpower to assist.
- At the scene, as many EMS personnel as can be mobilized may be supplemented by police or other safety personnel as appropriate. If sufficient manpower is not available, mutual aid may be required.
- It may be necessary to remove doors, walls or windows. The situation is no different than extrication from a vehicle, although property damage may be higher. At all times the patient's life must be the first priority.
- The patient is to be placed on at least 2 (double) backboards or other adequate transfer device for support.
- The patient is to be loaded on a cot that is in the down position, and the cot is to be kept in the down position at all times. Be aware of the cot weight limitations.
- It is necessary to notify the hospital well in advance of arrival so that preparations can be completed in a timely fashion.
- If individuals in the community are known to fall within this special category it is appropriate to inform them in advance of the type of assistance they can expect from the EMS system, and help them make plans well in advance to assist you.
- When calling for the squad, and if they identify themselves and their special needs, it will promote the timeliness of your efforts.

MEDICAL CONTROL / PROCEDURES

ON - SCENE EMT / NURSE / PHYSICIAN INTERVENER

The medical direction of prehospital care at the scene of an emergency is the responsibility of those most appropriately trained in providing such care.

PURPOSE

- To identify a chain of command to allow field personnel to adequately care for the patient
- To assure the patient receives the maximum benefit from prehospital care
- To minimize the liability of the EMS system as well as the on - scene Physician

PROCEDURE

1. When a non - Medical Control Physician offers assistance to EMS or the patient is being attended by a Physician with whom they do not have an ongoing patient relationship, EMS personnel must review the On-Scene Physician form with the Physician. All requisite documentation must be verified and the Physician must be approved by on – line Medical Control.
2. When the patient is being attended by a Physician with whom they have an ongoing patient relationship, EMS personnel may follow orders given by the Physician if the orders conform to current EMS guidelines, and if the Physician signs the PCR. Notify Medical Control at the earliest opportunity. Any deviation from local EMS protocols requires the Physician to accompany the patient to the hospital.
3. EMS personnel may accept orders from the patient's Physician over the phone with the approval of Medical Control. The Paramedic should obtain the specific order and the Physician's phone number for relay to Medical Control so that Medical Control can discuss any concerns with the Physician directly.

KEY POINTS

EMT / Nurse / Healthcare - Intervener:

On an EMS run where an unknown EMT / Nurse / Healthcare - Intervener from outside the responding EMS agency wishes to intervene in the care of patients, the following steps should be initiated:

- Ideally, if no further assistance is needed, the offer should be declined.
- If the intervener's assistance is needed or may contribute to the care of the patient:
  - ➢ An attempt should be made to obtain proper identification of a valid license / certification. Notation of intervener name, address and certification numbers must be documented on the run report.
  - ➢ Medical Control should be contacted, and permission given.

On - Scene Physician:

This is a Physician with no previous relationship to the patient, who is not the patient's private Physician but is offering assistance in caring for the patient. The following criteria must be met for this Physician to assume any responsibility for the care of the patient:

- Ideally, if no further assistance is needed, offer should be declined.
- Medical Control must be informed and give approval. Encourage Physician to Physician contact.
- The physician must have proof they are a Physician. They should be able to show you their medical license. Notation of Physician name, address and license numbers must be documented on the run report.
- The Physician should have expertise in the medical field for which the patient is being treated.
- The Physician must be willing to assume responsibility for the patient until relieved by another Physician, usually at the Emergency Department.
- The Physician must not require the EMT to perform any procedures or institute any treatment that would vary from protocol and / or procedure.
- If the Physician is not willing or able to comply with all the above requirements, his / her assistance must be declined.

On - Scene Personal Care Physician:

This is a Physician with a current relationship to the patient, who is offering assistance in caring for the patient. The following criteria must be met for this Physician to assume further responsibility for the care of the patient:

- EMS should perform its duties as usual under the supervision of Medical Control or by protocol.
- Physician to ED Physician contact is optimal.
- The Physician may elect to treat the patient in his office.
- EMS should not provide any treatment under the Physician's direction that varies from protocol. If asked, EMS should decline until contact is made with Medical Control.
- Once the patient has been transferred into the squad, the patient's care comes under Medical Control.

SCHOOL BUS ACCIDENTS

PURPOSE:

Provide treatment / transport guidelines for on scene providers when faced with incidents involving school buses

PROCEDURE:

- Check with the school district regarding their specific school bus response polices
- School administrators are responsible for the students; a school administrator should be requested to the scene as soon as possible.
- Administrators may take the children back to the school in another bus or school vehicle; they may arrange for transportation back to the home or have the student parents pick them up at school.
- Children should be cleared from the scene as safely and as quickly as possible.
- ANY injury should be transported to the nearest most appropriate emergency department and the parents notified.
- EMS responders must be prepared to enact mass casualty protocols in the event of any serious school bus accident.
- If school administrators accept responsibility for the non-injured children as per their bus accident protocols / policies, then individual releases are not required.
- If for whatever reason there is no school administrator on scene, EMS providers must take responsibility for all children until school administrators arrive.
- If there will be a significant delay in the arrival of school administrators, and the accident is minor, the bus should be directed to return to the school or to a safe area out of traffic.
- Notification of the number and types of injuries should be communicated with the receiving facilities in the event of transportation of injured students to the receiving facilities as early as possible.

TERMINATION OF RESUSCITATIVE EFFORTS

PURPOSE

The purpose of this policy is to:

- Allow for discontinuation of prehospital resuscitation after delivery of adequate and appropriate ALS therapy.

EACH PATIENT SHOULD BE EVALUATED ON A CASE-BY-CASE BASIS

INDICATIONS

When a patient that is in cardiac arrest has failed to respond to Advanced Life Support, it may be decided to terminate the effort and not transport the patient to the hospital. When the paramedic determines that this option is appropriate, the following criteria must be met:

1. The victims are 18 years or older.
2. The victim must be in asystole in two leads and have the absence of a pulse confirmed.
3. The victim must not be in arrest due to hypothermia, or apparent drug overdose.
4. The victim must have a properly placed advanced airway.
5. The patient must have a patent IV / IO access.
6. At least two rounds of ACLS drugs have been administered.
7. At least 20 minutes of resuscitation has been performed.
8. Capnography must be below 10 where available.
9. Medical control must be contacted - the physician must speak directly with the paramedic. Then the physician and paramedic must agree on the termination of efforts. The physician must give consent for the resuscitation effort to cease.

Do not remove endotracheal tubes, IV'S, etc.

INFECTION CONTROL / EXPOSURE POLICY GUIDELINES

Ohio law provides for the welfare and protection of EMS and other Emergency Care Workers (ECW) in two separate sections of the Ohio Revised Code:

- If there has been either an Airborne or Bloodborne exposure to the ECW, every hospital must have a policy to follow - up appropriately. This may include testing of the patient source and the ECW. It is important to report the exposure, so the patient source can be tested at the facility where the patient has been transported.

- The second section establishes the obligation of the hospital, once a patient has been diagnosed with a communicable disease, to find out if there was any exposure during transport of the patient.

All possible exposures must be documented both at the hospital and at the place of employment. Various forms must be completed.

STANDARD PRECAUTIONS

Emergency Care Workers are to consider ALL patients as potentially infected with a communicable disease and are to adhere RIGOROUSLY to Infection Control precautions for minimizing the risk of exposure to blood and body fluids of ALL patients.

Guidelines:

1. Wear gloves ALWAYS.

2. ALWAYS Wear gloves, mask, and goggles when performing Airway Maneuvers such as Bagging, King Insertion, Intubation, and Suctioning.

3. Wear apron, jumpsuit or other coverall when exposed to large amounts of blood or body fluids.

4. For Airborne Communicable Diseases, care must be taken to wear the proper mask, ventilate the squad, and limit exposure of EMS personnel as much as possible. If a patient has fever, cough or rash, a mask is a good idea.

5. Maintain good handwashing practices after removing gloves.

6. Obtain Hepatitis B Vaccination and other testing and vaccines as recommended.

7. Handle "Sharps" carefully - dispose of properly.

8. Wear personal protective gear when CLEANING contaminated equipment.

9. Dispose of contaminated waste, equipment and clothing carefully and properly

Report EXPOSURES immediately and at location of patient transport.
Document and follow up properly.

Contact your Medical Control for Exposure control Policy and Exposure forms

INFECTION CONTROL / EXPOSURE POLICY GUIDELINES

Purpose

It is reasonably anticipated that any operation, including fires, Haz-mat, extrication, MVA's etc. may involve exposure to blood, body fluids or other potentially infectious material. The health and welfare of everyone is the responsibility of each department (where employed), however it is recognized the need to offer guidance to minimize each individual's risk of exposure to communicable diseases during all aspects of care. This comprehensive program will provide individuals with education, immunization and personal protective equipment to minimize exposure to blood borne pathogens and/or communicable diseases. The major areas of exposure control encompass:

- Standard Precautions
- Engineering Controls
- Work Practice Controls
- Hand Hygiene
- Personal Protective Equipment
- Cleaning Procedures
- Hepatitis B vaccination
- Training regarding infection prevention and control will occur upon hire, yearly & as needed.

Standard Precautions

The blood and body fluids/substances of ALL patients are be treated as potentially infectious, regardless of diagnosis (or before diagnoses is determined in the case of prehospital care). Appropriate barrier precautions (i.e., gloves, gowns, masks, and goggles) must be routinely and consistently used for contact with blood and body fluids/substance, mucous membranes and non-intact skin of ALL patients.

Engineering controls

The following engineering controls are available to hospital care providers:

- Hand Hygiene methods (soap & water – sinks &/or hand sanitizers in rescue vehicles)
- Sharps containers are available at point of use – they are puncture resistant and leak proof
- Sharps safety devices are available for venipuncture devices, syringes and lancets
- Exposure from failed engineering controls must be reported to allow review ofinci-dent and follow-up.

Patient Care Equipment Cleaning

- Patient care equipment will be cleaned on a daily, weekly or monthly schedule as determined by individual EMS department.
- EMS will follow any additional recommendations for decontamination given by Medical Direction Infection Control Department, Cuyahoga County Board of Health, Ohio Dept. of Health and/or Centers for Disease Control.

General Requirements

- Hand hygiene is routinely and consistently performed (methods are described below).
- Avoid touching eyes, nose, or mouth while giving patient care or handling contaminated

equipment.

- Contaminated needles and sharps are handled and disposed of in the appropriate container.
- Needles are never to be recapped, bent or broken or otherwise manipulated.
- After use, allneedles and sharps are discarded uncapped and intact in a sharps container.
- Safety devices MUST be activated by the user.
- Needle/sharps containers are changed when ¾ full and sealed.
- All procedures involving blood or other infectious materials are performed to minimize splashing, spraying or other actions generating droplets. Caregivers must anticipate potential exposures and wear appropriate protective equipment to protect themselves from splashing or spraying.
- Patient items/equipment – any reusable patient care equipment that becomes contaminated must be cleaned with an appropriate disinfectant or sterilized before it used again.
- Eating, drinking, smoking, applying cosmetics/lip balm or handling contact lenses is prohibited in work areas where there is potential for exposure to blood borne pathogens.
- Food and drink are not kept in refrigerators, freezers, counter tops or in other storage areaswhere blood or other potentially infectious materials are present.
- Where communicable exposure is possible or anticipated, individuals not immediately needed will remain a safe distance from operations.
- Patients will be advised of respiratory etiquette (cover their nose/mouth when coughing/sneezing, use tissue to contain respiratory secretion/dispose of tissue after use, perform hand hygiene prn, wear a surgical mask if he/she is unable to cover his nose/mouth or contain respiratory secretions).
- Disposal of infectious waste in red biohazard bags to prevent further contamination to personnel, patients, and the environment. The types of waste designated as infectious at are: micro biologicals, pathological waste, blood and blood products, sharps, contaminated laboratory waste, fluid-filled containers of body substances, items that would release blood or other potentially infectious materials (OPIM) in a liquid or semi-liquid state if compressed (i.e. drippy or super-saturated), items caked with dried blood or OPIM and are capable of releasing these during handling.
- EMS, Infection Control and ED will follow established lines of communication to allow 24/7 alerting of prehospital care providers, surveillance of potentially infectious disease outbreaks and minimize risks.
- Post exposure follow-up will be done through EMS, ED and Infection Control Depts.
- If an exposure occurs, complete patient care, then seek immediate treatment in the ED.
- It is essential that the source patient be identified and tested.

Hand Hygiene

Hand hygiene is the single most important means of preventing the spread of infection.
Hand hygiene includes “washing” with soap and water or “sanitizing” with alcohol-based hand rub.

Wash with soap and water (scrub together, at least 15 seconds) in the following situations:

- On your arrival to work
- When hands are visibly soiled (dirty)
- When hands are visibly contaminated with blood or body fluids

- Before eating or after using the bathroom
- Before preparing, handling or serving food
- On completion of duty before going home

Sanitize with an alcohol hand rub in the following situations: (soap & water may also be used)

- Before and after having direct contact with patients (taking BP, pulse or lifting a patient)
- Before inserting indwelling catheters, peripheral vascular catheters or otherinvasive devices not requiring a surgical procedure
- Before donning sterile gloves when inserting a central intravascular device
- After contact with body fluids or excretions, mucous membranes, non-intact skin and wound dressings if hands are not visibly soiled
- If moving from a contaminated body site to a clean body site
- After contact with inanimate, environmental objects (including medical equipment) in the immediate vicinity of the patient
- After removing personal protective equipment (i.e. gloves, gowns, masks)
- After sneezing, coughing, or blowing your nose
- Alcohol hand rub is available in all rescue vehicles

Personal Protective Equipment

Occupational exposure may remain after engineering and work control practices have been implemented, requiring the use of personal protective equipment (PPE). PPE is a barrier that prevents blood or other infectious materials from passing through to skin and/or clothing underneath. These barriers include but are not limited to single use gloves, disposable gowns, face shields/masks, and protective eye-wear. Individuals must anticipate the type of exposure that may occur during each patient contact and wear the appropriate PPE to prevent an exposure to blood and/or other potentially infectious body fluids. Although each situation will be different, below are general guidelines to consider for PPE:

Gloves

- Gloves should be worn for all EMS runs.
- Gloves shall be replaced as soon as possible when soiled, torn, or punctured.
- "Disposable gloves" are single patient use only, carefully remove by turning gloves inside out and disposing in the trash
- "Structural firefighting gloves" shall be worn in situations where sharp or rough edges are likely to be encountered. If contaminated, gloves must be washed before being re-used.
- "Heavy-duty utility gloves" may be used for handling, cleaning, or decontamination of equipment.
- Wash hands immediately after glove removal.

Gowns/Shoes/Head Covers

Fluid resistant disposable gowns are worn when it is anticipated that clothing may be soiled by blood or body fluids during the performance of a task or procedure. Under certain circumstances, head covers and/or shoe covers will be required to protect these areas from potential contamination. The goal is to protect the employee and their clothing from becoming contaminated. Structural firefighting gear may be substituted to protect clothing from splashes and preferable in fire, rescue or vehicle extrication activities. Disposable, paper gowns may interfere with or present a hazard to the individual in these circumstances. The decision of what type of barrier protection to use to protect clothing will be left to the individual. If disposable gowns are used:

- Shoe and head cover and gowns are single patient use and only removed immediately after use.
- They should be rolled/folded with contaminated surface inside and disposed in the trash.

Mask / Eye / Mouth Protection

Masks and/or eye protection must be used whenever a reasonable potential for splashing or aerosolization of blood or body fluids to the eyes, nose or mouth exists.

Face shields on structural firefighting helmets are not adequate for infection control purposes.

When treating a patient with known or suspected droplet transmissible disease (i.e. seasonal influenza, meningitis), a surgical mask must be worn if you anticipate being within 3 feet of the patient.

When treating a patient with known or suspected airborne transmissible disease (i.e. TB, Avian Flu), N95 face masks must be used. If possible have the patient wear a surgical mask. (Also, notify the ED of need for isolation as they will need to prepare a negative pressure room for the patient.)

In times of limited supplies of N95 masks, masks can be re-used by the same person unless wet, dirty or torn. Place disposable surgical mask over N95 to prevent external contamination and extend use.

After removal of PPE

Upon returning to quarters, wash grossly contaminated uniforms in hot water with washer provided by department. If washer is being used, place clothing into biohazard bag and wash A.S.A.P.

- Under no circumstance should grossly contaminated clothing be removed from the station without being washed.
- After any contact with contaminated item perform hand hygiene. (wash or sanitize hands) No living area may be entered by personnel if clothes are contaminated.
- The individual shall shower if body fluids were in contact with skin under work clothes.
- All individuals shall have (2) complete changes of uniform clothing.
- Per NFPA 1971 contaminated structural firefighting gear shall be cleaned according to the manufacturer's recommendations found on attached labels. (i.e. gloves, boots, turnout coats, bunker pants.)

Expanded Precautions

Expanded precautions are designed for patients documented or suspected to be infected with highly transmissible or epidemiologically important pathogens spread by airborne or droplet transmission or by contact with the patient or contaminated surfaces. It is felt that precautions beyond Standard Precautions are necessary or may be helpful to interrupt transmission in health care settings both pre-hospital and in the health center.

These precautions are to be used in addition to Standard Precautions.

EXPANDED PRECAUTION TYPE	PRE-HOSPITAL IMPLEMENTATION
CONTACT PRECAUTIONS (Green)	Gloves worn by everyone providing care and/or handling patient care equipment. Gowns required for anyone having direct contact with patient or patient environment. Wash hands with soap and water after care. DO NOT use alcohol hand rub (sanitizer)
DROPLET PRECAUTIONS (Orange)	Surgical mask required if you are within 3 feet of the patient. OR Surgical mask on patient during transport.
AIRBORNE PRECAUTIONS (Pink)	N95 mask for everyone providing care. OR Turn on exhaust fan in transporting vehicle OR Surgical mask on patient during transport.
COMPROMISED PATIENT (White) The immuno-compromised host is a person with one or more defects in the body's normal defense mechanisms that predispose them to infections, often life-threatening, that would otherwise not occur.	Frequent, meticulous hand hygiene. Associates with active infections such as colds, herpes virus, upper respiratory illness, diarrhea, or other infectious diseases must have no contact with the patient. If this is unavoidable, they must wear a mask or other appropriate barriers.

Preparedness

Routine surveillance may detect an individual who requires "Expanded Precautions" such as a person being transported with possible Tuberculosis, Clostridium Difficile, or MRSA (Methicillin Resistant Staphylococcus Aureus). This is handled with routine procedures.
Some patient presentations may require extraordinary procedures such as implementation of internal, external or hazmat disaster plans at the health center. This may be for suspected cases of SARS, Avian Flu, Bioterrorism, etc.…or for clusters of unusual infectious diseases being identified. EMS will notify the ED of suspected cases that may require the health center to implement their Emergency Management Plans. If this happens, "PPE" (Personal Protective Equipment) may be added to the disaster phase if it is implemented.

Examples of situations that may require activation of disaster plans (Internal/External/Hazmat) and PPE is announced with the Disaster Phase:	
PHASE I PHASE I PPE	· A threatened biologic incident, an event where an intention is expressed, or warning made that an infectious agent will be used (or has been used) to cause harm to people. No patients are presenting currently. · New influenza virus (i.e. SARS, Avian Flu) is detected in the United States. · Unusual infectious disease cases identified or suspected such as SARS, Anthrax, Avian Flu, etc….. · Clinical staff needs to locate their PPE (including N95 mask if already fit-tested).
PHASE II PHASE II PPE	· Potential terrorist utilizing biologic agents may not always threaten or notify that an event has taken place. Recognition then, in some instances, takes place by hospitals, ED Physicians, laboratory personnel who report increased numbers of ill persons to their supervisor, risk manager or infection control. · Clusters of patients with unusual infectious disease identified or suspected in one or more South- west General facilities. · New influenza virus (i.e. SARS, Avian Flu) is detected in Ohio. · Clinical staff responding to patient care areas must look for and follow Expanded Precautions signs: “Contact”, “Droplet”, “Airborne”, or “Compromised Patient”. · Personal Protective Equipment will be available in their usual locations. · Nurse Managers or designees are responsible to obtain replacement N95’s from Protection Services. Labor Pool may be utilized to assist with their distribution.
PHASE III PHASE III PPE	· Pandemic Level 6 determined by the World Health Organization (virus transmission increases significantly and there is sustained transmissibility in the general population). · Multiple infectious patients are presenting to all Southwest General facilities. · All associates in all Southwest facilities will be required to wear PPE. · Infection Control will determine what PPE will be required. · Associate Occupational Health Services (AOHS) Department will distribute PPE. · Associates report to Jones Atrium to be screened by AOHS (i.e. temperature checked, history asked). If cleared, associate will be given appropriate PPE.

BLOOD COLLECTION FOR EVIDENCE (OHIO SENATE BILL 58)

Ohio Senate Bill 58 became Law in September 2010.

The Law includes provisions for EMS providers to withdraw blood for evidence collection in cases involving allegations of operating watercraft or vehicles under the influence.

The language of the bill states that drawing blood "may" not "shall" be done for evidence collection "in the course of" providing emergency medical treatment.

- You CANNOT be dispatched or called by the police for the sole purpose of performing phlebotomy when the person does not require emergency medical treatment.
- The Medic/AEMT in charge can refuse law enforcements request to draw the blood if doing so would interfere with lifesaving patient care or outcome.
- The patient must consent to the collection of blood for evidence purposes.
  (If unconscious, Implied Consent applies)
- The Police Officer making the request must always be present during the draw and must provide the Medic/AEMT with the evidence collection kit.
- EMS Providers MUST use the evidence kit provided by law enforcement to obtain the blood samples for evidence.

DEPARTMENT SUPPLIED PATIENT CARE EQUIPMENT

PURPOSE

- To allow equipment supplied by individual EMS departments, but not specifically referenced in EMS protocol to be used for the benefit of patient care.
- Define the process of Medical Director review and approval of EMS Department supplied patient care equipment
- Define where and who is responsible for the Operating Procedures for EMS department supplied patient care devices.

POLICY

It is understood that EMS departments may have equipment that is not necessarily referenced in this EMS protocol. For these items to be used within the scope of University Hospitals EMS Medical Direction and as an adjunct to these EMS protocols the following must occur;

1. The device must be approved by the Medical Director in writing.
2. The Department must develop, implement, and periodically review operating procedures for the device. These will become the protocol for the use of the referenced device. The operating procedure must include indications, contra-indications, instructions for use, approved levels of EMS certification, signs and symptoms, key points, outline training requirements, and define maintenance (if applicable). The operating procedures must be approved and signed by the Medical Director.
3. The Department must be willing to incur all costs associated with operating said device, including disposable items.
4. The Department must provide training on the device to all department members expected to use the device under the direction and approval of the Medical Director
5. The Department must be willing to share performance data on the device with the University Hospitals EMS Medical Direction, including Patient Care Reports, within the scope of HIPAA.
6. The Department must report adverse patient outcomes that may be attributed to thepatient care device as soon as identified.
7. The Department must agree to discontinue use of the device on the instruction of the Medical Director.

DRUG EXCHANGE

There are several methods of EMS drug exchange. Medications may be managed by the Medical Control hospital, or some agencies may purchase their own medications. Refer to individual hospital or agency rules regrading management of medications. Any method of medication management and restocking must be consistent with all federal, state, and local laws, rules, and regulations.

APPENDIX #4: ODPS EMS SCOPE OF PRACTICE

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Scope of Wractice
Approved by
State Board of Emergency Dedical, Fire and dransportation Services
Division of EDS, Ohio Department of Wublic Safety

dhis document offers an "at-a-glance" view of the Scope of Practice for Emergency Dedical Responders {EDR), Emergency Dedical dechnicians {EDd), Advanced Emergency Dedical dechnicians {AEDd), and Paramedics as approved by the State Board of Emergency Dedical, Fire and dransportation Services {EDFdS Board). dhe authorized services can be found in sections 4765.35 {FR/EDR), 4765.37 {EDd-B/EDd), 4765.38 {EDd-//AEDd), and 4765.39 {EDd-P/Paramedic) of the Revised Code. dhe scopes of practice can be found in rules 4765-12-04 {EDR), 4765-15-04 {EDd), 4765-16-04 {AEDd), and 4765-17-03 {Paramedic) of the Administrative Code.

Performance of services outlined in this document and in the aforementioned code sections, shall only be performed if the EDR, EDd, AEDd, and Paramedic have received training as part of an initial certification course or through subsequent training approved by the EDFdS Board. /f specific training has not been specified by the EDFdS Board, the EDR, EDd, AEDd, and Paramedic must have received training regarding such services approved by the local medical director before performing those services.

/n accordance with rule 4765-10-06 of the Administrative Code, the individual medical director of each EDS agency may limit or ask that providers obtain medical control approval for certain treatments. Each community may need to tailor and revise the protocol to fit their region and individual practice, but must ensure that they remain within the approved scope of practice. EDS medical directors are reminded that they are not permitted to expand the scope of practice for EDS providers, but may provide clarifications or limitations on services that are permitted.

EDS medical directors and EDS providers are strongly encouraged to review the EDFdS Board's policy statement "Regarding EDS Provider Pre-,ospital transport of Patients with Pre-Existing Dedical Devices or Drug Administrations" dated February 2016 {attached to this document, page 7). dhis statement clarifies how EDS providers, in the prehospital setting, should deal with medical devices and medicine administrations that are outside their scope of practice.

Pursuant to rule 4765-6-04 of the Administrative Code, the EDFdS Board may allow EDRs, EDds, AEDds, and Paramedics to perform services beyond their respective scopes of practices as part of a board-approved research study. An entity must submit a research proposal to the EDFdS Board in accordance with the requirements of rule 4765-6-04 of the Administrative Code. dhe EDFdS Board is not obligated to approve the proposed research study nor accept any recommendation to permanently amend the scope of practice.

hpdated 11/19/03; 5/17/05; 10/26/05; 10/17/07; 3/8/12; 8/22/13, 10/16/13, 12/18/13, 4/16/2014, 10/19/16, 2/15/17, 10/18/17, 6/20/18

State Board Emergency Dedical, Fire and dransportation Services
Division of EDS/Department of Wublic Safety

hpdated June 20, 2018

	Airway Danagement	EDR	EDd	AEDd	WARADED/C
1	Kpen and maintain the airway	X	X	X	X
2	Kropharyngeal airway adjunct	X	X	X	X
3	Easopharyngeal airway adjunct	X	X	X	X
4	Danual removal of obstructed airway	X	X	X	X
5	Laryngoscopy for removal of airway obstruction			X	X
6	Kral suctioning	X	X	X	X
7	Endotracheal {Ed) tube suctioning via through a previously established airway or a stoma		X	X	X
8	dracheostomy tube replacement			X	X
9	Cricothyrotomy, surgical				X
10	Cricothyrotomy, needle				X
11	Apply and obtain readings of pulse oximeter, CK-oximeter, and capnography or capnometry equipment	X	X	X	X
12	Kxygen administration				
	a. Easal cannula	X	X	X	X
	b. Eon-rebreather mask	X	X	X	X
	c. Douth-to-barrier devices	X	X	X	X
	d. Partial rebreather mask		X	X	X
	e. senturi mask		X	X	X
13	sentilation management				
	a. Bag valve mask	X	X	X	X
	b. sentilation with a flow-restricted oxygen-powered device	X	X	X	X
	c. Positive pressure ventilation devices {manually triggered or automatic ventilators)		X	X	X
14	sentilator management - 16 years of age or older				X
15	Krotracheal intubation				X
	a. Apneic patients			X	X
	b. Pulseless and apneic patients			X	X
16	Easotracheal intubation				X
17	Dual lumen airway				X
	a. Apneic patients			X	X
	b. Pulseless and apneic patients		X	X	X
18	Extraglottic airways				X
	a. Apneic patients			X	X
	b. Pulseless and apneic patients		X	X	X
19	CPAP administration and management		X	X	X
20	BiPAP administration and management				X
21	Positive end-expiratory pressure {PEEP)				X

22	End tidal CK_2 monitoring and detecting		X	X	X
23	Kxygen humidifier equipment application and monitoring		X	X	X
24	Chest tube monitoring and management				X
25	Easogastric {E▪) tube placement				X
26	Krogastric {K▪) tube placement				X

	Cardiac Danagement	**EDR**	**EDd**	**AEDd**	**WARADED/C**
1	Cardiopulmonary resuscitation {CPR)	X	X	X	X
2	Chest compression assist devices	y	X	X	X
3	Automated external defibrillator {use of an AED)	X	X	X	X
4	Danual defibrillation			X	X
5	Eegative impedance threshold devices		X	X	X
6	Administration of cardiac medication				X
7	Set up cardiac monitor in the presence of an AEDd or Paramedic		X		
8	Cardiac monitor strip interpretation			X	X
9	Cardioversion				X
10	Carotid massage				X
11	dranscutaneous cardiac pacing				X
12	12-lead EK▪ performance and interpretation				X
13	12-lead EK▪ application assisting Paramedic who is present		X	X	
14	12-lead EK▪ set up and application for electronic transmission [A]		X	X	X

[A] An EDd or AEDd may set up and apply a 12-lead electrocardiogram when assisting a Paramedic or for the purposes of electronic transmission if all of the following conditions are met: 1) performed in accordance with written protocol; 2) EDd or AEDd shall not interpret the electrocardiogram; 3) delay in patient transport is minimized; and 4) EK▪ is used in conjunction with destination protocols approved by the local medical director.

	Dedical Danagement	**EDR**	**EDd**	**AEDd**	**WARADED/C**
1	Epinephrine administration via auto-injector	X	X	X	X
2	Epinephrine administration via SQ or /D routes			X	X
3	Epinephrine administration via /s or /K route				X
4	Aspirin administration		X	X	X
5	Kral glucose administration		X	X	X
6	Activated charcoal administration		X	X	X
7	Eitroglycerin administration {patient assisted) [B]		X	X	X
8	Eitroglycerin administration {non-patient assisted)			X	X
9	Aerosolized or nebulized medications administration {patient assisted) [B]		X	X	X
10	Administration of aerosolized or nebulized medications {non-patient assisted)			X	X
11	Ealoxone administration via auto-injector	X	X	X	X
12	Ealoxone administration via intranasal route	X	X	X	X
13	Ealoxone administration via Edd, /D, /s, /K, or SQ routes			X	X
14	Dedication administration {protocol-approved) [C]			X	X
15	Administration of intranasal medications {in addition to naloxone)			X	X

16	/mmunizations for influenza to firefighters, EDds, AEDds, or paramedics {KRC 4765.391)				X
17	Set up of /s administration kit in the presence of an AEDd or Paramedic		X		
18	hltrasound-guided peripheral venous access when approved by the medical director and appropriately trained **[EOd AWWROsED; WEED/EG RhLES hWDAdE]**				X
19	dransport of central/peripheral /s without an infusion		X	X	X
20	/s maintenance and fluid administration			X	X
21	Daintenance of medicated /s fluids				X
22	Central line monitoring				X
23	/s infusion pump				X
24	/ntraosseous needle insertion			X	X
25	Saline lock initiation			X	X
26	Peripheral /s blood specimens			X	X
27	Daintenance of blood administration				X
28	dhrombolytic therapy initiation and monitoring				X

[B] Patient Assisted Definition: Day assist with 1) patient's prescription upon patient request and with written protocol - KR - 2) EDS-provided medications with verbal medical direction.
[C] See "AEDd Dedications Approved by the EDFdS Board."

	drauma Danagement	EDR	EDd	AEDd	WARADED/C
1	PAS▪		X	X	X
2	Long spine board	X	X	X	X
3	Short spine board	X	X	X	X
4	Splinting devices	X	X	X	X
5	draction splint		X	X	X
6	Cervical immobilization device {C/D)	X	X	X	X
7	,elmet removal		X	X	X
8	Rapid extrication procedures		X	X	X
9	Eeedle decompression of the chest			X	X
10	Soft tissue management	X	X	X	X
11	Danagement of suspected fractures	X	X	X	X
12	Controlling of hemorrhage	X	X	X	X

	Basic Werformances	EDR	EDd	AEDd	WARADED/C
1	Body substance isolation precaution/administration	X	X	X	X
2	daking and recording of vital signs	X	X	X	X
3	Patient Care Report {PCR) documentation	X	X	X	X
4	drauma triage determination per KAC 4765-14-02	y	y	X	X

	Additional Services	EDR	EDd	AEDd	WARADED/C
1	Emergency childbirth management [D]	X	X	X	X
2	▪lucose monitoring system use {with Clinical Laboratory /mprovement Amendments {CL/A) waiver in place)		X	X	X
3	Blood analysis **[+ BODY FLh/D t/d, d,E EyCEWd/OE OF**				X

	AD/E/Od/C FLh/D; EOd AWWROsED; WEED/EG RhLES hWDAdE]				
4	Eye irrigation	X	X	X	X
5	Eye irrigation with Dorgan lens				X
6	Daintenance of blood administration				X
7	dhrombolytic therapy initiation and monitoring				X
[D] An EDR may only assist with emergency childbirth management.					

Emergency Dedical Services in ,ospital	**EDR**	**EDd**	**AEDd**	**WARADED/C**
An EDS provider may perform emergency medical services in the hospital emergency department {ED) or while moving a patient between the ED and another part of the hospital. dhe EDS provider shall be under physician medical direction and has received appropriate training. {KRC 4765.36)	X	X	X	X
Additional Services in a Declared Emergency	**EDR**	**EDd**	**AEDd**	**WARADED/C**
/n the event of an emergency declared by the governor that affects the public's health, an EDS provider may perform immunizations and administer drugs or dangerous drugs, in relation to the emergency, provided the EDS provider is under physician medical direction and has received appropriate training regarding the administration of such immunizations and/or drugs. {KAC 4765-6-03)	X	X	X	X
Eerve Agent or Organophosphate Release	**EDR**	**EDd**	**AEDd**	**WARADED/C**
An EDS provider may administer drugs or dangerous drugs contained within a nerve agent antidote auto-injector kit, including a DARK/® kit, in response to suspected or known exposure to a nerve or organophosphate agent provided the EDS provider is under physician medical direction and has received appropriate training regarding the administration of such drugs within the nerve agent antidote auto-injector kit. {KAC 4765-6-05)	X	X	X	X

AEDd Dedication Administration Approved by the EDFdS Board

A certified AEMd may administer medications from the following list, provided the AEMd is under physician medical direction and has received appropriate training regarding the administration of such medications. A medication that does not appear on the following list S, ALL EOd be added to the department's AEMd protocol.

Benzodiazepines		Lidocaine for pain relief after intraosseous needle insertions
Bronchodilators		Ealbuphine
Dextrose in water		Ealoxone
Diphenhydramine		Earcotics or other analgesics for pain relief
Epinephrine 1 mg per 1 ml {subcutaneous or intramuscular)		Eitrous oxide
▪lucagon		Kral ondansetron[E]
Ketamine		Sublingual nitroglycerin

[E] A certified AEDd may administer oral ondansetron to patients are the age of 18 years and older. For patients from the age of 12 years to 17 years who weigh greater than or equal to 40 kg, the maximum dose of ondansetron that can be administered is 4 mg. dhe administration of ondansetron is not permitted for patients of the age of 12 years to 17 years who weigh less than 40 kg nor is its administration permitted for all patients under the age of 12 years.

dhe approved route of administration of any specific medication is stated in the respective EMd, AEMd, and Paramedic curriculum. dhe EMS provider shall administer medications only via the route addressed in each respective curriculum and consistent with their level of training.

The approved route of administration of any specific medication is stated in the respective EMT, AEMT, and Paramedic curriculum. The EMS provider shall administer medications only via the route addressed in each respective curriculum and consistent with their level of training.

EMS Care to Dogs and Cats

House Bill 187 was signed by the Governor on May 31, 2016 and becomes effective on August 31, 2016. This legislation establishes Ohio Revised Code 4765.52, which permits EMS certificate holders to provide care to dogs and cats within the following guidelines.

• The law applies to all EMS certificate holders (EMR, EMT, AEMT, Paramedic).

• Only dogs and cats are referenced in the Bill. The law does not authorize care to any other animals.

• Medical care for dogs and cats should only be performed in the course of an emergency medical response, fire response, or response to aid law enforcement. The law does not apply to a call for EMS care for animals and, furthermore, does not require EMS organizations to respond to calls for animal assistance.

• The scope of practice is not expanded for care to animals. The certificate holder is only authorized to perform the corresponding form of medical services that could be provided to a human patient including:
-Opening and manually maintaining an airway;
-Giving mouth to snout or mouth to barrier ventilation;
-Administering oxygen;
-Managing ventilation by mask;
-Controlling hemorrhage with direct pressure;
-Immobilizing fractures;
-Bandaging;

-Administering Naloxone if administering Naloxone has been authorized by the medical director and the drug is administered either in accordance with a written protocol established by a veterinarian or pursuant to consultation with a veterinarian.

• Immunity applies to EMS certificate holders when providing care to dogs and cats under the same circumstances as when providing care to human patients.

• Veterinarians who assist EMS certificate holders with medical services to a dog or cat have the same level of immunity as medical directors who assist with EMS matters.

This document has been prepared for informational purposes only. As always, certificate holders and EMSOs should consult with their legal counsel for advice.

EMFTS BOARD

State Board of Emergency Medical, Fire, and Transportation Services
Thomas Allenstein, Chair
Dudley H.A. Wright II, Vice-Chair
Dr. Carol Cunningham, State Medical Director
www.ems.ohio.gov/about.aspx

1970 West Broad Street, P.O. Box 182073, Columbus, Ohio 43218-2073 (614) 466-9447 / (614) 466-9461 FAX

The State Board of Emergency Medical, Fire, and Transportation Services ("EMFTS Board") issues the following statement:

Regarding EMS Provider Prehospital Transport of Patients with Pre-Existing Medical Devices or Drug Administrations
February 2018

This statement is an attempt to provide general information about the above issue facing EMS providers. It should not be treated as legal advice or medical direction. For direct advice regarding a particular scenario, please consult with your medical director and legal counsel. Although the following statement represents the EMS Board's general position on the above issue, this statement in no way precludes the EMFTS Board from taking disciplinary action in a particular case if necessary. Any potential complaints brought before the EMFTS Board will be decided on a case-by-case basis.

Introduction:

The EMFTS Board and the Ohio Department of Public Safety, Division of Emergency Medical Services, has developed a defined scope of practice for EMS providers. It is maintained in matrix form and available on- line as a reference for public access. This scope of practice addresses all levels of EMS providers and has been approved by the EMFTS Board. Updates to the scope of practice are made as necessary and after approval by the EMFTS Board.

From time to time, EMS providers are confronted on-scene with patients with preexisting medical situations not included or addressed in their respective EMFTS Board approved scope of practice. Specifically, patients with pre-existing medical devices and drug administrations requiring prehospital EMS service are becoming more commonplace. The intent of this position paper is to address the EMS provider's approach to that prehospital patient with a pre-existing physician-ordered medical device or drug administration ("MDDA") not covered in the provider's scope of practice.

Discussion:

In general, the EMS provider should maintain the pre-existing MDDA and transport the patient to the appropriate facility. There is no expectation that the EMS provider will initiate, adjust, or discontinue the pre-existing MDDA. This implies that the EMS provider will maintain and continue care so that the patient can be transported.

The EMS provider is expected to follow local protocols regarding the overall evaluation, treatment, and transportation of this type of prehospital patient requiring EMS service. It applies to EMS provider situations where alternative transportation and care is not available or practical (prehospital or "911 scene response"). It implies that the most appropriate and available level of EMS provider will respond to the request for prehospital EMS service. It also implies that the patient requires the pre-existing MDDA and it is not feasible or appropriate to transport the patient without the pre-existing MDDA.

The number and type of pre-existing MDDAs currently or potentially encountered by the EMS provider in the community setting is extensive and may change frequently. The intent of this position paper is not to provide an inclusive list of pre-existing MDDAs. However, as a guideline for the EMS provider, current pre-existing MDDAs may include ventilatory adjuncts (CPAP, BiPAP), continuous or intermittent IV medication infusions

(analgesics, antibiotics, chemotherapeutic agents, vasopressors, cardiac drugs), continuous gastric or parenteral infusion of nutrition, and nontraditional out-of-hospital drug infusion routes (subcutaneous infusaports, central venous access lines, direct subcutaneous infusions, self-contained implanted pumps).

Conclusion:

In conclusion, the EMS provider confronted with a prehospital patient with a pre-existing physician-ordered medical device or drug administration not covered in the EMS provider's respective scope of practice should provide usual care and transportation while maintaining the pre-existing MDDA, if applicable. Concerns or questions regarding real-time events associated with a pre-existing MDDA should be directed to the relevant physician providing medical direction. Concerns or questions regarding previous, recurrent, or future prehospital transportations with a pre-existing MDDA should be directed to the appropriate EMS medical director and legal counsel.

October 2013
Revised January 29, 2018
Approved by EMFTS Board February 15, 2018

EMFTS BOARD

State Board of Emergency Medical, Fire, and Transportation Services
Thomas Allenstein, Chair
Dudley H.A. Wright II, Vice-Chair
Dr. Carol Cunningham, State Medical Director
www.ems.ohio.gov/about.aspx

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The State Board of Emergency Medical, Fire, and Transportation Services ("EMFTS Board") issues the following statement:

Regarding Interfacility Transport of Patients by EMS Providers and the Scope of Practice
June 2018

This statement is an attempt to provide general information about the above issue facing EMS providers. It should not be treated as legal advice or medical direction. For direct advice regarding a particular scenario, please consult with your medical director and legal counsel. Although the following statement represents the EMFTS Board's general position on the above issue, this statement in no way precludes the EMFTS Board from taking disciplinary action in a particular case if necessary. Any potential complaints brought before the EMFTS Board will be decided on a case-by case basis.

Introduction:

The State Board of Emergency Medical, Fire, and Transportation Services and the Ohio Department of Public Safety, Division of Emergency Medical Services, have developed a defined scope of practice for all EMS providers. The scope of practice for emergency medical technicians (EMTs), advanced emergency medical technicians (AEMTs), and Paramedics is established respectively in Ohio Administrative Code Chapters 4765-15, 4765-16, and 4765-17. An outline of the Ohio EMS scope of practice is available in a matrix form and is posted on the Ohio Department of Public Safety, Division of EMS' website as a reference for public access. This scope of practice addresses all levels of EMS providers and has been approved by the EMFTS Board. Updates to the scope of practice are made as necessary and must be approved by the EMFTS Board.

From time to time, during interfacility transport, EMS providers are confronted with medications, interventions, and therapies that are beyond of their routine scope of practice and training. In these scenarios, additional training (particularly for the Paramedic) paired with initial and ongoing demonstration or testing of skills, is required. The intent of this position paper is to address the approach of the EMS providers and their medical directors to these situations which are not explicitly covered in the Ohio EMS scope of practice.

Discussion:

The number and type of medications, interventions, and therapies in the medical field currently or potentially encountered by the EMS provider in the interfacility transport setting are extensive and may change frequently. The intent of this position paper is not to provide an inclusive or exclusive list of medications, interventions, and therapies that should be included or excluded from the EMS provider's scope of practice. Rather, the intention of this document is to frame the discussion around maintenance of patient safety during interfacility transport and provision of patient care that is appropriate to the EMS provider's level of training, including additional training that has been approved and documented by the medical director and completed well in advance of the transfer.

Additionally, the success of any EMS service requires robust medical direction from an actively involved physician who meets the requirements set forth in Ohio Administrative Code 4765-3-05. This includes, but is not limited to, the initial and ongoing training of EMS providers, as well as an active performance improvement process in which all transports are subject to review for quality assurance.

The scope of this document includes all transports in which the highest level of training of the personnel in the transport vehicle is a Paramedic, including transports that require additional training. A mobile intensive care unit, as legislated in Ohio Revised Code 4766.01, is qualified to transport patients whose conditions require care beyond the scope of practice of a Paramedic. A mobile intensive care unit requires the inclusion of a registered

nurse or other allied health professional as cited in Ohio Administrative Code 4766-4-12 and a transport vehicle that has the vehicle specifications and required equipment cited in Ohio Revised Code 4766.07 and Ohio Administrative Code 4766-4-08.

Conclusion:

All authorized services provided by certified Ohio EMS providers, which are cited in Ohio Revised Code 4765 and Ohio Administrative Code 4765, require a written protocol from the medical director. The EMT, AEMT, and Paramedic certification is limited to the scope of practice that is set forth respectively in Ohio Administrative Code Chapters 4765-15, 4765-16, and 4765-17. Furthermore, this position paper does not provide an inclusive or exclusive list of medications, interventions, and therapies that should be included or excluded from the EMS provider's scope of practice. Patient care or services provided that are beyond the routine practice of the certified Ohio EMS provider require additional training that has been approved and documented by the medical director. All additional training must be completed well in advance of the patient transfer and should be paired with initial and ongoing demonstration or testing of skills as an adjunct to support competency.

Prior to accepting a patient for interfacility transportation, the EMS provider:

- Shall complete training for all services provided, including the management of medical equipment and devices, well in advance of the patient transfer, and any additional training must be approved and documented by the medical director.
- Shall complete training for all medications administered, including indications, contraindications, pharmacology, and side effects, well in advance of the patient transfer, and any additional training must be approved and documented by the medical director

In addition, during the interfacility transportation of patients, the EMS provider:

- Shall follow written protocols, which have been developed and signed by the EMS provider's medical director.
- Shall not initiate the infusion of blood or blood products including the initiation of infusion of additional units. Under the current scope of practice, the Paramedic may only maintain the infusion of blood or blood products.
- Shall not initiate the infusion of intravenous parenteral nutrition including the initiation of infusion of additional units. Under the current scope of practice, the Paramedic may only maintain the infusion of intravenous parenteral nutrition.
- Shall not initiate or continue the infusion of chemotherapeutic agents.
- Should refuse to initiate a transport if the EMS provider feels that adequate training on a specific medication, intervention, or therapy has not been provided well in advance of the transfer as outlined above or if the EMS provider feels uncomfortable with the transport for any reason, including but not exclusive to safety reasons, patient scenario, or any requested parameter of patient care delivery ordered during patient transport.

Concerns or questions regarding specific interfacility transports should be directed to the Ohio Department of Public Safety, Division of Emergency Medical Services.

OHIO DEPARTMENT OF PUBLIC SAFETY
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- **Emergency Medical Services**
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To: Ohio EMS providers and Ohio EMS medical directors
From: Carol A. Cunningham, M.D., FAAEM, FACEP
State Medical Director, Ohio Department of Public Safety, Division of EMS
Date: August 18, 2015
RE: Electronic transmission of 12-lead EKGs and the Ohio EMS scope of practice

On August 18, 2015, the Emergency Medical Services, Fire, and Transportation Services (EMFTS) Board approved a position statement regarding electronic technologies and the impact on EMS. For EMS agencies who wish to implement policies and procedures for the use of electronic technology for the transmission of data and images, this will provide additional options for the modes of transmission of prehospital 12-lead electrocardiograms (EKGs), and in some cases, cardiac monitor strips, by Ohio EMS providers.

At the time when the rules addressing the performance and transmission of prehospital 12-lead EKGs were promulgated, the majority of cellular phones lacked camera and internet capabilities, and the primary mode for transmission of a 12-lead EKG to a receiving facility was by telemetry. With the expanded modalities that are cited in the EMFTS Board position paper as inclusive in the definition of electronic transmission, it is important to reinforce the fact that the primary goal of the acquisition of a prehospital 12-lead EKG is to rapidly activate a cardiac catheterization laboratory when a patient experiencing an acute ST-segment myocardial infarction is identified.

The ability to transmit the image of an EKG or a cardiac monitor strip as a digital image via telemedicine avenues or via a cellular phone does not alter the Ohio EMS scope of practice. Regardless of an EMS agency's policies and procedures to utilize electronic technologies or the protocols provided by the EMS medical director, Ohio EMS providers may not exceed the Ohio EMS scope of practice for their respective level of Ohio EMS certification.

As a review, please note the following key information regarding cardiac monitoring and 12-lead EKG acquisition:

1. The Ohio EMS scope of practice permits Emergency Medical Technicians (EMTs) and Advanced Emergency Medical Technicians (AEMTs) to set up and apply a 12-lead EKG when assisting a Paramedic or for the purposes of electronic transmission if all of the following conditions are met:
   A. The EKG is performed in accordance with a written protocol
   B. The EMT and the AEMT shall not interpret the EKG
   C. Delay in patient transport is minimized
   D. The EKG is used in conjunction with destination protocols approved by the local medical director

2. The Ohio EMS scope of practice does not permit EMTs to set up a cardiac monitor unless an AEMT or a Paramedic is present. The EMT shall not perform cardiac monitor interpretation.

Due to the Ohio EMS scope of practice for EMTs and AEMTs, the EMFTS Board continues to strongly recommend the inactivation of the automated interpretation function that is installed in many 12-lead EKG machines and/or the blockade of the printing of the interpretation when the EKG is acquired by an EMT or by an AEMT in the absence of a Paramedic. This action has three benefits:

A. The lack of an automated 12-lead EKG interpretation prevents the EMT and the AEMT from exceeding the Ohio EMS scope of practice.
B. The EMT and the AEMT will avoid the scenario where a patient experiencing chest pain refuses prehospital care and/or transport due to a "normal" automated 12-lead EKG interpretation.
C. Automated interpretations should not be used and are not intended to serve as a substitute for the primary interpretation of a 12-lead EKG by a Paramedic or other medical professional whose training and scope of practice includes 12-lead EKG interpretation.