

# **Cuyahoga Falls Fire Department**

**EMS**

**PROTOCOL**

**October 2020**



I, Dr. Rudd Bare, Medical Director for the Cuyahoga Falls Fire Department, hereby declare that the attached document titled CFFD EMS PROTOCOLS is the standing protocol for the Cuyahoga Falls Fire Department.

R. Bare MD  
Dr. Rudd Bare

9-4-19  
Date

State of Ohio, County of Summit  
Sworn to me this 4 day of September.

Gail M. Frangos  
Notary Public Signature

9-4-19  
Date



GAIL M. FRANGOS  
Notary Public, State of Ohio  
My Commission Expires 01-28-2028

## Additions and Revisions

When a page in this document is added, or revised, note it here. The revision date can be found at the top left of each page.

Date of Revision	Page Number	Initials
02.19.16	xiv: Appendix #1: Medications Ketorolac (Toradol)	KE
02.19.16	5-3: Adult Medical Emergencies Protocols	KE
02.19.16	13-1: Appendix #1: Medications Ketorolac (Toradol)	KE
02.19.16	13-24: Medications: Ketorolac (Toradol)	KE
01.22.18	06-05: Pre-hospital Spinal Motion Restriction Guidelines	KE
09.10.19	iii: Medical Director standing protocol signature page	KE
09.10.19	1-29: PPES Medical Control Guidelines & Procedures	KE
09.10.19	13-46: WRH EMS Pain Management Protocol	KE
03.26.20	CO ID-19 Protocol - Respiratory Distress	KE

## Additions and Revisions

When a page in this document is added, or revised, note it here. The revision date can be found at the bottom left of each page.

Date of Revision	Page Number & Name	Initials
01.14.16	xiv: Appendix #1: Medications (remove Lasix, Ativan & add Versed)	KE
01.14.16	2-4: Airway / Breathing: Airway (Adult)	KE
01.14.16	2-10: Airway / Breathing: CHF / Pulmonary Edema	KE
01.14.16	4-2: ACLS: Acute Coronary Syndrome	KE
01.14.16	4-4: ACLS: Bradycardia	KE
01.14.16	4-6 & 4-7: ACLS: Narrow - Complex Tachycardia 4-8:	KE
01.14.16	ACLS: Wide - Complex Tachycardia w/Pulse	KE
01.14.16	4-17: ACLS: Post - Resuscitation Cardiac Care induced Hypothermia	KE
01.14.16	5-8: Medical: Behavioral / Psychiatric Emergencies	KE
01.14.16	5-22 & 5-23: Medical: Seizures	KE
01.14.16	6-14: Trauma: Extremity Trauma / Amputation	KE
01.14.16	9-4 & 9-5: ACLS - Pediatric: Narrow - Complex Tachycardia	KE
01.14.16	10-15 & 10-16: Medical- Pediatric: Seizure	KE
01.14.16	12-4: Childbirth / Obstetrical Emergencies - Obstetrical Emergencies	KE
01.14.16	13-1: Appendix #1: Medications (remove Lasix • Ativan & add Versed)	KE
01.14.16	13-18: Medications: Furosemide (Lasix) remove page	KE
01.14.16	13-26: Medications: Lorazepam (Ativan) remove page	KE
01.14.16	13-41 thru 13-45: Pediatric: Drug Administration Chart	KE
01.14.16	14-37: Cardiac/ACLS: Synchronized Cardioversion (Manual)	KE
01.14.16	14-38: Cardiac/ACLS: Transcutaneous Pacing	KE
01.14.16	14-41: Medical Procedures: Mucosa! Atomization Device (MAD)	KE
01.14.16	15-3: Special Operations Nerve Agent Exposure Kit	KE

# NAVIGATION

## If viewing this document as a printed hard copy

The Header color of each section defines the protocol type

<b>AIRWAY / BREATHING</b>	<b>CIRCULATION / SHOCK</b>	<b>ACLS</b>	<b>MEDICAL</b>	<b>TRAUMA</b>
Blue – Adult Protocols				
<b>AIRWAY / BREATHING</b>	<b>CIRCULATION / SHOCK</b>	<b>ACLS</b>	<b>MEDICAL</b>	<b>TRAUMA</b>
Pink – Pediatric				
<b>OB EMERGENCIES</b>				
Purple – OB Emergencies				
<b>MEDICAL CONTROL</b>				
Gray – Reference or Policy				

### Header Text

The header text highlights where you are in each protocol sub-section

The WHITE 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.

# INTRODUCTION

The Cleveland Clinic Regional Hospitals Physicians Advisory Board has developed the following EMS Medical Control Protocols and Procedures Manual to establish the minimum standard of care, which will be provided by all Emergency Medical Services organizations under their respective Medical Control authority.

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 direct supervision of a physician and under their respective EMS Medical Control.

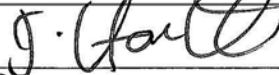
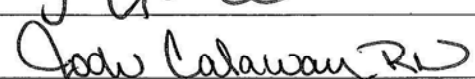
Treatment protocols may and should be initiated without prior direct Medical Control contact, especially when the patient's condition and / or situation is life threatening. As soon as the condition and / or situation permits, direct contact must be established with Medical Control for confirmation of medical care and further medical direction.

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. The bottom of the page shows when the most current version was printed. Please replace older versions with newly updated material as soon as it is issued. Once updated, older versions are to be considered obsolete and thus, are to be discarded to help eliminate confusion.



# ACKNOWLEDGEMENTS

Appreciation is extended to all those who assisted in the development and revision of these protocols.


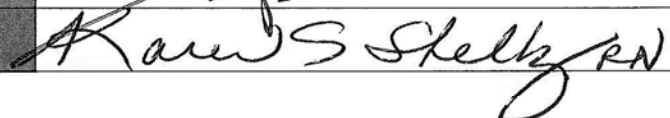
## Ashtabula County Medical Center

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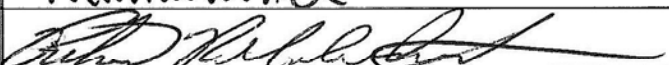
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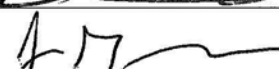
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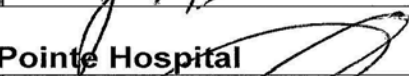
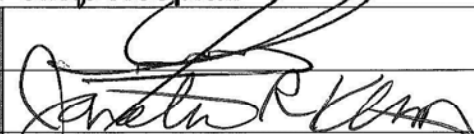
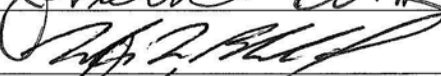
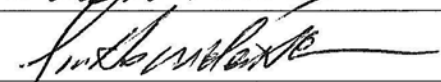
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# MEDICAL CONTROL PROTOCOLS AND PROCEDURES GUIDELINES

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 en route.
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. Patient transport, or other needed treatments, must not be delayed for multiple attempts at endotracheal intubation.
5. Verbally repeat all orders received before their initiation.
6. Any patient with a cardiac history, irregular pulse, unstable blood pressure, dyspnea, or chest pain **must** be placed on a cardiac monitor and a copy of the EKG **must** be attached to the EMS Run Sheet.
7. 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.
8. If the patient's condition does not seem to fit a protocol or protocols, contact Medical Control for guidance.
9. All trauma patients with mechanisms or history for multiple system trauma will be transported as soon as possible. The scene time should be 10 minutes or less.
10. 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.



# 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, 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.

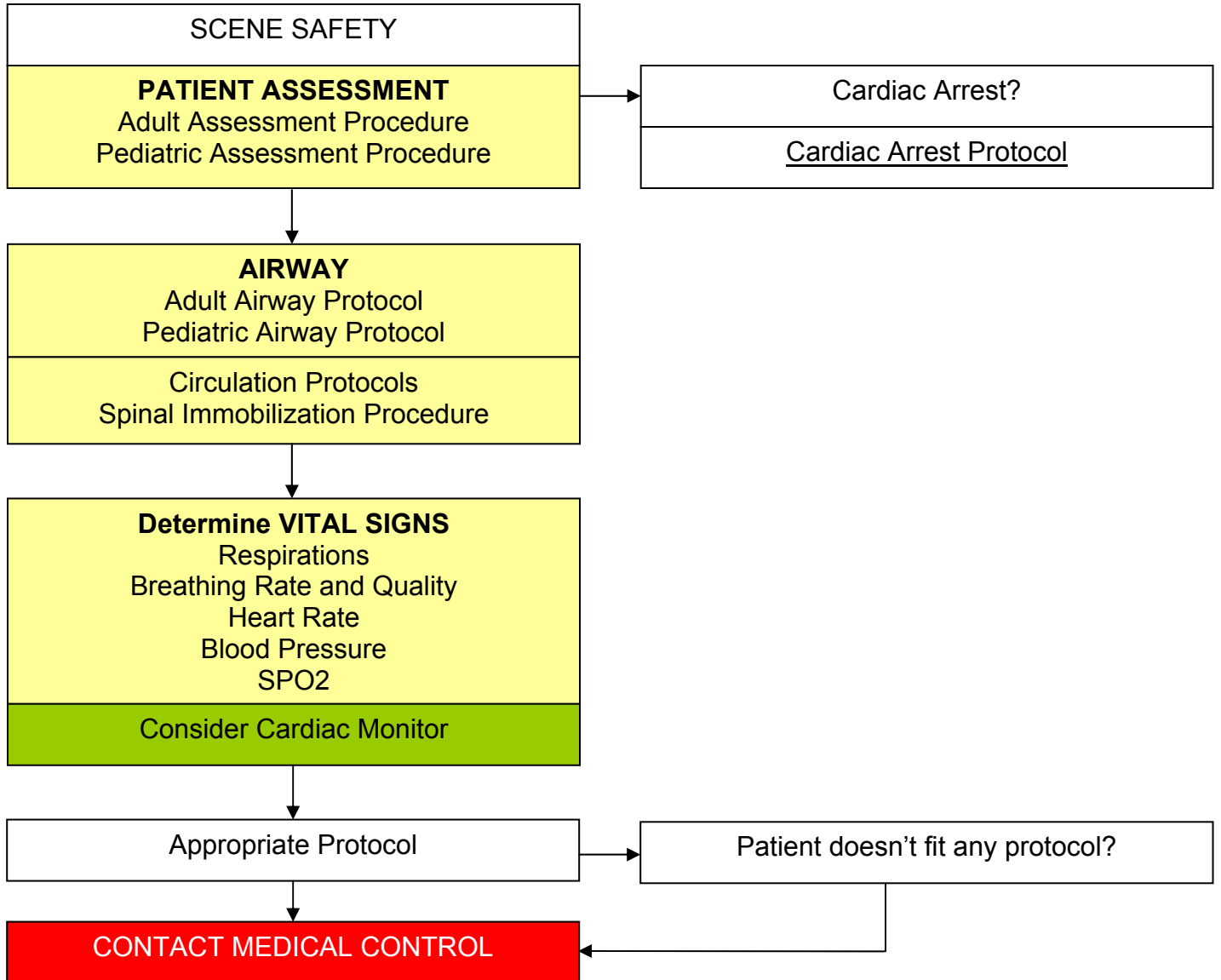
COLOR CODES	
<b>BLACK</b>	Universal Patient Care Protocol
<b>YELLOW</b>	EMT – EMT Skill and Assessment Level Interventions
<b>GREEN</b>	EMT – Advanced EMT and Assessment Level Interventions
<b>BLUE</b>	Paramedic Skill and Assessment Level Interventions
<b>RED</b>	Medical Direction Contact / Authorization - Consult Required

ALGORITHM LEGEND		
<b>E</b>	<b>E</b>	<b>E</b>
<b>A</b>	<b>A</b>	<b>A</b>
<b>P</b>	<b>P</b>	<b>P</b>
<b>M</b>	<b>M</b>	<b>M</b>

	Stop – Do NOT Perform Intervention If Listed Criteria Present
	Caution – Reminder About Specific Intervention. Do NOT Perform Action Unless Listed Criteria Are Met and Understood. If Question(s), Contact Medical Control

# UNIVERSAL MEDICAL CARE PROTOCOL

E	EMT	E
A	AEMT	A
P	PARAMEDIC	P
M	MED CONTROL	M



## KEY POINTS

- **Any patient contact, which does not result in an EMS transport, 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 blood pressure, pulse, respirations, pain / severity.**
- A pediatric patient is defined by the Broselow-Luten tape. If the patient does not fit on the tape, 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 with in the standard of care of the State of Ohio.
- Only functioning Paramedics can perform ALS procedures.
- Use the standard AHA guidelines for CPR and rescue breathing.
- Refer to the Post Resuscitation Cardiac Care Protocol for all successfully 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.
- IVs should be initiated in all patients based upon the results of the patient assessment, and the IV / IO Procedure.
- Administer cardiac monitoring (3-Lead) and perform a 12-Lead EKG based upon the results of the patient assessment or the protocols.
- If indicated and possible, perform a 12-Lead EKG before moving to the squad and before any medication administration.
- Check the patient's BGL 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.
- Patients who are having a sickle cell attack may benefit from high flow oxygen and IV fluids.
- It is mandatory to document the reason why an intervention was not performed if it was indicated.
- If Medical Control requests that a functioning paramedic perform an intervention outside of the protocol; the functioning paramedic may follow the orders as long as **ALL** of the following applies:
  - Medical Control was notified that the intervention is not in the protocol.
  - The intervention is in the recognized scope of practice for paramedics in the state of Ohio.
  - The patient's condition could be severely affected if the intervention was not performed.
  - The paramedic has documented training in the intervention within the last 2 years.
  - The paramedic has received permission to perform the intervention from Medical Control.

### 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 extrication.
- An adult patient is considered hypotensive if their systolic BP is 90 mm Hg or less or loss of radial pulses.
- Assess the patient after every 300 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 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 15 years old or younger.
- Refer to the Pediatric Vital Signs Chart, as needed.



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## EMS LEVELS OF CERTIFICATION

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 Director / Manager / Coordinator, Department EMS Coordinator, Fire / EMS Chief and / or Owner. 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

<b>EMT</b>	<b>ADVANCED EMT</b>	<b>PARAMEDIC</b>
<p><b>40 hours of CE which includes:</b></p> <ul style="list-style-type: none"> <li>• 6 hours of pediatric education</li> <li>• 2 hours of geriatric education</li> <li>• 8 hours of trauma training</li> <li>• 2 hours of trauma triage protocol / issues training (2 of the 8 hrs must be dedicated to local / issues training)</li> </ul>	<p><b>60 hours of CE which includes:</b></p> <ul style="list-style-type: none"> <li>• 8 hours of pediatric education</li> <li>• 4 hours of geriatric education</li> <li>• 8 hours of trauma training</li> <li>• 2 hours of trauma triage protocol / issues training (2 of the 8 hrs must be dedicated to local / issues training)</li> </ul>	<p><b>86 hours of CE which includes:</b></p> <ul style="list-style-type: none"> <li>• 12 hours of pediatric education</li> <li>• 4 hours of geriatric education</li> <li>• 8 hours of trauma training</li> <li>• 2 hours of trauma triage protocol / issues training (2 of the 8 trauma hrs must be dedicated to trauma triage)</li> </ul>
<b>OR</b>	<b>OR</b>	<b>PLUS</b>
<p>State approved Refresher Course (including pediatric, geriatric and trauma requirements)</p>	<p>State approved Refresher Course which satisfies 40 of the required 60 hours PLUS 20 additional hours of CE.</p>	<p>6 hours on emergency cardiac care; which may be satisfied by ACLS certification or equivalent course approved by EMS Board</p>
<b>OR</b>	<b>OR</b>	<b>OR</b>
<p><b>Current NREMT Renewal Requirements</b></p> <ul style="list-style-type: none"> <li>• 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.</li> </ul>	<p><b>Current NREMT Renewal Requirements</b></p> <ul style="list-style-type: none"> <li>• 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.</li> </ul>	<p>Forty-eight (48) hours Paramedic Refresher Course</p>
		<b>PLUS</b>
<p>If opting for National Registry Renewal, all that is required is:</p> <ul style="list-style-type: none"> <li>• 2 hours of trauma / triage / issues training</li> </ul>	<p>If opting for National Registry Renewal, all that is required is:</p> <ul style="list-style-type: none"> <li>• 2 hours of trauma / triage issues training</li> </ul>	<p>Forty-four (38) additional hours of CE</p>
<b>OR</b>	<b>OR</b>	<b>OR</b>
<p><b>Exam in Lieu of CE (for all levels)</b> 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.</p>	<p><b>Exam in Lieu of CE (for all levels)</b> 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.</p>	<p><b>Current National Registry Paramedic Renewal Requirements</b></p> <ul style="list-style-type: none"> <li>• 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.</li> </ul>
		<p>If opting for National Registry Renewal, all that is required is:</p> <ul style="list-style-type: none"> <li>• 2 hours of trauma / triage / issues training.</li> </ul>
		<b>OR</b>
		<p><b>Exam in Lieu of CE (for all levels)</b> 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.</p>

# EMS COMMUNICATIONS

A member of the pre-hospital care team must contact the receiving facility at the earliest time conducive to good patient care. This may be a brief early notification or “heads up”. It may mean that the hospital is contacted from the scene if assistance is needed in the patient's immediate care or permission is required for part of the patient care deemed necessary by the EMS provider in charge.

## 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.
- **Medical Control can and will notify receiving hospitals if required, or EMS may elect to contact receiving hospital directly.**

# 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 some 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.
- Make an effort 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.

**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 at all times.****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
- Position for comfort
- Splint or 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

## 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 other 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 situation 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 if and 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

The following principles regarding on-scene use of a helicopter have been adopted by the Cuyahoga County EMS Advisory Board, and are endorsed by these protocols. Air transport should be utilized whenever patient care can be improved by decreasing transport time, due to extended extrication or by giving advanced care not available from ground EMS.

## PURPOSE

- Provide life - saving treatment by improving patient care in the prehospital setting.
- Allow for expedient transport in serious, mass casualty settings.

## INDICATIONS FOR AEROMEDICAL TRANSPORT

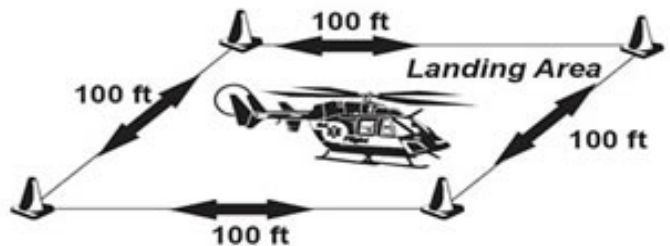
1. Aeromedical services may be requested directly to the scene by:
  - An On - Scene EMS organization
  - Hospitals and healthcare facilities
2. A request for aeromedical service response may be initiated when one or more of the following conditions exists:
  - The patient's airway, breathing, or hemorrhage / circulation can not be controlled by conventional means and the estimated arrival time of the air medical service is less than the time required for ground transport to the nearest hospital.
  - High priority patient with > 20 minute transport time.
  - Entrapped patients with > 10 minute estimated extrication time.
  - Access hard to reach victims for whom the helicopter will have a special advantage.
  - When sufficient other Mutual Aid resources are not available.
  - To assist in dispersing multiple, serious victims to more distant hospitals. It is recognized that in major emergency incidents, the Summit County 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).
3. If a potential need for air transport is anticipated, but not yet confirmed, an air medical transport service can be placed on standby.
4. If the scene conditions or patient situation improves after activation of the air medical transport service and air transport is determined not to be necessary, paramedic or administrative personnel may cancel the request for air transport.
5. Minimal 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)

## KEY POINTS

- 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 to wait 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 physician shall use his / her 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.
- A flight physician on the scene assumes care of the patient. If a physician on the scene asks a squad member to perform beyond the squad member's level of authorization, the squad member should inform the physician that he / she is unable to do so.
- 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.).

## 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

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 who 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 of 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
- Catheter replacements
- Gastric (feeding) tubes that have become displaced

## 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 judgment 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**

# Refusal of Care

ADULT - Patient initiated refusal of care

Patient exhibits CAPACITY to refuse  
**Lucid and capable of making an informed decision, alert to Person, Place, Time, and Event.**

Inform patient of risks associated with refusal  
 Patient must be able to repeat in their own words risks and must verbalize understanding of consequences  
 Document in narrative

Physical assessment of complaint  
 Assess and document vital signs

## Abnormal Vitals / Assessment

Heart Rate <50bpm or >100bpm  
 SBP < 100 mmHg or > 180mmHg  
 DBP <50 mmHg or > 100 mmHg  
 Respirations <12bpm or >24bpm  
 BGL <60 mg/dl  
 Spo2 <94%

Obtain blood glucose where indicated, 12 Lead EKG, Transmit, and Contact Medical Control

## Stable vitals / NOT a dangerous refusal

Assure patient has access to food, water, communications, and can complete activities of daily living  
 Document these in narrative

Explain to patient if there are changes or concerns after EMS leaves to call back for re-evaluation

Read release form to patient and have them sign. If unable to sign have witness sign and place witness information in narrative

## Dangerous Refusals

- Suicide attempts
- Head injury
- Intoxication (drug or ETOH)
- Chest Pain
- Syncope
- Dyspnea
- Lift assists with weakness or symptoms

Obtain blood glucose where indicated, 12 Lead EKG, Transmit, and Contact Medical Control

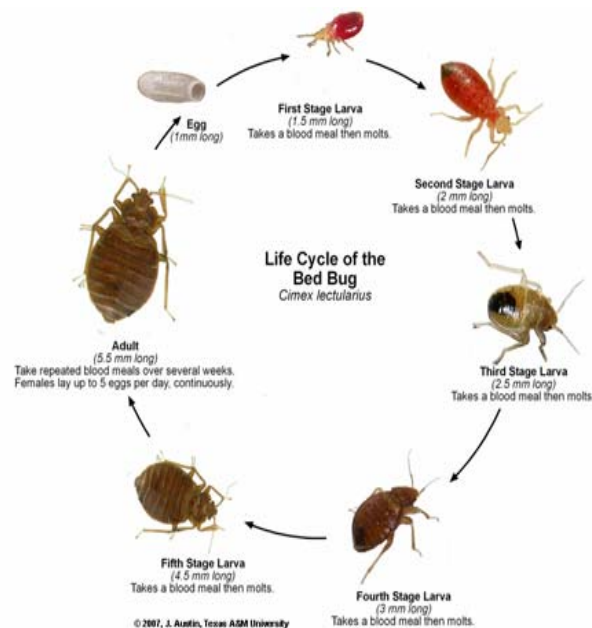
## BED BUGS

### 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 HEALTHCARE 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 length based tapes 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 ABUSE / NEGLECT**

- 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 a child abuse case based upon the following principles:

- **Protect** the life of the child from harm, as well as that of the EMS team from liability.
- **Suspect** that the child may be a victim of abuse, especially if the injury / illness is not consistent with the reported history.
- **Respect** the privacy of the child and family.
- **Collect** as much evidence as possible, especially information.

**PROCEDURE**

1. With all children, assess for and document psychological characteristics of abuse, including excessively passivity, compliant or fearful behavior, excessive aggression, violent tendencies, excessive crying, fussy behavior, hyperactivity, or other behavioral disorders.
2. With all children, assess for and document physical signs of abuse, including especially any injuries that are inconsistent with the reported mechanism of injury. The back, buttocks, genitals, and face are common sites for abusive injuries.
3. With all children, assess for and document 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. With all children, assess for and document signs of sexual abuse, including torn, stained, or bloody underclothing, unexplained injuries, pregnancy, or sexually transmitted diseases.
5. Immediately report any suspicious findings to both the receiving hospital (if transported). Law Enforcement must also be notified.
6. 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**

- 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.

**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.)
- Multiple bruises in various stages of healing
- Not age appropriate when approached by strangers
- Not age appropriate when approached by parent
- Blood in undergarments

# 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*



<b>GUIDELINES / PROCEDURES - MEDICAL CONTROL</b>
<b>CONSENT AND REFUSAL OF CARE GUIDELINES</b>

## **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 life saving treatments.

## **Refusal of Treatment:**

**Competent:** A competent adult 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 at all possible. An offer to return and transport them at a later time should be made by EMS. Contact with Medical Control should be made if there is any question about the person's competency. If the need for treatment is obvious, speaking directly to the Nurse or Physician may assist in convincing the patient to be transported.

**Incompetent:** While an adult may refuse treatment, in some situations, their refusal may not be competent. In the following situations, the refusal of treatment may be incompetent:

- 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, incompetent refusal.

## **Incompetent 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.

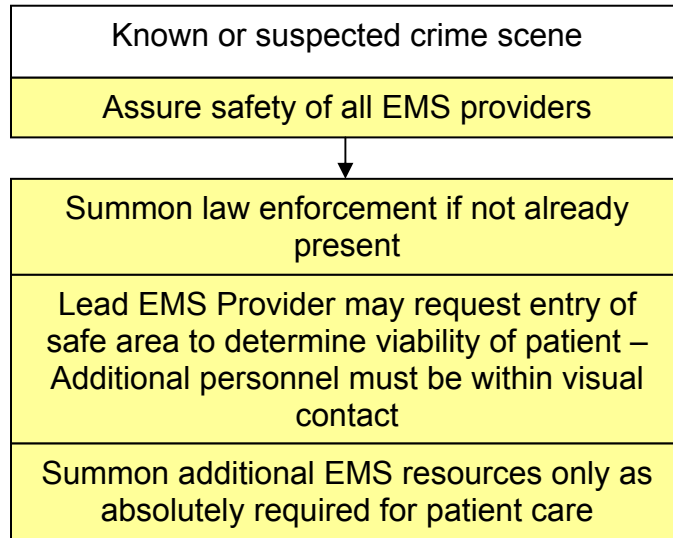
## **TRANSPORTATION**

### **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

E	EMT	E
A	AEMT	A
P	PARAMEDIC	P
M	MED CONTROL	M



**REFUSED ACCESS TO PATIENT**

Remain Calm

**CONTACT MEDICAL CONTROL**

**VIABLE PATENT**

Follow appropriate treatment protocol

Remove from crime scene as soon as possible

Relay any information regarding crime obtained during treatment to police as soon as possible

**TRANSPORT**  
To facility appropriate for patient condition

**Minimize scene disturbances**

- Enter and exit scene in the same path
- Do not go any other places within the scene other than what is required for patient care and / or assessment
- Wear gloves at all times, put on prior to entry and do not remove until after exit
- Avoid pools of blood
- Minimize personnel allowed access to the scene to those who are absolutely required for patient care and / or assessment
- Do not cut clothes through knife or bullet holes
- Do not go through patients personal effects

**DECEASED PATIENT**

Refer to DOA guidelines

Do not move body

One provider to apply cardiac monitor to document death

**CONTACT MEDICAL CONTROL**

Do not transport DOA

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 thorough investigation of the crime.

## DEAD ON ARRIVAL (DOA)

### 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:

- Decapitation
- Massive crush injury of the head, chest, or abdomen
- Gross decomposition
- Gross rigor mortis without hypothermia
- Gross incineration
- Severe blunt trauma
- 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 patient is in complete cardiopulmonary arrest (clinically dead) and meets one or more of the criteria below, CPR and ALS therapy need not be initiated:
  - Gross decomposition
  - Gross rigor mortis without hypothermia
  - Gross incineration
  - Dependent lividity
  - Severe blunt force trauma
  - Injury not compatible with life (i.e., decapitation, burned beyond recognition, massive open or penetrating trauma to the head or chest with obvious organ destruction)
  - Extended downtime with Asystole on the EKG
- 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.

## GUIDELINES / PROCEDURES - MEDICAL CONTROL

### DOMESTIC VIOLENCE / SEXUAL ASSAULT / RAPE / ELDER ABUSE

- 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.

#### 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.

#### KEY POINTS

##### SEXUAL ASSAULT:

- A victim of a sexual assault has experience 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.)
  - o What happened? (A brief description is acceptable)
  - o When did the attack occur?
  - o 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.

**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:
  - o Not sharing information with bystanders.
  - o Limiting radio transmissions that identify patients.
  - o Avoid disclosure of unnecessary information to police (appropriate info includes patient's name, DOB, and destination hospital.)
  - o Protecting patient's privacy whenever possible.
  - o 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 ABANDONMENT

Ohio law provides that a parent may drop-off a newborn baby within the first 72 hours 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.

## **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.

**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 policies
- 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**

Under the auspices of each EMS jurisdiction and the Medical Director, termination of resuscitative efforts may apply.

**PURPOSE**

The purpose of this policy is to:

- Allow for discontinuation of prehospital resuscitation after delivery of adequate and appropriate ALS therapy.

**PROCEDURE**

1. Discontinuation of CPR and ALS intervention may be implemented prior to contact with Medical Control if ALL of the following criteria have been met:
  - The victim must be 18 years of age or older.
  - The victim must be in asystole or PEA, and have the absence of a pulse and vital signs confirmed.
  - Adequate CPR has been administered.
  - The victim must have a properly placed orotracheal tube, king airway, or cricothyrotomy.
  - The patient must have a patent intravenous access.
  - The victim must not be in arrest due to hypothermia, or apparent drug overdose.
  - At least two rounds of ACLS drugs / and subsequent procedures have been administered without return of spontaneous circulation (palpable pulse).
  - All EMS Paramedic personnel involved in the patient's care agree that discontinuation of the resuscitation is appropriate.
  - If all of the above criteria are not met and discontinuation of prehospital resuscitation is desired, contact Medical Control. The Physician must speak directly with the Paramedic and must give consent for the resuscitation effort to cease.
  - Document all patient care and interactions with the patient's family, personal Physician, medical examiner, law enforcement and Medical Control on EMS patient care report form.

**GUIDELINES FOR FIELD TERMINATION**

Patients found in cardiac arrest from trauma, medical, environmental insult, or hypothermia who present as follows:

**Trauma Arrest Patients:**

- Trauma patients should be rapidly assessed for signs of life. If the patient is apneic and pulseless but has organized ECG activity, and has a down time less than 20 minutes (less than 10 minutes for blunt trauma) then they should be treated and transported to the nearest appropriate facility. Otherwise resuscitation efforts should be withheld.
- Resuscitative efforts should be withheld if a trauma arrest patient has; signs; of irreversible death
  - Decapitation
  - Rigor mortis
  - Decomposition
  - Injuries incompatible with life
  - 90% surface burns with other trauma

**Medical Patients:**

- Medical patients should be rapidly assessed for signs of life
- Resuscitative efforts should be withheld if a medical arrest patient
  - If the patient did **NOT** have a return of spontaneous pulse or respirations after 20 minutes of CPR, ACLS, successful ETT with confirmation by a secondary device, minimum of two rounds of medications, and all reversible causes have been identified.
  - Continuous asystole for at least 10 minutes in the adult patient, and 30 minutes in pediatric patients after CPR and successful airway management and a minimum of two rounds of medications, and no reversible cases identified.
  - Initial rhythm is asystole and signs of rigor mortis, or lividity are present.
  - A valid DNR directive is present with the patient.
  - Rigor mortis.
  - Decomposition.

**Drowning patients:** field resuscitation efforts should be withheld if:

- Patient has been submersed in water for more than 60 minutes and is **NOT** hypothermic
- Any obvious lethal injury is present

**Hypothermia Patients**

- **Known prolonged hypothermia and obvious signs of death such as lividity, rigor mortis and asystole.**

**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. Wear gloves, mask, goggles **ALWAYS** 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.**

CUYAHOGA FALLS  
FIRE DEPARTMENT

EMERGENCY CARE WORKER (ECW)  
EXPOSURE REQUEST FOR INFORMATION

Name \_\_\_\_\_

Home Address \_\_\_\_\_

Telephone \_\_\_\_\_

Employer Department: \_\_\_\_\_

Employer Address \_\_\_\_\_

Supervisor's \_\_\_\_\_

Work Telephone \_\_\_\_\_

Hepatitis B Vaccine Series Completed \_\_\_\_\_ (year)

Hepatitis B Immunity Titer Positive on \_\_\_\_\_ (date)

**EXPOSURE INFORMATION:**

Date of Exposure \_\_\_\_\_ Time \_\_\_\_\_

Location \_\_\_\_\_

Manner of Exposure \_\_\_\_\_

Substance if known \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Source Patient Info: \_\_\_\_\_

Name \_\_\_\_\_

Date of Birth \_\_\_\_\_

Transported to \_\_\_\_\_

Date Received \_\_\_\_\_

Action \_\_\_\_\_

Fax to: CFFD: 330-971-8409

**CONFIDENTIAL**

## SELECTED PATIENTS TO PORTAGE PATH PSYCHIATRIC EMERGENCY SERVICES (PES) PROTOCOL

**BACKGROUND:** Cuyahoga Falls Fire Department (CFFD) may transport selected patients directly to PES.

### PATIENTS MAY INCLUDE:

- **Involuntary** mental health patients with a completed Ohio Department of Mental Health Application for Emergency Admission ("**pink slip**"), e.g. suicidal (without attempt), homicidal, seriously impaired by their mental illness, et al.
- **Voluntary** mental health patients, e.g. hearing voices, wants to talk, depressed, medication issues, et al.

### THE FOLLOWING PATIENTS ARE EXCLUDED AND SHALL BE TRANSPORTED TO AN ED:

- Patients requiring emergency medical care, including, but not limited to:
  - **Medical emergencies**, such as chest pain, dyspnea, stroke, altered mental status not caused by their psychiatric illness, abnormal and/or concerning vital signs, diabetic issues, seizures, overdoses/ingestions, excited delirium, et al.
  - **Major trauma patients, and minor trauma patients** that require emergency care, e.g. X-rays, sutures, et al.
  - Patients with a **suicide attempt**, e.g. hanging, overdose, poisoning, et al.
  - Patients with **severe intoxication**, i.e. not A&Ox3, not ambulatory, and/or requiring medical care
  - **Pregnant** patients
- Patients **less than 18 years** of age
- Be cautious with **elderly** patients and other vulnerable populations
- Patients requiring **chemical restraint**

### PROTOCOL:

1. Contact online medical control for approval for transport to PES.
2. Then contact PES (**330-762-6110**) to advise of the transport.
3. Follow all applicable behavior and medical protocols, as indicated.
4. If the patient's history, exam, and/or clinical condition changes, then first treat the patient accordingly. Contact medical control, law enforcement, and/or PES for assistance as needed.
5. Transport the patient.

# AIRWAY / BREATHING PROTOCOLS

Airway / Breathing Guidelines .....	2-2
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**AIRWAY / BREATHING GUIDELINES****GUIDELINES OF AIRWAY 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.

**GUIDELINES OF BREATHING ASSESSMENT****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:**

- 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.

<b>ADJUNCT</b>	<b>INDICATIONS</b>	<b>CONTRAINDICATIONS</b>	<b>COMMENTS</b>
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	This maneuver does not protect against aspiration in patient with depressed consciousness
Hyperextension of neck	Opening airway of non-trauma patient	Potential cervical spine injury	This maneuver does not protect against aspiration in patient with depressed consciousness
Nasal airway	Obstruction by tongue with gag reflex present	Potential mid-face injury	These adjuncts do not protect against aspiration in patient with depressed consciousness
Oral airway	Obstruction to tongue, etc.	Positive gag reflex	These adjuncts do not protect 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	Difficult airway Airway device for BLS providers	NONE	Primary salvage airway Size appropriately
LMA	Difficult airway Airway device for BLS providers	NONE	Requires special training prior to use
Needle cricothyrotomy	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
Quicktrach or other cricothyrotomy device	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

# AIRWAY (ADULT)

E	EMT	E
A	AEMT	A
P	PARAMEDIC	P
M	MED CONTROL	M

Assess ABC's  
Respiratory Rate, Effort,  
and Adequacy

**Adequate**

Supplemental OXYGEN

⚠ COPD Patients

CAPNOGRAPHY PROCEDURE

Treat per specific protocol

**Inadequate**

BASIC MANEUVERS FIRST

Open airway  
Nasal / Oral Airway  
Bag-Valve-Mask

**Patent Airway**

CAPNOGRAPHY PROCEDURE

Consider Sedation **Prior** To Advanced Airway Placement – *IF RESPONDS TO PAIN*  
Consider  
MIDAZOLAM (VERSED)  
2-5 mg IV / IM / IN

**STOP** Contact MED CONTROL if MIDAZOLAM (VERSED) needed in Head Injury

**INTUBATION PROCEDURE**

⚠ Patient must be apneic for AEMT to intubate

Apply nasal cannula 4 – 6 LPM during intubation attempts

Cardiac Arrest - May Go Straight to Supraglottic Airway

**Supraglottic Airway Device (King, LMA)**

**STOP** No Medications Down Supraglottic Airway

⚠ Esophageal Disease

⚠ AEMT patient must be apneic  
EMT patient must be pulseless and apneic

Additional Sedation Required **After** Advanced Airway Placement  
Consider  
MIDAZOLAM (VERSED)  
2-5 mg IV / IM / IN

**STOP** Contact MED CONTROL if MIDAZOLAM (VERSED) needed in Head Injury

**Obstructed Airway**

See Foreign Body Airway Obstruction Protocol

Heimlich Maneuvers

Direct Laryngoscopy  
Attempt Removal with Magill Forceps

**NEEDLE CRICOTHYROTOMY  
OR  
CRICOTHYROTOMY KIT**

**STOP** Not Had Training on Cricothyrotomy Kit

CAPNOGRAPHY PROCEDURE

**TRANSPORT** to appropriate facility **CONTACT** receiving facility **CONSULT** Medical Direction where indicated

INDICATIONS	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
<ul style="list-style-type: none"> <li>• Apnea</li> <li>• Coughing</li> <li>• Choking</li> <li>• Inability to speak</li> <li>• Unresponsive</li> <li>• Burns</li> <li>• Trauma</li> </ul>	<ul style="list-style-type: none"> <li>• Witnessed aspiration</li> <li>• Sudden episode of choking</li> <li>• Gagging</li> <li>• Audible stridor</li> <li>• Change in skin color</li> <li>• Decreased LOC</li> <li>• Increased or decreased Respiratory rate</li> <li>• Labored breathing</li> <li>• Unproductive cough</li> </ul>	<ul style="list-style-type: none"> <li>• Cardiac arrest</li> <li>• Respiratory arrest</li> <li>• Anaphylaxis</li> <li>• Esophageal obstruction</li> </ul>

## Tracheostomy Patient Airway Management

If unable to ventilate patient, attempt to suction the tracheostomy or replace inner cannula if replacements are available. If unable to suction, the suction catheter will not pass, or a replacement innertrac cannula is unavailable, remove entire tracheostomy and place a ET tube of similar outer diameter in the stoma. Do not advance the ET tube too far, a few centimeters after the distal cuff disappears from the stoma is sufficient.

### Cuffed Tracheostomies

Like other advanced airways, tracheostomies must have a distal cuff to seal internally while utilizing positive pressure ventilation. Patients on ventilators must have a cuffed tracheostomy tube to facilitate positive pressure ventilation. While ventilating patients with a cuffed tracheostomy, assure the pilot balloon is inflated assuring a good internal seal.

### Uncuffed Tracheostomies

Spontaneously breathing patients will likely have an uncuffed tracheostomy. Although a BVM will adapt to the end of the uncuffed tracheostomy, the will likely be leakage yielding insufficient ventilation. Remove the uncuffed tracheostomy and insert an ET tube as described above if ventilation is required.

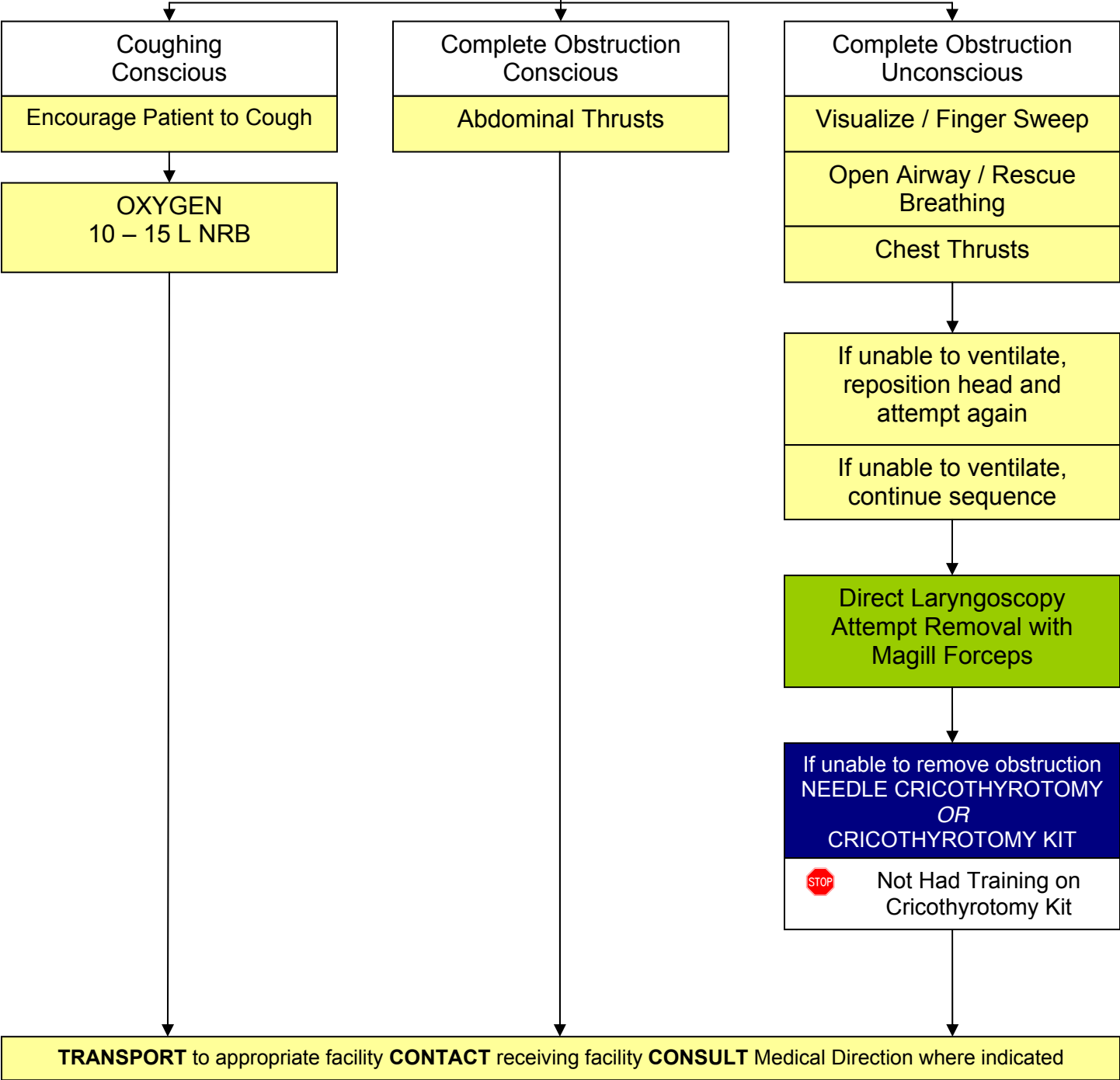
## KEY POINTS

- 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 a supraglottic airway (King or LMA) if they are unable to Intubate. Consider c-collar to maintain ETT placement for all intubated patients to maintain tube placement (REMOVE COLLAR upon patient TRANSFER).
- **AEMT's may only intubate or place supraglottic airways on apneic patients.**
- **EMT's may only use supraglottic airways on pulseless AND apneic patients.**
- Consider the use of intubation aids such as a bougie to facilitate intubation.

**AIRWAY / BREATHING CIRCULATION / SHOCK ACLS MEDICAL TRAUMA**  
**FOREIGN BODY AIRWAY OBSTRUCTION (FBAO) - ADULT**

E	E	E
A	A	A
P	P	P
M	M	M

UNIVERSAL PATIENT CARE PROTOCOL  
 Head Tilt / Chin Lift / Jaw Thrust  
 Airway Maneuvers



# FOREIGN BODY AIRWAY OBSTRUCTION (FBAO) - ADULT

INDICATIONS	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
<ul style="list-style-type: none"> <li>• Coughing</li> <li>• Choking</li> <li>• Inability to speak</li> <li>• Unresponsive</li> </ul>	<ul style="list-style-type: none"> <li>• Witnessed aspiration</li> <li>• Sudden episode of choking</li> <li>• Gagging</li> <li>• Audible stridor</li> <li>• Change in skin color</li> <li>• Decreased LOC</li> <li>• Increased or decreased Respiratory rate</li> <li>• Labored breathing</li> <li>• Unproductive cough</li> </ul>	<ul style="list-style-type: none"> <li>• Cardiac arrest</li> <li>• Respiratory arrest</li> <li>• Anaphylaxis</li> <li>• Esophageal obstruction</li> </ul>

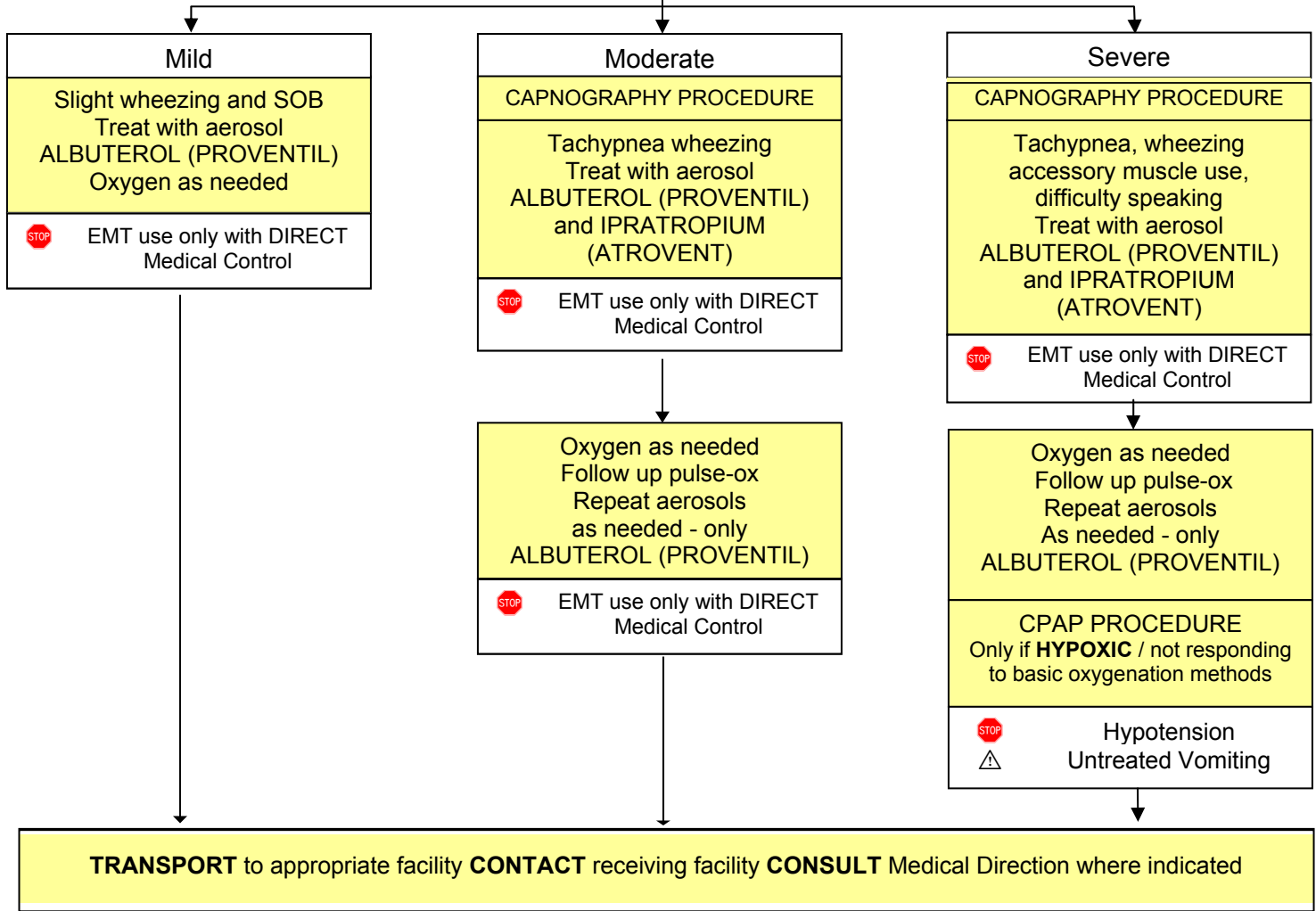
## KEY POINTS

- 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.
- Quicktrach kits have a larger internal diameter and thus will provide some minimal ventilation.
- Needle cricothyrotomy and Quicktrach kits are bridge devices to surgical intervention.
- A scalpel may be used in obese or patients with otherwise difficult to identify cricothyrotomy landmarks to make a VERTICAL, MIDLINE incision below the thyroid cartilage to help identify the cricothyroid membrane. Then use Quicktrach once the membrane is identified.

# RESPIRATORY DISTRESS

UNIVERSAL PATIENT CARE PROTOCOL
OXYGEN
12 Lead EKG Procedure 🕒 1 <sup>ST</sup> Contact to EKG and Transmission < 10 Min
IV PROCEDURE

E	EMT	E
A	AEMT	A
P	PARAMEDIC	P
M	MED CONTROL	M



# RESPIRATORY DISTRESS

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
<ul style="list-style-type: none"> <li>Asthma; COPD -- chronic bronchitis, emphysema, congestive heart failure</li> <li>Home treatment (oxygen, nebulizer)</li> <li>Medications (Theophylline, steroids, inhalers)</li> <li>Toxic exposure, smoke inhalation</li> </ul>	<ul style="list-style-type: none"> <li>Shortness of breath</li> <li>Pursed lip breathing</li> <li>Decreased ability to speak</li> <li>Increased respiratory rate and effort</li> <li>Wheezing, rhonchi</li> <li>Use of accessory muscles</li> <li>Fever, cough</li> <li>Tachycardia</li> <li>Tripod position</li> </ul>	<ul style="list-style-type: none"> <li>Asthma</li> <li>Anaphylaxis</li> <li>Aspiration</li> <li>COPD (emphysema, bronchitis)</li> <li>Pleural effusion</li> <li>Pneumonia</li> <li>Pulmonary embolus</li> <li>Pneumothorax</li> <li>Cardiac (MI or CHF)</li> <li>Pericardial tamponade</li> <li>Hyperventilation</li> <li>Inhaled toxin (Carbon monoxide, etc.)</li> </ul>

## Tracheostomy Patient Breathing Management

If the patient is in respiratory distress and has a tracheostomy, suction vigorously with an appropriately sized soft suction catheter using sterile technique. If continued distress, remove and examine the inner cannula of the tracheostomy, if removable, for obstructions. If the tracheostomy and the patient's airway have been suctioned and the catheter passes freely, apply oxygen and / or breathing treatments over the tracheostomy site rather than the patients face.

### 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 cardiac disease, or if the patient's heart rate is >120 Epinephrine (Adrenaline) may precipitate cardiac ischemia.
- Monitor pulse oximetry 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.
- 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.

**AIRWAY / BREATHING CIRCULATION / SHOCK ACLS MEDICAL TRAUMA**  
**CONGESTIVE HEART FAILURE (CHF) / PULMONARY EDEMA**

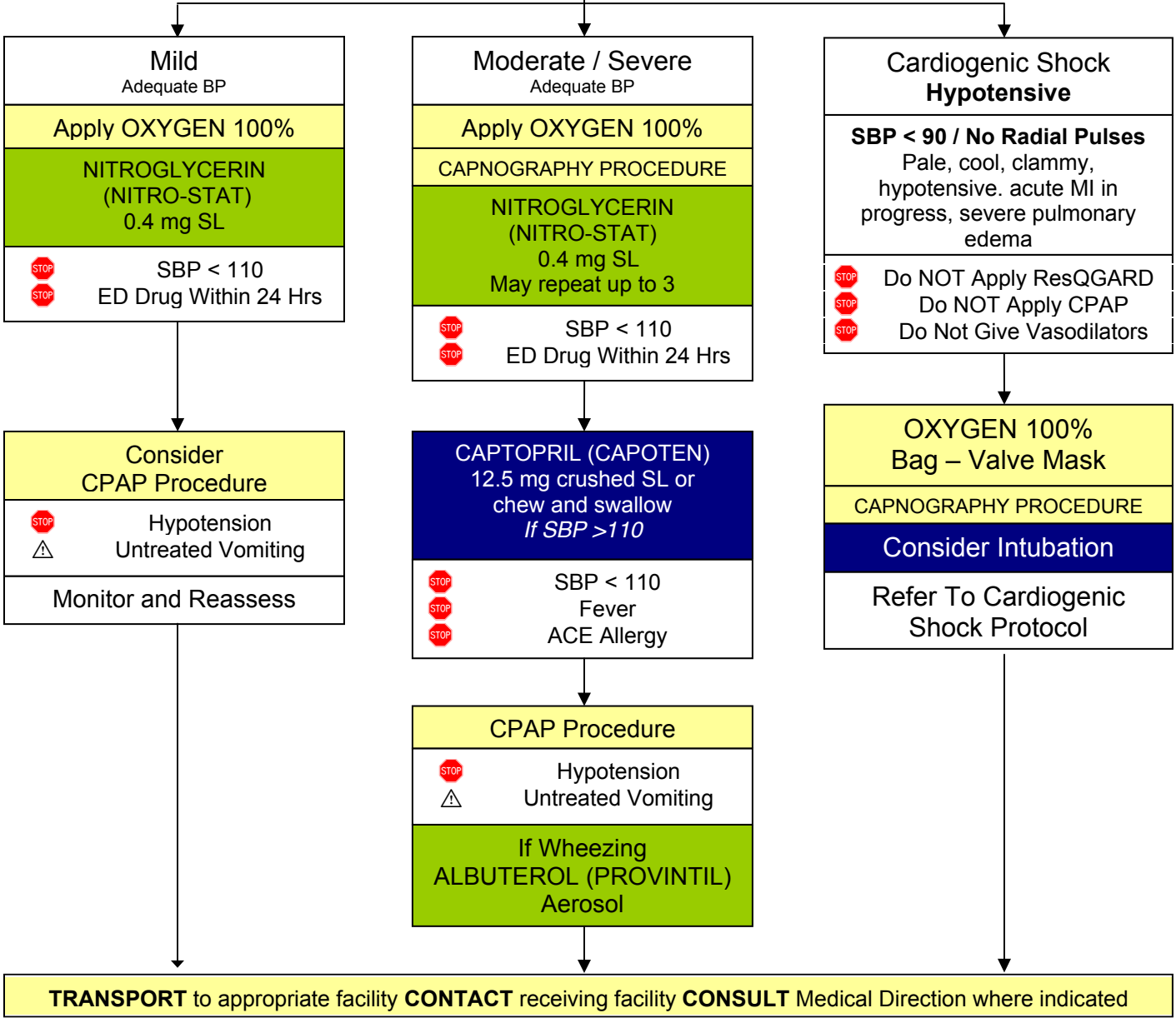
**UNIVERSAL PATIENT CARE PROTOCOL**

12 Lead EKG Procedure

🕒 1<sup>ST</sup> Contact to EKG and Transmission < 10 Min

**IV PROCEDURE**

E	EMT	E
A	AEMT	A
P	PARAMEDIC	P
M	MED CONTROL	M



**AIRWAY / BREATHING    CIRCULATION / SHOCK    ACLS    MEDICAL TRAUMA**  
**CONGESTIVE HEART FAILURE (CHF) / PULMONARY EDEMA**

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

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
<ul style="list-style-type: none"> <li>• Congestive heart failure</li> <li>• Past medical history</li> <li>• Medications (digoxin, lasix)</li> <li>• Erectile dysfunction medication use</li> <li>• Cardiac history - past myocardial infarction</li> </ul>	<ul style="list-style-type: none"> <li>• Respiratory distress, bilateral rales</li> <li>• Apprehension, orthopnea</li> <li>• Jugular vein distention</li> <li>• Pink, frothy sputum</li> <li>• Peripheral edema, diaphoresis</li> <li>• Hypotension, shock</li> <li>• Chest pain</li> <li>• Positive hepato-jugular reflux (HJR)</li> <li>• Orthopnea</li> </ul>	<ul style="list-style-type: none"> <li>• Myocardial infarction</li> <li>• Congestive heart failure</li> <li>• Asthma</li> <li>• Anaphylaxis</li> <li>• Aspiration</li> <li>• COPD</li> <li>• Pleural effusion</li> <li>• Pneumonia</li> <li>• Pulmonary embolus</li> <li>• Pericardial tamponade</li> </ul>

**Differentiate CHF vs. Pneumonia**

Congestive Heart Failure Signs and Symptoms	Pneumonia Signs and Symptoms
<ul style="list-style-type: none"> <li>• Afebrile</li> <li>• Jugular venous distension (JVD)</li> <li>• Positive hepato-jugular reflux (HJR)</li> <li>• Bilateral rales</li> <li>• Distal edema</li> <li>• Orthopnea</li> <li>• History of CHF</li> </ul>	<ul style="list-style-type: none"> <li>• Febrile</li> <li>• Cough</li> <li>• History of infectious illness</li> <li>• Unilateral rales</li> <li>• No distal edema</li> <li>• No jugular venous distension (JVD)</li> <li>• No hepato-jugular reflux (HJR)</li> </ul>

Accupril	Moexapril	Enalapril	Renitec
Accuretic	Monopril	Enalaprilat	Tarka
Aceon	Novatec	Fosinopril	Trandolapril
Altace	Perindopril	Lexxel	Tritace
Amlodipine	Prinivil	Lisinopril	Uniretic
Benazepril	Prinzide	Lisodur	Univasc
Capoten	Quinapril	Lopril	Vasotec
Capozide	Ramace	Lotensin	Zestoretic
Captopril	Ramipril	Lotrel	Zestril
Coversyl	Ramiwin	Mavik	Zofenopril

KEY POINTS
<ul style="list-style-type: none"> <li>• Exam: Mental Status, Skin, Neck, Lung, Heart, Abdomen, Back, Extremities, Neuro</li> <li>• Obtain 12-lead EKG to evaluate for M.I.</li> <li>• Differentiate and document CHF vs.: pneumonia.</li> <li>• Monitor for hypotension after administration of Nitroglycerin (Nitro-Stat) and / or Captopril (Capoten).</li> <li>• Monitor for hypotension while using CPAP, specifically with Nitroglycerine (Nitro-Stat) and Captopril (Capoten).</li> <li>• DO NOT administer Nitroglycerin (Nitro-Stat) to a patient who took an erectile dysfunction medication (Viagra, Cialis, Levitra, etc.) within the last 48 hours.</li> </ul>

**TRAUMATIC BREATHING**

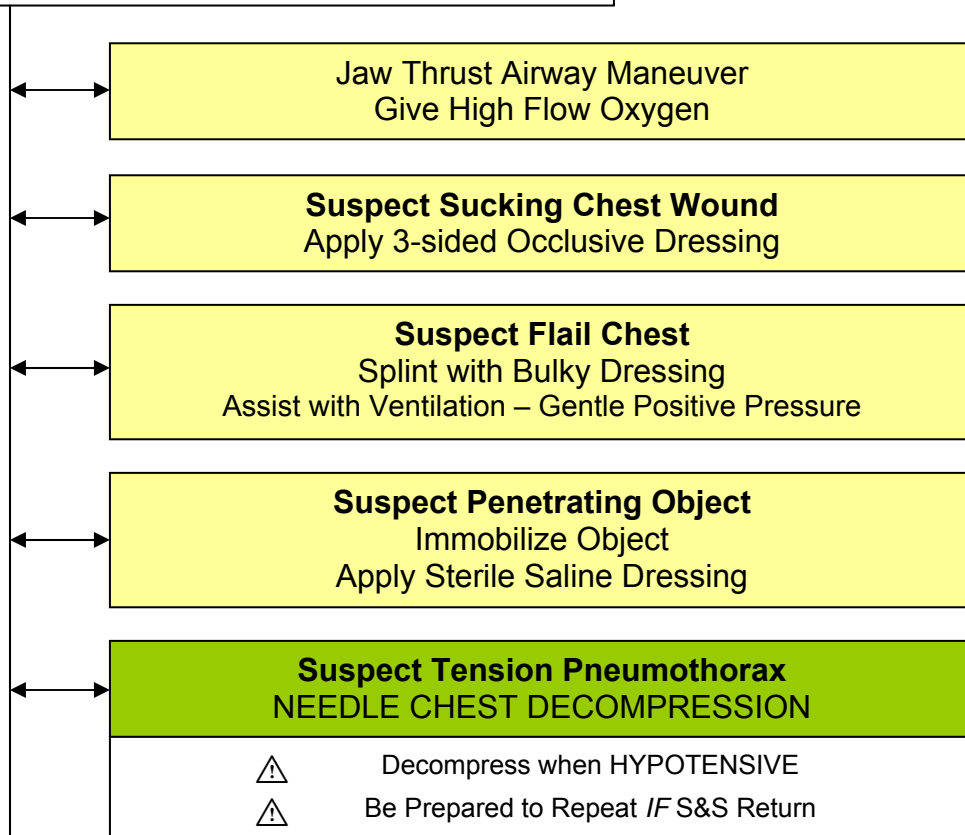
UNIVERSAL PATIENT CARE PROTOCOL

**Evidence of Trauma – Blunt or Penetrating**

Abnormal breath sounds, inadequate respiratory rate, unequal symmetry, diminished chest excursion, cyanosis

E	EMT	E
A	AEMT	A
P	PARAMEDIC	P
M	MED CONTROL	M

Identify Treatable Causes



**TRANSPORT** to appropriate facility **CONTACT** receiving facility **CONSULT** Medical Direction where indicated

**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 intercostals space between the 2<sup>nd</sup> and 3<sup>rd</sup> ribs on the midclavicular line, going in on the top side of the 3<sup>rd</sup> rib. Once the catheter is placed, watch closely for reocclusion. Be prepared to repeat decompression if signs of tension pneumothorax return. Use a long 2 1/4" – 3 1/4" 14 gauge needle based on the patients size.

# CIRCULATION / SHOCK PROTOCOLS

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Hypovolemic Shock.....	3-5
Neurogenic Shock.....	3-5
Septic Shock .....	3-5

# SHOCK GUIDELINES

TYPES OF SHOCK	SIGNS AND SYMPTOMS
CARDIOGENIC SHOCK	<ul style="list-style-type: none"> <li>• Hypotension</li> <li>• Difficulty breathing</li> <li>• Cool, clammy skin</li> <li>• Weakness</li> </ul>
HYPOVOLEMIC SHOCK	<ul style="list-style-type: none"> <li>• Tachycardia</li> <li>• Weak, thready pulse</li> <li>• Hypotension with narrow pulse pressure</li> <li>• Hypotension or falling systolic BP</li> <li>• Pale skin</li> <li>• Clammy or dry skin</li> <li>• Dyspnea</li> <li>• Altered LOC / coma</li> <li>• Decreased urine output</li> <li>• Restlessness</li> <li>• Irritability</li> <li>• Decreased urine output</li> </ul>
ANAPHYLACTIC SHOCK (Distributive Shock)	<ul style="list-style-type: none"> <li>• Hypotension</li> <li>• Severe respiratory distress</li> <li>• Shock</li> <li>• Dyspnea</li> <li>• Wheezing</li> <li>• Hoarseness / stridor</li> <li>• Cyanosis</li> <li>• Facial / airway edema</li> <li>• Urticaria / hives</li> <li>• Warm burning feeling</li> <li>• Itching</li> <li>• Rhinorrhea</li> <li>• Altered LOC / coma</li> <li>• Pulmonary edema</li> </ul>
NEUROGENIC SHOCK (Distributive Shock)	<ul style="list-style-type: none"> <li>• Hypotension with a narrow pulse pressure</li> <li>• Evidence of trauma (lacerations, bruising, swelling, deformity)</li> <li>• Normal or bradycardic HR</li> <li>• Compromise in neurological function</li> <li>• Normal or flushed skin color</li> </ul>
SEPTIC SHOCK (Distributive Shock)	<ul style="list-style-type: none"> <li>• Hypotension with a narrow pulse pressure</li> <li>• Dyspnea</li> <li>• Febrile</li> <li>• Tachycardia</li> <li>• Signs of infection</li> <li>• Hx of UTI</li> <li>• Hypovolemia (Fever, Sweating)</li> <li>• Dehydration</li> <li>• Altered LOC / coma</li> </ul>
OBSTRUCTIVE SHOCK	<ul style="list-style-type: none"> <li>• Obstruction that interferes with preload / afterload</li> <li>• Commonly caused by tension pneumothorax / pulmonary embolism</li> <li>• Hypotension</li> <li>• Chest pain</li> <li>• Hypoxia</li> <li>• Absent lung sounds (tension pneumothorax)</li> <li>• Present lung sounds (pulmonary embolism)</li> </ul>

# SHOCK

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
<ul style="list-style-type: none"> <li>Blood loss - vaginal or gastrointestinal bleeding, AAA, ectopic</li> <li>Fluid loss - vomiting, diarrhea, fever</li> <li>Infection</li> <li>Cardiac ischemia (MI, CHF)</li> <li>Medications</li> <li>Allergic reaction</li> <li>Pregnancy</li> </ul>	<ul style="list-style-type: none"> <li>Restlessness, confusion</li> <li>Weakness, dizziness</li> <li>Weak, rapid pulse</li> <li>Pale, cool, clammy skin</li> <li>Delayed capillary refill</li> <li>Hypotension</li> <li>Coffee-ground emesis</li> <li>Tarry stools</li> </ul>	<ul style="list-style-type: none"> <li>Shock</li> <li>Hypovolemic</li> <li>Cardiogenic</li> <li>Septic</li> <li>Neurogenic</li> <li>Anaphylactic</li> <li>Ectopic pregnancy</li> <li>Dysrhythmias</li> <li>Pulmonary embolus</li> <li>Tension pneumothorax</li> <li>Medication effect / overdose</li> <li>Vasovagal hypotension</li> <li>Physiologic (pregnancy)</li> </ul>

## 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

- Do not confuse Epinephrine (Adrenaline) 1:1000 IM / SQ and 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.
- Use caution when using Epinephrine (Adrenaline) for patients over fifty years of age.
- Use caution when using Epinephrine (Adrenaline) for patients with a heart rate greater than 120 bpm.
- 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 BP of 90 systolic.

### Neurogenic Shock

- Cushings reflex is a sign of increased ICP.
- Cushings reflex is a high blood pressure, low pulse rate, and widening pulse pressure.

### 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.

# ANAPHYLACTIC REACTION / SHOCK

UNIVERSAL PATIENT CARE PROTOCOL

OXYGEN

CAPNOGRAPHY PROCEDURE

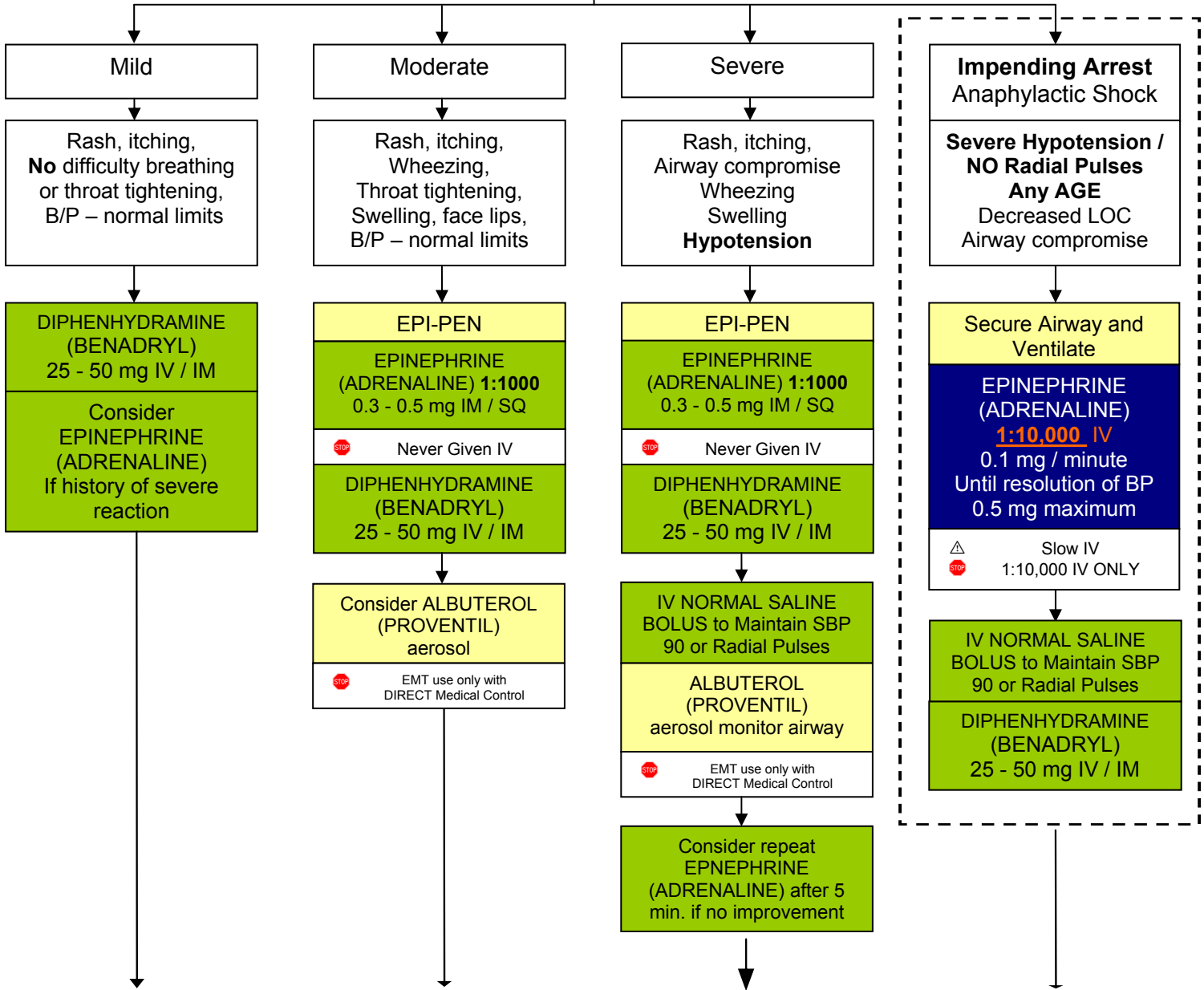
IV / IO PROCEDURE

Apply Cardiac Monitor and Assess Vitals

Consider ResQGARD ITD Procedure

E	EMT	E
A	AEMT	A
P	PARAMEDIC	P
M	MED CONTROL	M

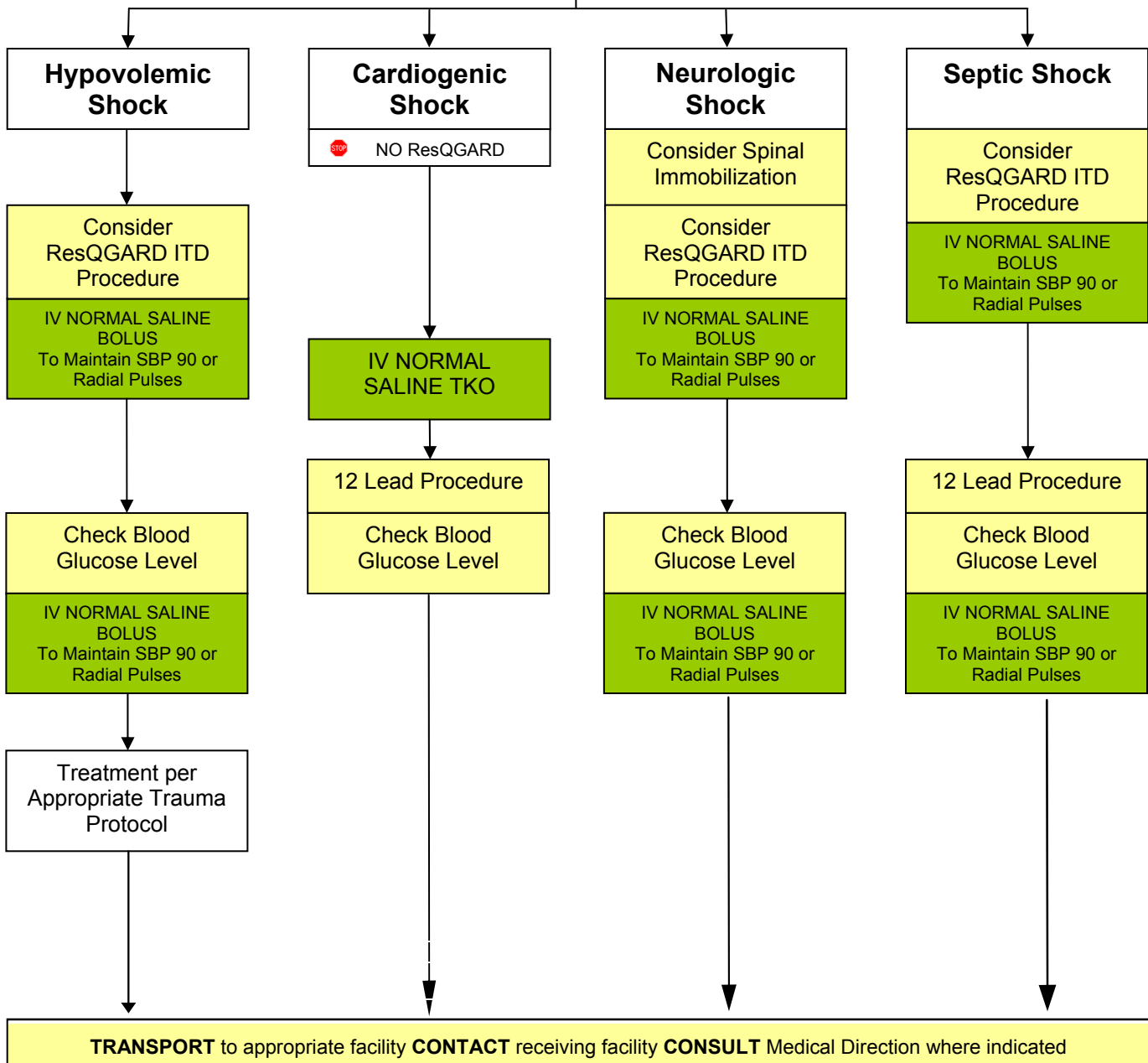
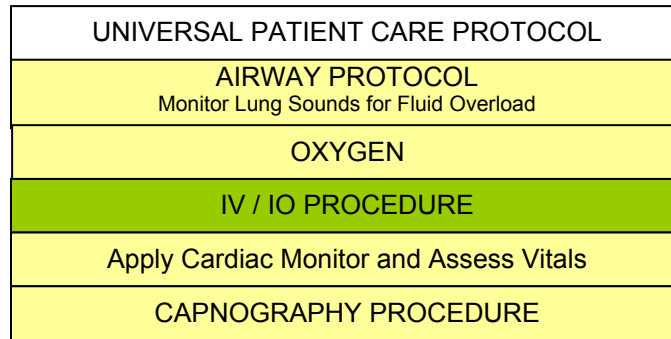
**DO NOT CONFUSE**  
EPI 1:1000 SQ / IM ONLY  
and 1:10,000 IV



**TRANSPORT** to appropriate facility **CONTACT** receiving facility **CONSULT** Medical Direction where indicated

# HYPOVOLEMIC, NEUROGENIC, CARDIOGENIC, AND SEPTIC SHOCK

E	EMT	E
A	AEMT	A
P	PARAMEDIC	P
M	MED CONTROL	M

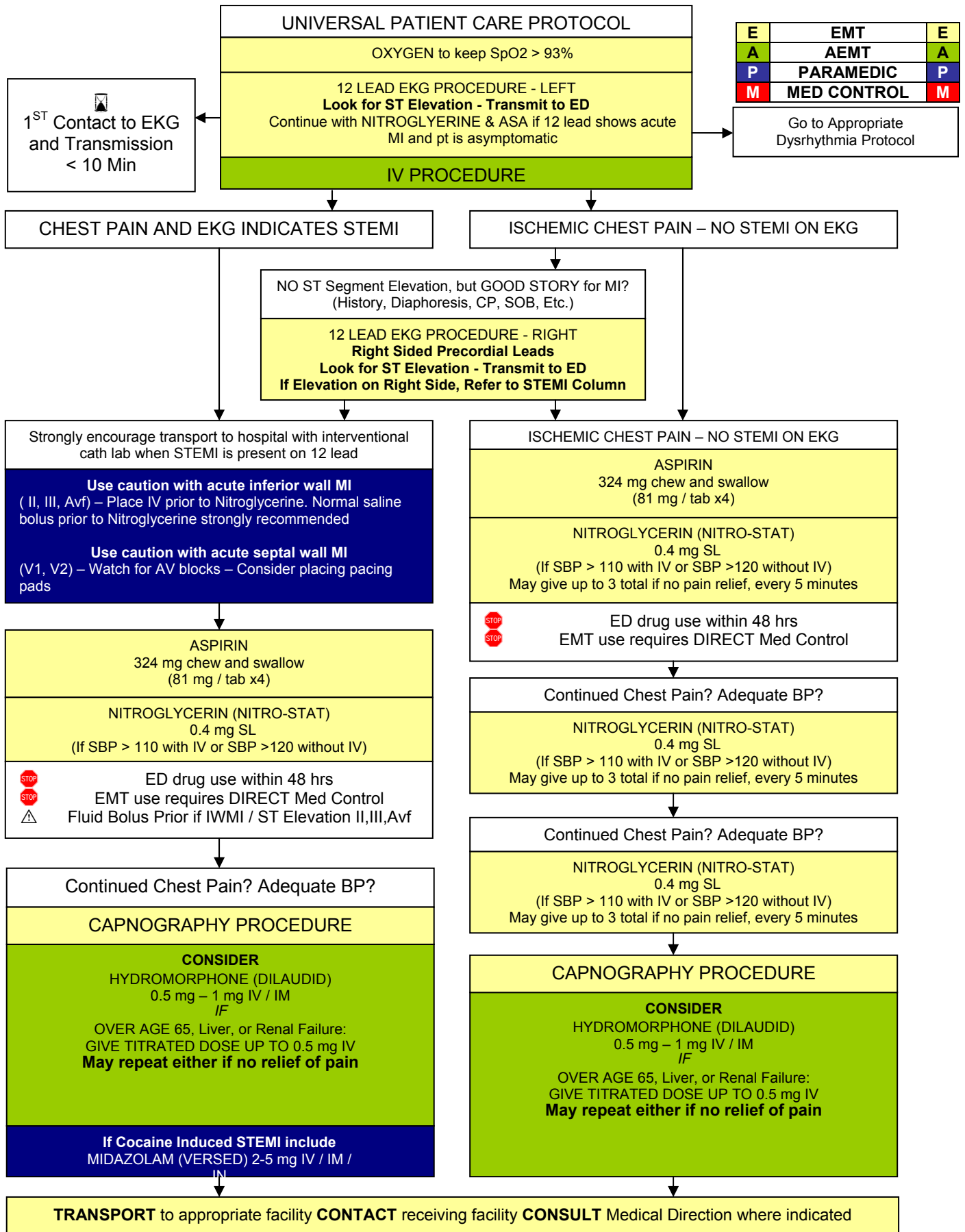




# ACLS PROTOCOLS

Acute Coronary Syndrome .....	4-2
Bradycardia .....	4-4
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Cardiac Arrest.....	4-10
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Ventricular Fibrillation (V-FIB) / Pulseless Ventricular Tachycardia.....	4-14
Post - Resuscitation Cardiac Care.....	4-16

# ACUTE CORONARY SYNDROME



"Paramedic Treatment if Confirmed STEMI and requested by receiving facility:

TICAGRELOR (BRILINTA) – When requested 180 mg PO  
HEPARIN – When requested 60 Units / kg IV / IO  
Max Dose 4000 Units"

# ACUTE CORONARY SYNDROME

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
<ul style="list-style-type: none"> <li>• Age</li> <li>• Medications</li> <li>• Past medical history (MI, angina, diabetes)</li> <li>• Allergies</li> <li>• Recent physical exertion</li> <li>• Onset</li> <li>• Palliation / Provocation</li> <li>• Quality (crampy, constant, sharp, dull, etc.)</li> <li>• Region / Radiation / Referred</li> <li>• Severity (1-10)</li> <li>• Time (duration / repetition)</li> </ul>	<ul style="list-style-type: none"> <li>• CP (pain, pressure, aching, tightness)</li> <li>• Location (substernal, epigastric, arm, jaw, neck, shoulder)</li> <li>• Radiation of pain</li> <li>• Pale, diaphoresis</li> <li>• Shortness of breath</li> <li>• Nausea, vomiting, dizziness</li> </ul>	<ul style="list-style-type: none"> <li>• Trauma vs. medical</li> <li>• Angina vs. myocardial infarction</li> <li>• Pericarditis</li> <li>• Pulmonary embolism</li> <li>• Asthma / COPD</li> <li>• Pneumothorax</li> <li>• Aortic dissection or aneurysm</li> <li>• GE reflux or hiatal hernia</li> <li>• Esophageal spasm</li> <li>• Chest wall injury or pain</li> <li>• Pleural pain</li> </ul>

## KEY POINTS

- Make the scene safe: All cardiac chest pain patients must have an IV, O<sub>2</sub> and monitor.
- 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 en route to the hospital.
- Monitor for hypotension after administration of Nitroglycerin (Nitro-stat) and Hydromorphone (Dilaudid).
- Nitroglycerin (Nitro-stat) , Hydromorphone (Dilaudid) may be repeated per dosing guidelines in the MEDICATIONS SECTION.
- Diabetics and 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) 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 Hydromorphone (Dilaudid) administration.
- If pulmonary edema is present, refer to the CHF / ACUTE PULMONARY EDEMA PROTOCOL.
- Consider other causes of chest pain such as aortic aneurysms, pericarditis, esophageal reflux, pneumonia, pneumothorax, costochondritis, pleurisy, pancreatitis, appendicitis, cholecystitis (gallbladder), and pulmonary embolism.
- 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 (Viagra, Cialis, 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 to a hypertensive patient complaining of chest discomfort without Medical Direction permission.
- 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 the PVC'S with Amiodarone (Cordarone) unless patient develops V-tach.
- All patients complaining chest discomfort must be administered oxygen.
- Pulse oximetry is not an indicator of myocardial perfusion.

# BRADYCARDIA

E	EMT	E
A	AEMT	A
P	PARAMEDIC	P
M	MED CONTROL	M

UNIVERSAL PATIENT CARE PROTOCOL

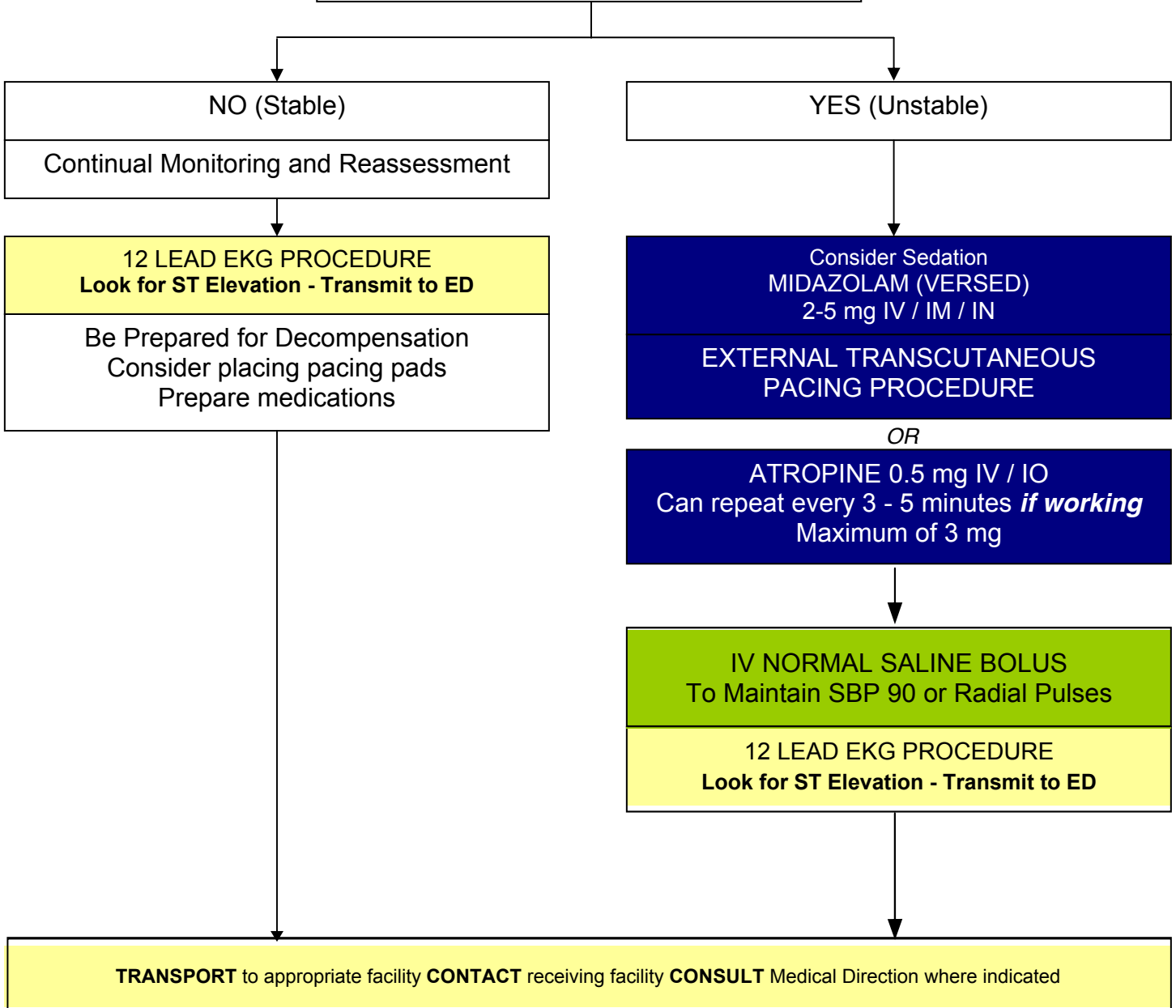
IV / IO PROCEDURE

OXYGEN

CAPNOGRAPHY PROCEDURE

APPLY CARDIAC MONITOR

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



# BRADYCARDIA

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
<ul style="list-style-type: none"> <li>• Past medical history</li> <li>• Medications</li> <li>• Beta-blocker use</li> <li>• Calcium channel blocker use</li> <li>• Clonidine use</li> <li>• Digitalis use</li> <li>• Pacemaker</li> </ul>	<ul style="list-style-type: none"> <li>• HR &lt; 60 / min</li> <li>• Chest pain</li> <li>• Respiratory distress</li> <li>• Hypotension or shock</li> <li>• Altered mental status</li> <li>• Syncope</li> </ul>	<ul style="list-style-type: none"> <li>• Acute myocardial infarction</li> <li>• Hypoxia</li> <li>• Hypothermia</li> <li>• Sinus bradycardia</li> <li>• Athletes</li> <li>• Head injury (elevated ICP) or stroke</li> <li>• Spinal cord lesion</li> <li>• Sick sinus syndrome</li> <li>• AV blocks (1°, 2°, or 3°)</li> </ul>

## 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.
- DO NOT administer Atropine, if the patient's rhythm is a Type II second-degree heart block or a third degree heart block.
- Transcutaneous pacing is the treatment of choice for Type II second-degree heart blocks and third degree heart blocks.
- If the patient is critical and an IV is not established, initiate pacing.
- 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.

# NARROW – COMPLEX TACHYCARDIA

E	EMT	E
A	AEMT	A
P	PARAMEDIC	P
M	MED CONTROL	M

UNIVERSAL PATIENT CARE PROTOCOL

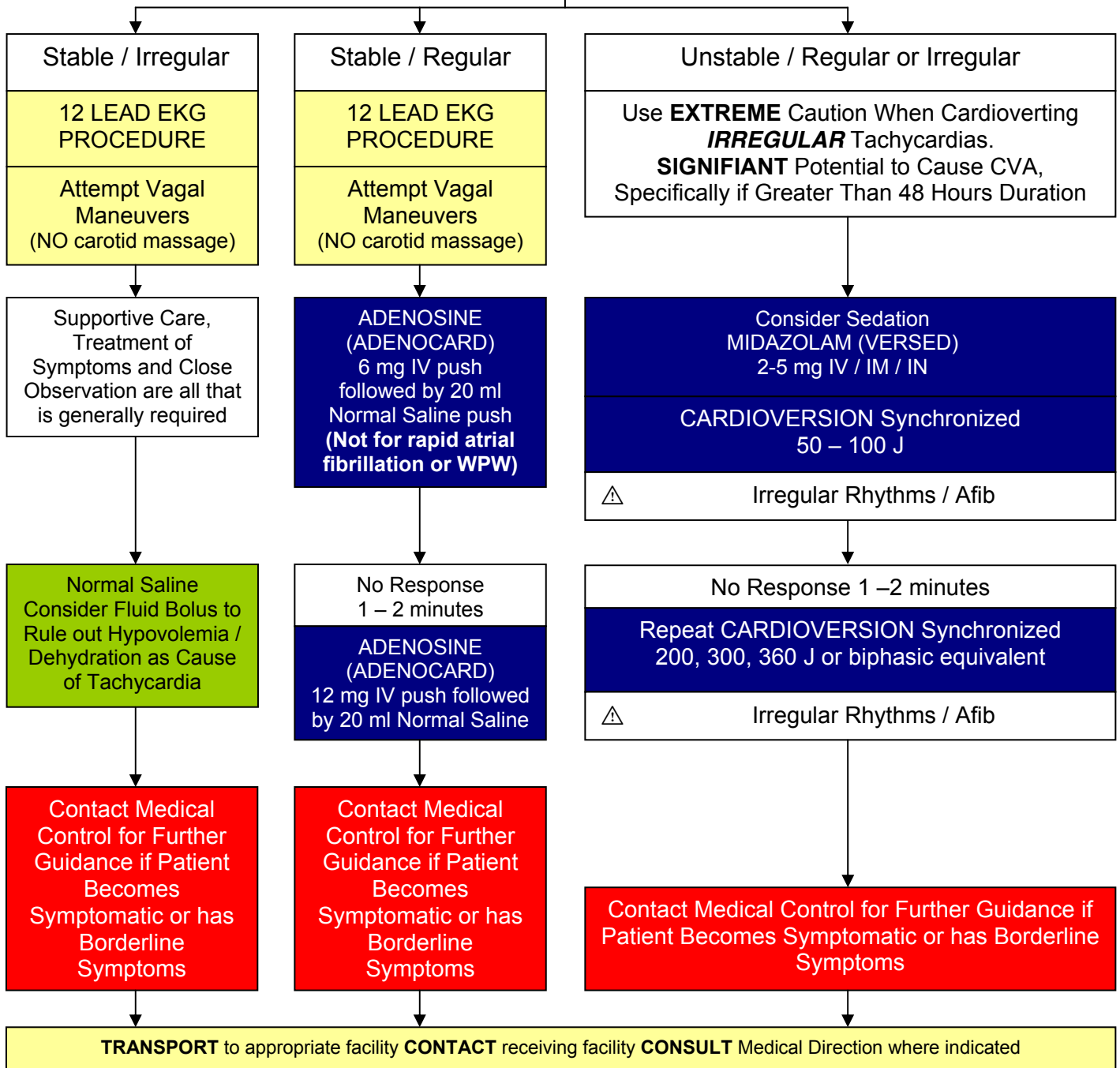
IV / IO PROCEDURE

OXYGEN

CAPNOGRAPHY PROCEDURE

APPLY CARDIAC MONITOR

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



## NARROW – COMPLEX TACHYCARDIA

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
<ul style="list-style-type: none"> <li>• Medications (Aminophylline, diet pills, thyroid supplements, decongestants, digoxin)</li> <li>• Diet (caffeine, chocolate)</li> <li>• Drugs (nicotine, cocaine)</li> <li>• Past medical history</li> <li>• History of palpitations / heart racing</li> <li>• Syncope / near syncope</li> </ul>	<ul style="list-style-type: none"> <li>• HR &gt; 150 bpm</li> <li>• QRS &lt; .12 Sec</li> <li>• Dizziness, CP, SOB</li> <li>• Potential presenting rhythm</li> <li>• Sinus tachycardia</li> <li>• Atrial fibrillation / flutter</li> <li>• Multifocal atrial tachycardia</li> </ul>	<ul style="list-style-type: none"> <li>• Heart disease (WPW, valvular)</li> <li>• Sick sinus syndrome</li> <li>• Myocardial infarction</li> <li>• Electrolyte imbalance</li> <li>• Exertion, pain, emotional stress</li> <li>• Fever</li> <li>• Hypoxia</li> <li>• Hypovolemia or anemia</li> <li>• Drug effect / overdose (see HX)</li> <li>• Hyperthyroidism</li> <li>• Pulmonary embolus</li> </ul>

### KEY POINTS

- Exam: Mental Status, Skin, Neck, Lung, Heart, Abdomen, Back, Extremities, Neuro
- Monitor for respiratory depression and hypotension associated with Midazolam (Versed).
- 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.

**AIRWAY / BREATHING CIRCULATION / SHOCK ACLS MEDICAL TRAUMA**

# WIDE – COMPLEX TACHYCARDIA – With Pulse

E	EMT	E
A	AEMT	A
P	PARAMEDIC	P
M	MED CONTROL	M

UNIVERSAL PATIENT CARE PROTOCOL

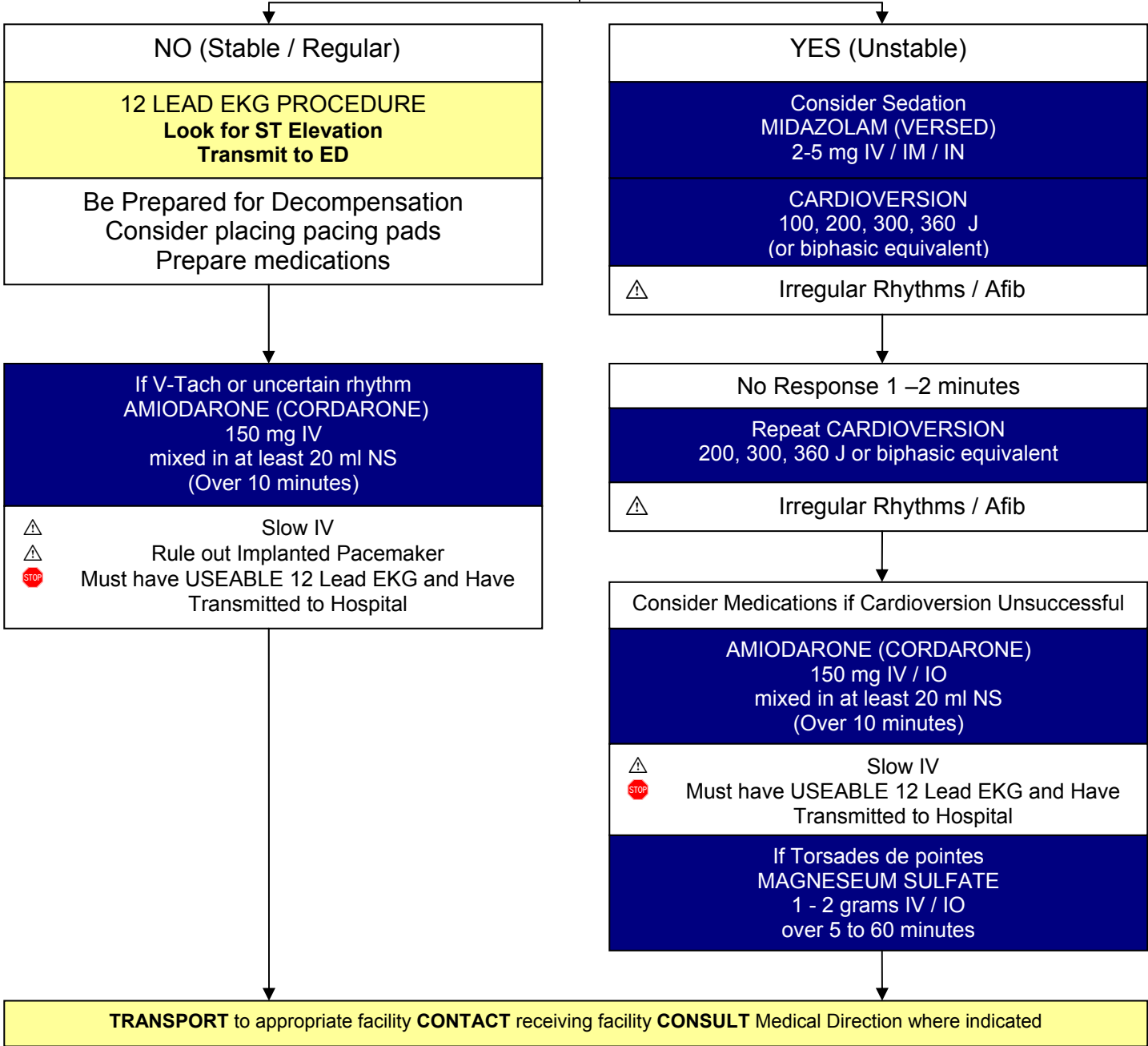
**IV / IO PROCEDURE**

OXYGEN

CAPNOGRAPHY PROCEDURE

**APPLY CARDIAC MONITOR**

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



# WIDE– COMPLEX TACHYCARDIA

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
<ul style="list-style-type: none"> <li>• Past medical history / medications, diet, drugs.</li> <li>• Syncope / near syncope</li> <li>• Palpitations</li> <li>• Pacemaker</li> <li>• Allergies: Amiodarone (Cordarone)</li> </ul>	<ul style="list-style-type: none"> <li>• Ventricular tachycardia on ECG (runs or sustained)</li> <li>• Conscious, rapid pulse</li> <li>• Chest pain, shortness of breath</li> <li>• Dizziness</li> <li>• Rate usually 150 - 180 bpm for sustained V-Tach</li> </ul>	<ul style="list-style-type: none"> <li>• Artifact / device failure</li> <li>• Cardiac</li> <li>• Endocrine / metabolic</li> <li>• Drugs</li> <li>• Pulmonary</li> </ul>

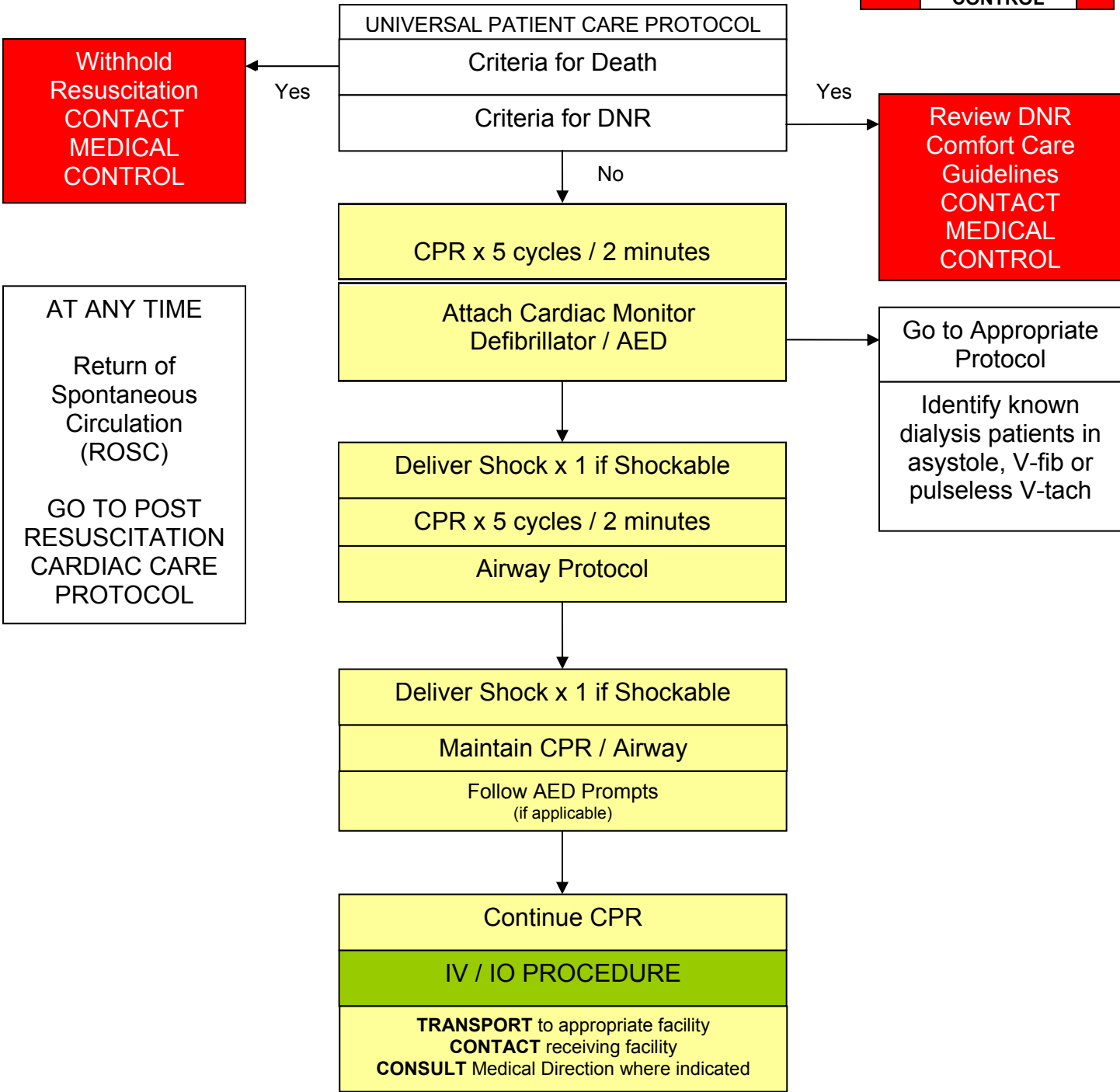
## KEY POINTS

- 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.
- 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 - Lead EKG strips during medication administration.
- Perform a 12- Lead EKG prior to and after Amiodarone (Cordarone) 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.

**AIRWAY / BREATHING CIRCULATION / SHOCK ACLS MEDICAL TRAUMA**

# CARDIAC ARREST

E	EMT	E
A	AEMT	A
arrP	PARAMEDIC	P
M	MED CONTROL	M



# CARDIAC ARREST

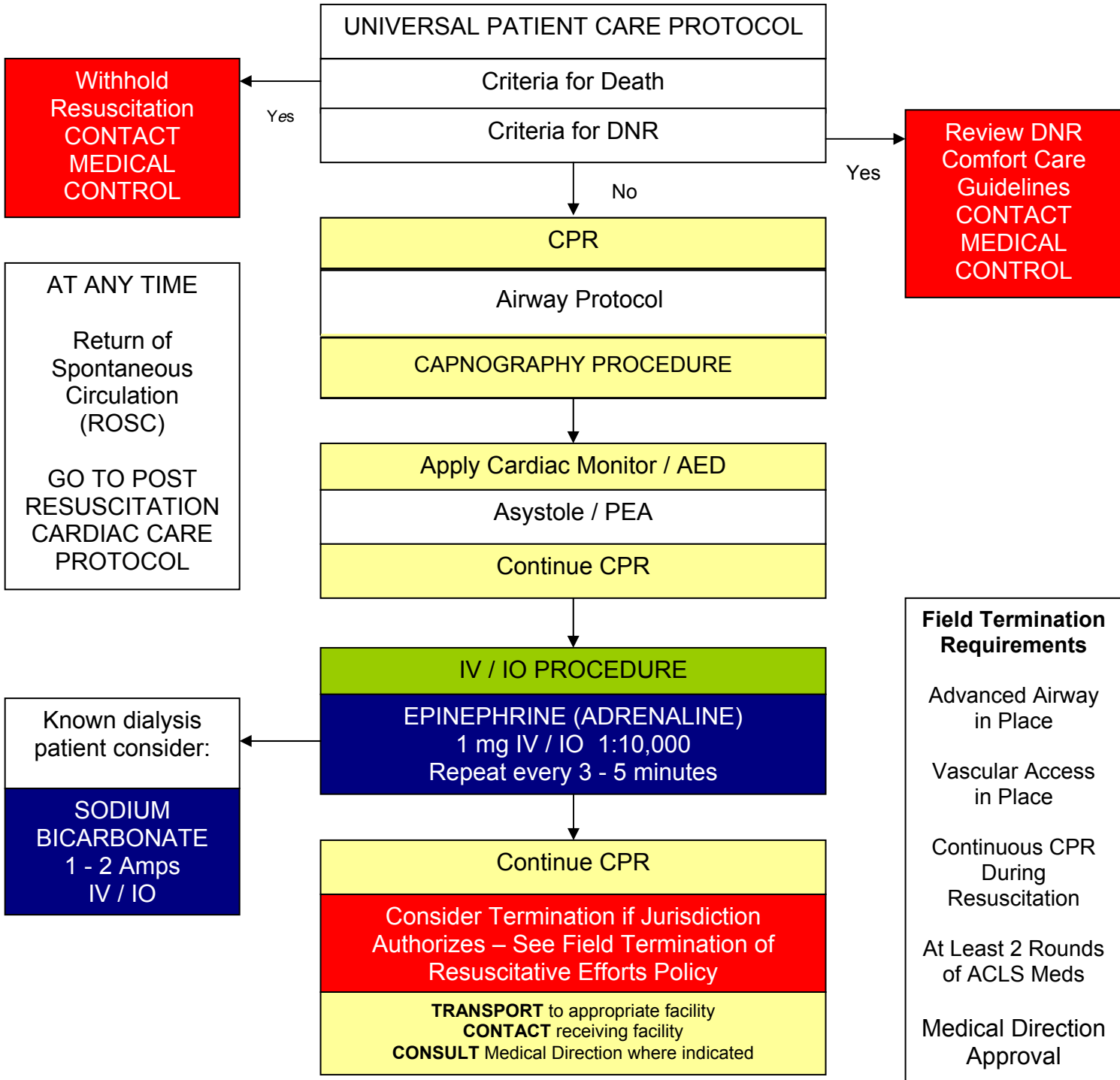
HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
<ul style="list-style-type: none"> <li>• Events leading to arrest</li> <li>• Estimated downtime</li> <li>• Past medical history</li> <li>• Medications</li> <li>• Existence of terminal illness</li> <li>• Signs of lividity, rigor mortis</li> <li>• DNR</li> </ul>	<ul style="list-style-type: none"> <li>• Unresponsive</li> <li>• Apneic</li> <li>• Pulseless</li> </ul>	<ul style="list-style-type: none"> <li>• Medical vs. trauma</li> <li>• V-fib vs. pulseless V-tach</li> <li>• Asystole</li> <li>• Pulseless electrical activity (PEA)</li> </ul>

## KEY POINTS

- Exam: Mental Status
- Always minimize interruptions to chest compressions.
- Attach ResQPOD (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 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 50% (D50) or Dextrose 10% (D10) only if the patient has a blood glucose level < 60 mg / dl. Dextrose 50% (D50) or Dextrose 10% (D10) should be administered as soon as hypoglycemia is determined.
- DO NOT administer Narcan (Naloxone) until the patient has been resuscitated and is known or suspected to have used narcotics.
- Reassess the patient if the interventions do not produce any changes.
- If indicated, refer to the TERMINATION OF RESUSCITATION EFFORTS POLICY.

**AIRWAY / BREATHING CIRCULATION / SHOCK ACLS MEDICAL TRAUMA**  
**ASYSTOLE / PULSELESS ELECTRICAL ACTIVITY (PEA)**

E	EMT	E
A	AEMT	A
P	PARAMEDIC	P
M	MED CONTROL	M



# ASYSTOLE / PULSELESS ELECTRICAL ACTIVITY (PEA)

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
<ul style="list-style-type: none"> <li>• Past medical history</li> <li>• Medications</li> <li>• Events leading to arrest</li> <li>• End stage renal disease</li> <li>• Estimated downtime</li> <li>• Suspected hypothermia</li> <li>• Suspected overdose</li> <li>• DNR</li> <li>• Tricyclics</li> <li>• Digitalis</li> <li>• Beta blockers</li> <li>• Calcium channel blockers</li> </ul>	<ul style="list-style-type: none"> <li>• Pulseless</li> <li>• Apneic</li> <li>• No electrical activity on ECG</li> <li>• Cyanosis</li> </ul>	<ul style="list-style-type: none"> <li>• Medical vs. trauma</li> <li>• Hypoxia</li> <li>• Potassium (hypo / hyper)</li> <li>• Acidosis</li> <li>• Hypothermia</li> <li>• Device (lead) error</li> <li>• Death</li> <li>• Hypovolemia</li> <li>• Cardiac tamponade</li> <li>• Drug overdose (Tricyclics, digitalis, beta blockers, calcium channel blockers)</li> <li>• Massive myocardial infarction</li> <li>• Tension pneumothorax</li> <li>• Pulmonary embolus</li> </ul>

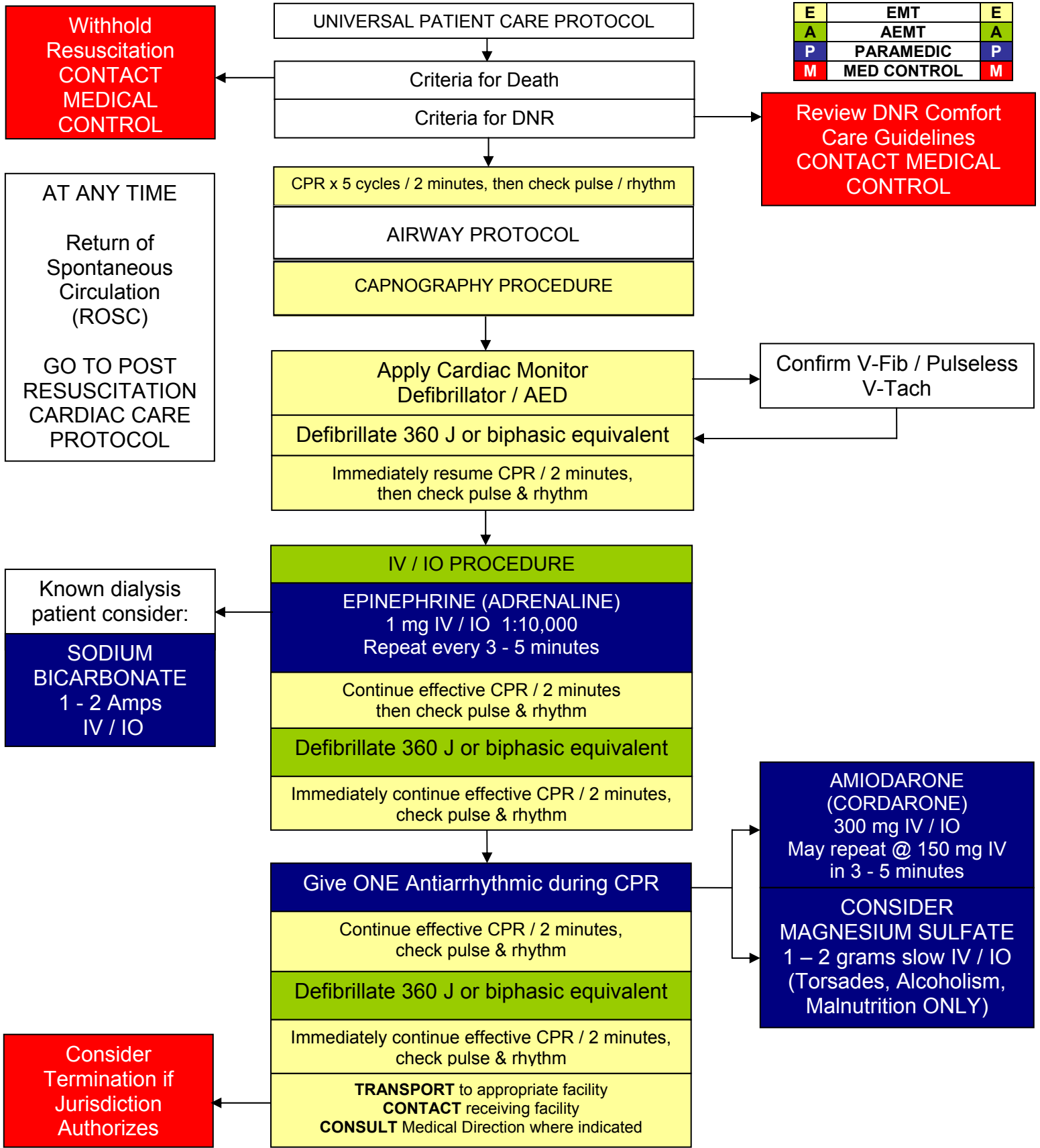
## CONSIDER TREATABLE CAUSES

<ul style="list-style-type: none"> <li>• Hypovolemia</li> <li>• Hypo-hyperkalemia</li> <li>• Hypoxia</li> <li>• Hypoglycemia</li> <li>• Hydrogen ion (acidosis)</li> <li>• Hypothermia</li> </ul>	<ul style="list-style-type: none"> <li>• Toxins</li> <li>• Tamponade (cardiac)</li> <li>• Tension pneumothorax</li> <li>• Thrombosis (coronary or pulmonary)</li> <li>• Trauma</li> </ul>
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## KEY POINTS

<ul style="list-style-type: none"> <li>• Exam: Mental Status</li> <li>• Always minimize interruptions to chest compressions.</li> <li>• Attach ResQPOD (ITD) to enhance circulation with chest compressions. Remove if there is a return of spontaneous circulation (ROSC).</li> <li>• Always confirm asystole in more than one lead.</li> <li>• Consider each possible cause listed in the differential: Survival is based on identifying and correcting the cause!</li> <li>• Discussion with Medical Control can be a valuable tool in developing a differential diagnosis and identifying possible treatment options.</li> <li>• If the patient converts to another rhythm, refer to the appropriate protocol and treat accordingly.</li> <li>• Early identification and treatment of reversible causes of PEA increases the chance of a successful outcome.</li> <li>• Consider volume infusion for all patients in PEA. Be alert for fluid overload.</li> <li>• Treat as ventricular fibrillation if you cannot differentiate between asystole and fine ventricular fibrillation.</li> <li>• Dextrose 50% (D50) or Dextrose 10% (D10) should only be administered to a patient with a confirmed blood glucose level less than 60 mg / dl.</li> </ul>
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# VENTRICULAR FIBRILLATION (V – FIB) PULSELESS VENTRICULAR TACHYCARDIA



## VENTRICULAR FIBRILLATION (V – FIB) PULSELESS VENTRICULAR TACHYCARDIA

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
<ul style="list-style-type: none"> <li>• Estimated down time</li> <li>• Past medical history</li> <li>• Medications</li> <li>• Events leading to arrest</li> <li>• Renal failure / dialysis</li> <li>• DNR</li> </ul>	<ul style="list-style-type: none"> <li>• Unresponsive, apneic, pulseless</li> <li>• Ventricular fibrillation or ventricular tachycardia on ECG</li> </ul>	<ul style="list-style-type: none"> <li>• Asystole</li> <li>• Artifact / device failure</li> <li>• Cardiac</li> <li>• Endocrine / metabolic</li> <li>• Drugs</li> <li>• Pulmonary embolus</li> </ul>

### KEY POINTS

- Exam: Mental Status
- Always minimize interruptions to chest compressions.
- Attach 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.

**AIRWAY / BREATHING CIRCULATION / SHOCK ACLS MEDICAL TRAUMA**

# POST – RESUSCITATION CARDIAC CARE

E	EMT	E
A	AEMT	A
P	PARAMEDIC	P
M	MED CONTROL	M

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

**UNIVERSAL PATIENT CARE PROTOCOL**

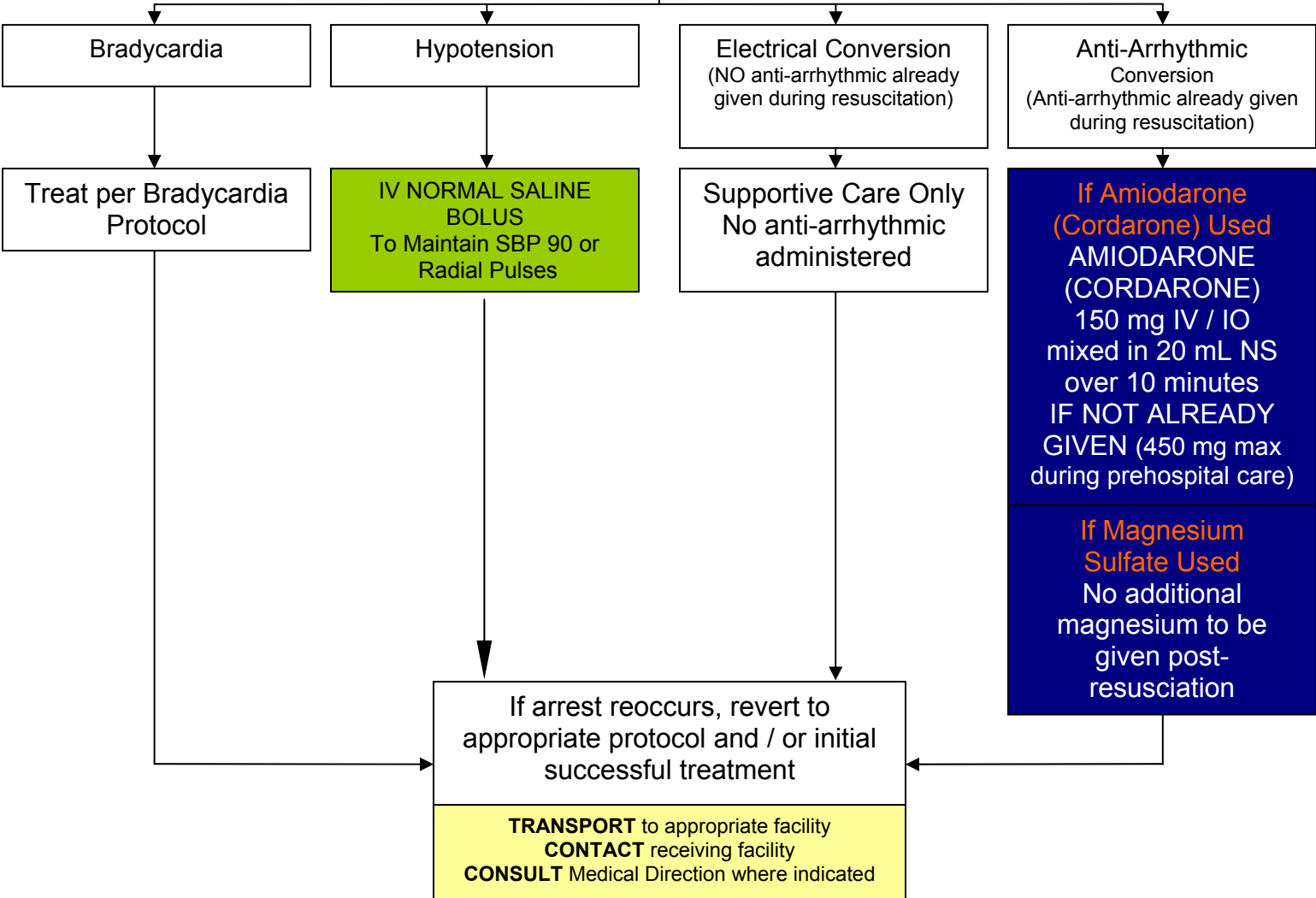
Continue Ventilatory Support with 100% OXYGEN

CAPNOGRAPHY PROCEDURE

IV / IO PROCEDURE

12 LEAD EKG PROCEDURE

Vital Signs

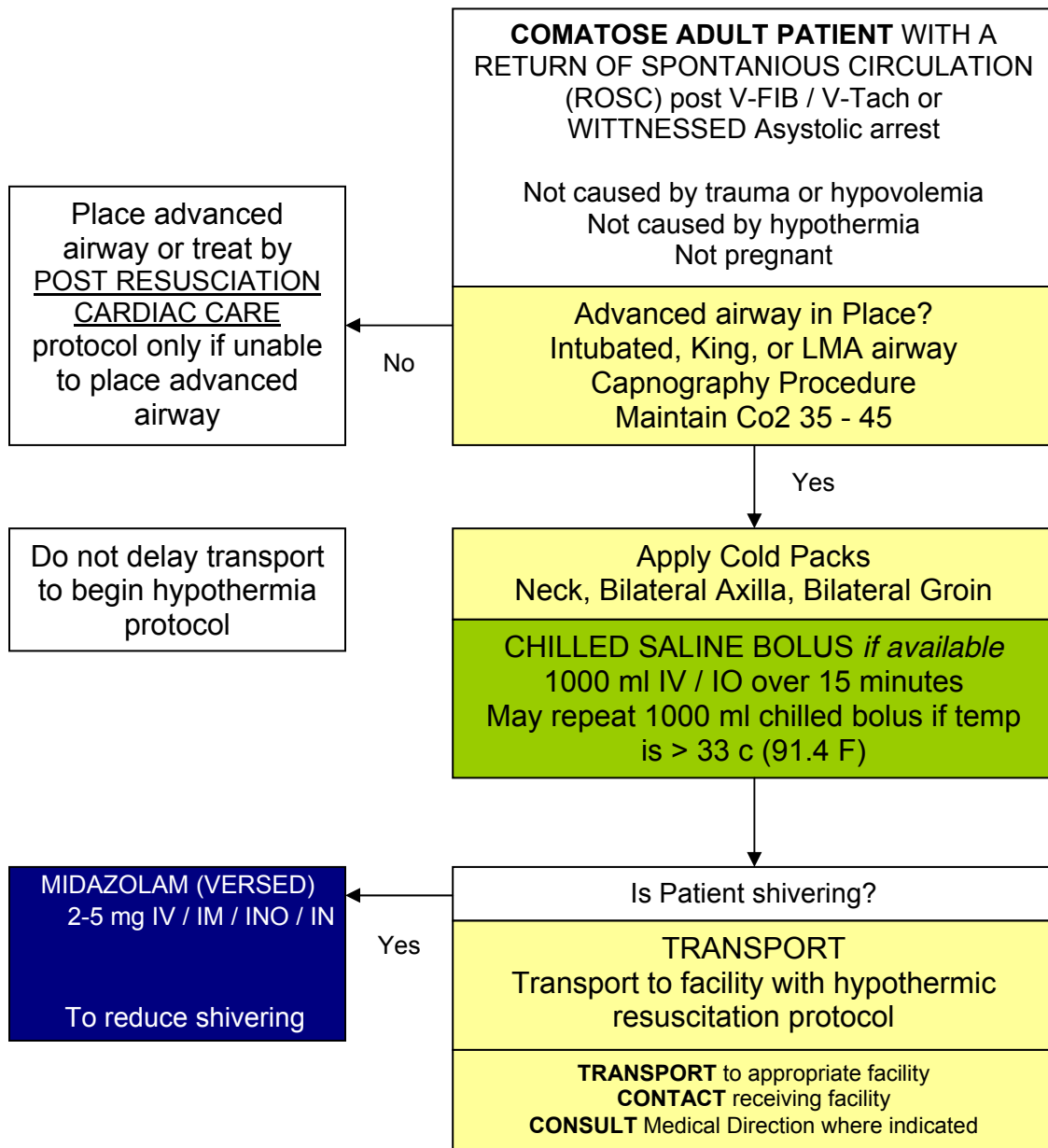


# POST – RESUSCITATION CARDIAC CARE INDUCED HYPOTHERMIA

## 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 RESUSCITATION CARDIAC CARE protocol. If patient loses pulses / re-arrests discontinue induced hypothermia and treat per appropriate arrest protocol.



## POST – RESUSCITATION CARDIAC CARE

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
<ul style="list-style-type: none"> <li>Respiratory arrest</li> <li>Cardiac arrest</li> </ul>	<ul style="list-style-type: none"> <li>Return of pulse</li> </ul>	<ul style="list-style-type: none"> <li>Continue to address specific differentials associated with the original dysrhythmia</li> </ul>

### KEY POINTS

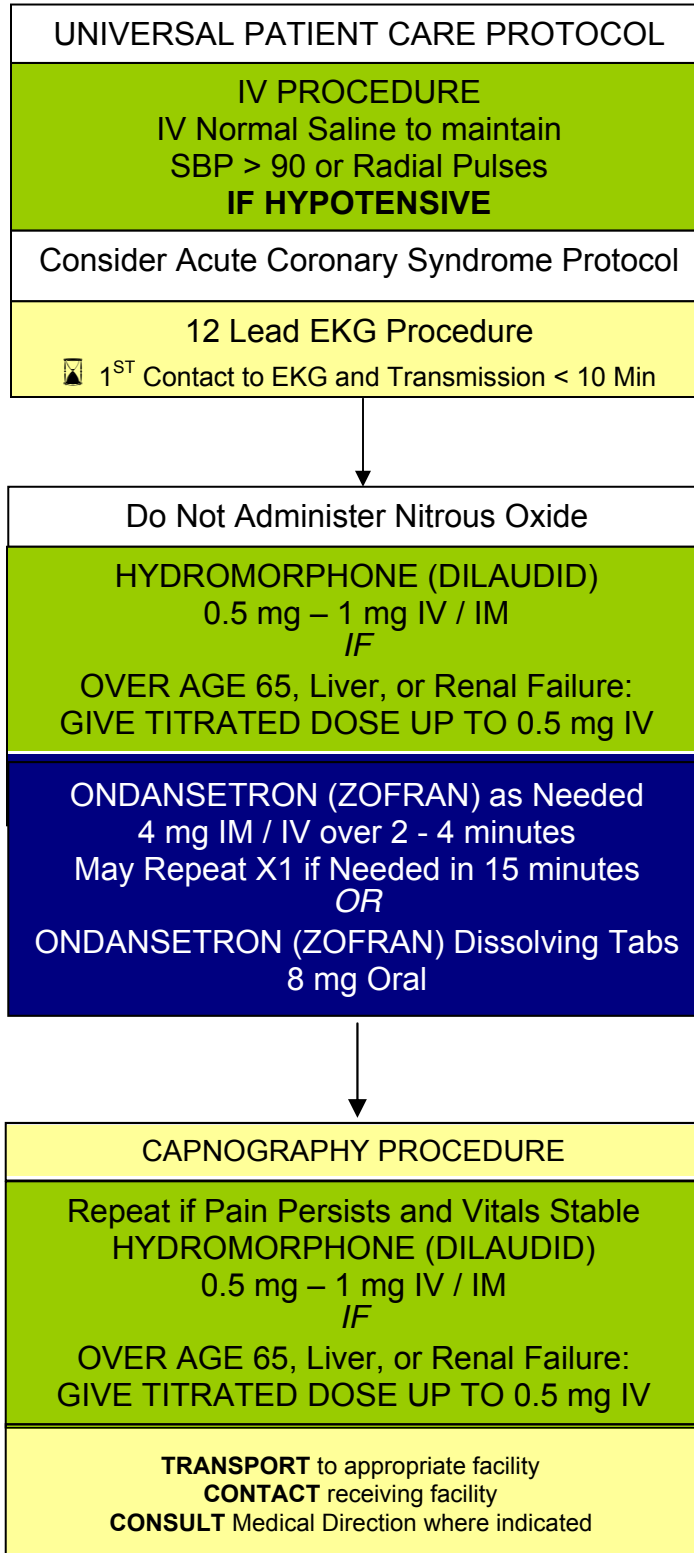
- Exam: Mental Status, Neck, Skin, Lungs, Heart, Abdomen, Extremities, Neuro
- Most patients immediately post resuscitation will require ventilatory assistance.
- The condition of post-resuscitation patients fluctuates rapidly and continuously, and they require close monitoring.
- Appropriate post-resuscitation management can best be planned in consultation with 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.
- Adequate oxygenation is the key to a good outcome.

# MEDICAL EMERGENCIES PROTOCOLS

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

# ABDOMINAL PAIN

E	EMT	E
A	AEMT	A
P	PARAMEDIC	P
M	MED CONTROL	M



# ABDOMINAL PAIN

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
<ul style="list-style-type: none"> <li>• Age</li> <li>• Past medical / surgical history</li> <li>• Medications</li> <li>• Onset</li> <li>• Palliation / provocation</li> <li>• Quality (crampy, constant, sharp, dull, etc.)</li> <li>• Region / radiation / referred pain</li> <li>• Severity (1-10)</li> <li>• Time (duration / repetition)</li> <li>• Fever</li> <li>• Last meal eaten</li> <li>• Last bowel movement / emesis</li> <li>• Menstrual history (pregnancy)</li> </ul>	<ul style="list-style-type: none"> <li>• Pain (location / migration)</li> <li>• Tenderness</li> <li>• Nausea</li> <li>• Vomiting</li> <li>• Diarrhea</li> <li>• Dysuria</li> <li>• Constipation</li> <li>• Vaginal bleeding / discharge</li> <li>• Pregnancy</li> </ul> <p><b>Associated symptoms: (Helpful to localize source)</b></p> <ul style="list-style-type: none"> <li>• Fever, headache, weakness, malaise, myalgias, cough, headache, mental status changes, rash</li> </ul>	<ul style="list-style-type: none"> <li>• Pneumonia or pulmonary embolus</li> <li>• Liver (hepatitis, CHF)</li> <li>• Peptic ulcer disease / gastritis</li> <li>• Gallbladder</li> <li>• Myocardial infarction</li> <li>• Pancreatitis</li> <li>• Kidney stone</li> <li>• Abdominal aneurysm</li> <li>• Appendicitis</li> <li>• Bladder / prostate disorder</li> <li>• Pelvic (PID, ectopic pregnancy, ovarian cyst)</li> <li>• Spleen enlargement</li> <li>• Diverticulitis</li> <li>• Bowel obstruction</li> <li>• Gastroenteritis (infectious)</li> </ul>

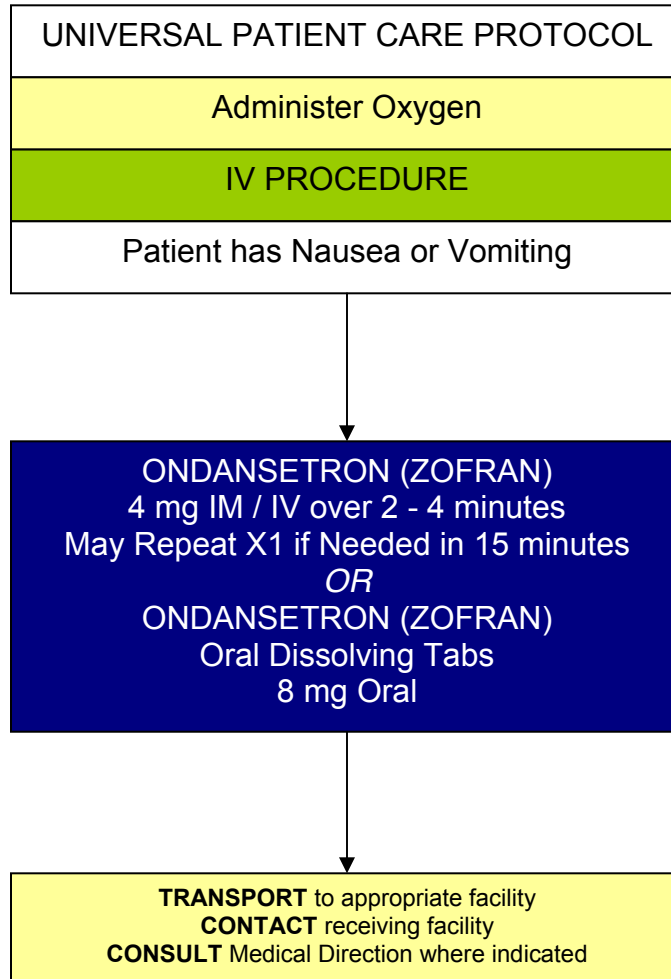
If patient is less than 65 years old and suspicion is high for kidney stones administer:  
Ketorolac (Toradol) 30 mg slow IV or 60 mg IM in addition to Hydromorphone (Dilaudid)

## 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 a large number of 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.
- If 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.

# ANTI - EMETIC PROTOCOL

E	EMT	E
A	AEMT	A
P	PARAMEDIC	P
M	MED CONTROL	M



## ANTI – EMETIC PROTOCOL

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
<ul style="list-style-type: none"> <li>• Nausea</li> <li>• Vomiting</li> <li>• Medication(s) administration such as narcotic analgesics</li> </ul>	<ul style="list-style-type: none"> <li>• Complaints of nausea and / or vomiting</li> </ul>	<ul style="list-style-type: none"> <li>• Consider AMI / 12 lead EKG</li> <li>• Gastroenteritis</li> <li>• Toxic ingestion / food poisoning</li> <li>• Bowel obstruction</li> <li>• Appendicitis</li> <li>• Gastritis</li> <li>• Cholecystitis (gallbladder)</li> <li>• Hepatitis / cirrhosis</li> <li>• Headaches / migraine</li> <li>• Pregnancy</li> <li>• Hypertensive crisis</li> <li>• Electrolyte imbalances</li> <li>• DKA</li> <li>• Intracranial pressure</li> <li>• Sepsis / infections</li> </ul>

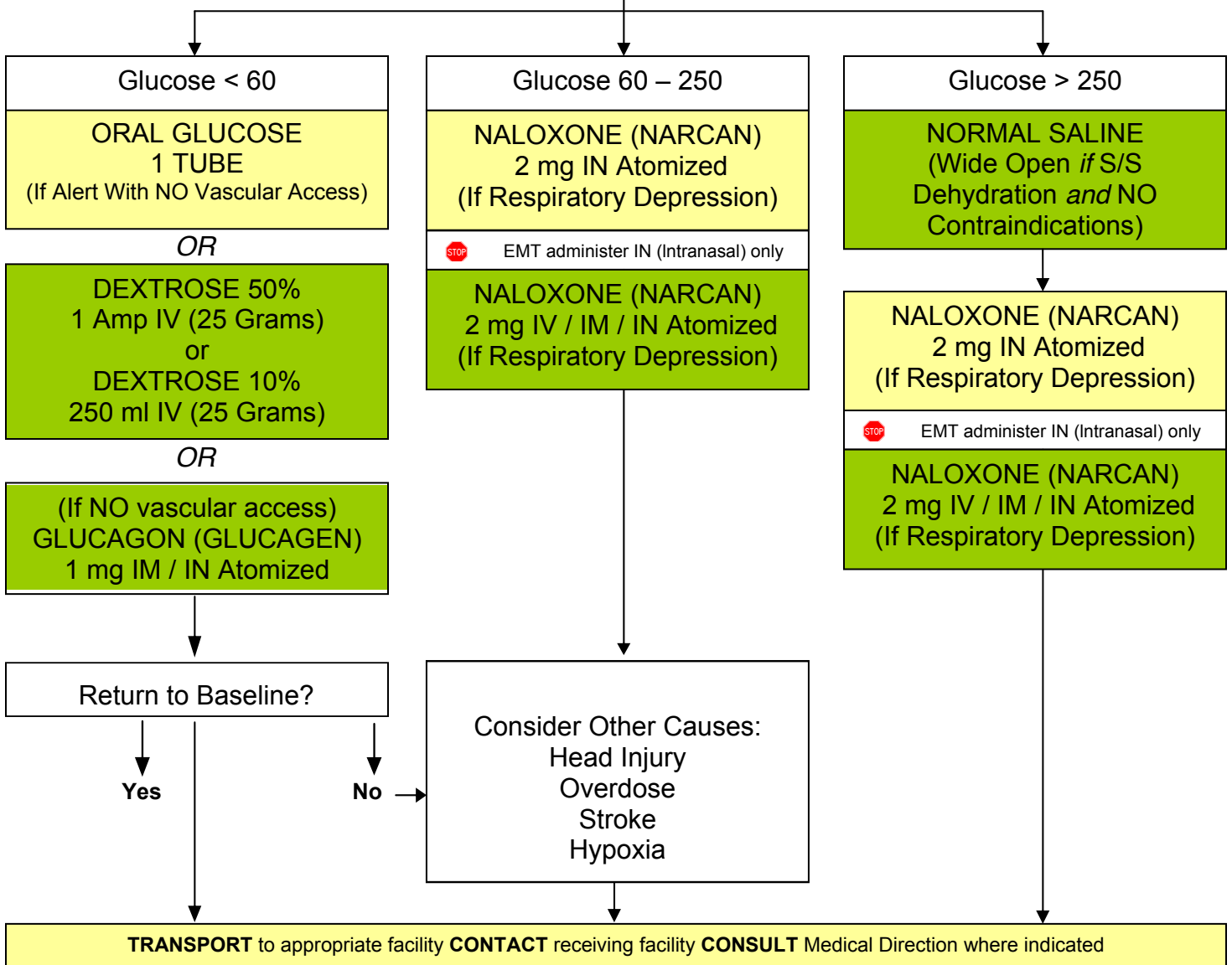
### KEY POINTS

- 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 15 minutes 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.

# ALTERED LEVEL OF CONSCIOUSNESS

E	EMT	E
A	AEMT	A
P	PARAMEDIC	P
M	MED CONTROL	M

UNIVERSAL PATIENT CARE PROTOCOL
Consider Spinal Immobilization Protocol
12 Lead EKG Procedure 🕒 1 <sup>ST</sup> Contact to EKG and Transmission < 10 Min
IV PROCEDURE
Airway Protocol
OXYGEN
CAPNOGRAPHY PROCEDURE
Check Blood Glucose Level



## ALTERED LEVEL OF CONSCIOUSNESS

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
<ul style="list-style-type: none"> <li>• Known diabetic, medic alert tag</li> <li>• Drugs, drug paraphernalia</li> <li>• Report of illicit drug use or toxic ingestion</li> <li>• Past medical history</li> <li>• Medications</li> <li>• History of trauma</li> </ul>	<ul style="list-style-type: none"> <li>• Decreased mental status</li> <li>• Change in baseline mental status</li> <li>• Bizarre behavior</li> <li>• Hypoglycemia (cool, diaphoretic skin)</li> <li>• Hyperglycemia (warm, dry skin; fruity breath; Kussmal resps; signs of dehydration)</li> </ul>	<ul style="list-style-type: none"> <li>• Head trauma</li> <li>• CNS (stroke, tumor, seizure, infection)</li> <li>• Cardiac (MI, CHF)</li> <li>• Infection</li> <li>• Thyroid (hyper / hypo)</li> <li>• Shock (septic, metabolic, traumatic)</li> <li>• Diabetes (hyper / hypoglycemia)</li> <li>• Toxicological incident</li> <li>• Acidosis / alkalosis</li> <li>• Environmental exposure</li> <li>• Pulmonary (hypoxia)</li> <li>• Electrolyte abnormality</li> <li>• Psychiatric disorder</li> </ul>

### 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 (< 60), normal glucose (60 - 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 patients receiving Naloxone (Narcan) MUST be transported.

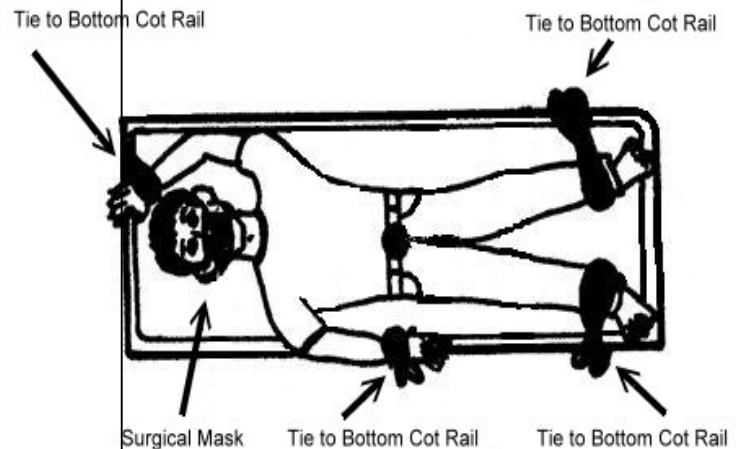
# BEHAVIORAL / PSYCHIATRIC EMERGENCIES

E	EMT	E
A	AEMT	A
P	PARAMEDIC	P
M	MED CONTROL	M

SCENE SAFETY SUMMON LAW ENFORCEMENT
UNIVERSAL PATIENT CARE PROTOCOL
Remove patient from Stressful environment
Verbal techniques (Reassurance, calm, establish rapport)
<b>Treat Suspected Problems per Appropriate Protocol</b> <u>Altered Mental Status</u> <u>Overdose</u> <u>Head Trauma</u> <u>Hypoglycemia</u>
Restrain Where Indicated THREAT TO SELF OR OTHERS
RESTRAINT PROCEDURE

Consider Chemical Restrain if Aggressive, Violent, Severe Agitation in the Setting of Psychosis
<b>For Use in ADULT Psychosis Only</b> <i>Not For Medical Emergencies Such As Hypoxemia, Sepsis, Encephalitis, Hypoglycemia, or Stroke</i>
<b>MIDAZOLAM (VERSED)</b> 2-5 mg IV / IM / IN
Consider HALOPERIDOL (HALDOL) 5 mg IM Over Age 65 Give 2.5 mg IM <b>THIS IS AN IM INJECTION ONLY</b>
Anytime After Injection: If Fasciculations, Extrapyrimal Symptoms (EPS) Like Dystonia
<b>DIPHENHYDRAMINE (BENADRYL)</b> 25 - 50 mg IV / IM
Do not mix HALOPERIDOL (HALDOL) and DIPHENHYDRAMINE (BENADRYL) in the same syringe - Incompatible

<b>Extrapyrimal Symptoms (EPS)</b> Involuntary Movements Purposeless Movements Tongue Protrusion - Rapid Eye Blinking Facial Grimacing - Lip Smacking / Puckering
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CONSTANT REASSESSMENT OF ABC'S, PERSONAL, AND PATIENT SAFETY
<b>TRANSPORT</b> to appropriate facility <b>CONTACT</b> receiving facility <b>CONSULT</b> Medical Direction where indicated

## BEHAVIORAL EMERGENCIES

### GENERAL CONSIDERATIONS

#### ALL RESPONDERS SHOULD HAVE A HEIGHTENED AWARENESS OF SCENE SAFETY

- A. Obtain relevant history:
  - 1. Previous psychiatric hospitalization, when and where?
  - 2. Where does patient receive psychiatric care?
  - 3. What medications does that patient take (include prescription, over-the-counter, herbals)
  - 4. When is the last time the patient actually took their medications?
  - 5. Has the patient been using illicit drugs or otherwise “self-medicating”?
- B. Calm the patient/verbal de-escalation. Sit down, speak calmly, avoid judgmental statements
- C. Evaluate the patient's general appearance and vital signs
- D. EMS Providers must remember that aggressive, violent behavior may be a symptom of medical conditions such as, but not limited to:
  - 1. Head trauma
  - 2. Alcohol / drug related issues
  - 3. Metabolic disorders (i.e., hypoglycemia, hypoxia, environmental exposure etc)
  - 4. Psychiatric / Stress-related disorders
- E. Contact Medical Control and advise of patient condition
- F. Transport patient to appropriate facility
  - 1. **Pregnant psychiatric patients** of any age shall be transported to an obstetrics-capable hospital.
  - 2. **Non-pregnant pediatric (under 18 years) psychiatric patients** shall be transported to a pediatric psychiatric capable hospital (i.e. Akron Children's Hospital)
  - 3. If exceptions need to be made consult online medical control.
- G. Contact law enforcement for assistance with violent patients

**NOTE: RESTRAINTS (physical and chemical) MAY BE USED TO PROTECT THE PATIENT, RESPONDERS AND BYSTANDERS.**

- H. All patients who are not making rational decisions should be transported for medical evaluation. They lack medical capacity to refuse care. See Transport Policy.
  - 1. Threats of suicide; overdose of medication, drugs or alcohol; and/or threats to the health and well-being of others are NOT considered rational.

## RESTRAINT POLICY & AGITATION *WITHOUT* EXCITED DELIRIUM

### Basic & Advanced EMT

- A. Soft restraints are to be used only when necessary in situations where the patient is potentially violent and may be a danger to themselves or others.
- B. Patient health care management remains the responsibility of the EMS provider. The method of restraint shall not restrict the adequate monitoring of vital signs, the ability to protect the patient's airway, compromise peripheral neurovascular status or otherwise prevent appropriate and necessary therapeutic measures.

It is recognized that the evaluation of many patient parameters requires patient cooperation and thus may be difficult or impossible to complete.

- C. All restraints should have the ability to be quickly released, if necessary.
- D. Restraints applied by law enforcement (i.e., handcuffs) require a law enforcement officer to remain with patient to adjust the 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.
- E. Patients shall NOT be transported in a prone position to ensure adequate respiratory and circulatory monitoring and management.
- F. Restrained extremities should be monitored for pulse quality, capillary refill, color, motor function, and sensory function at the time of restraint application and every 5 minutes thereafter.
- G. Restraint documentation on the Patient Care Report shall include:
  - a. Reason for the restraint
  - b. Agency responsible for restraint application (i.e., EMS, police)
  - c. Documentation of cardiorespiratory status and peripheral neurovascular status at least every 5 minutes.

### Advanced EMT

- A. Chemical restraint should be used in conjunction with physical restraints in controlling the violent / agitated patient so as to minimize the risk of injury to themselves and/or others. Physical restraint may actually make excited delirium worse. Physical restraint alone should never be used; it should always be a bridge to/buy time for chemical restraint with Ketamine or Midazolam.
- B. Try to determine if the patient's behavior is due to psychiatric emergency, drug / alcohol intoxication, environmental exposure, or head injury.
- C. Attempt to determine the patient's allergies. Administer [midazolam \(Versed\)](#) 2.5 mg IV/IM/IN. May repeat once in 5 minutes if agitation persists.
- D. All patients requiring any form of restraints – physical or chemical – must have vital signs, respiratory status and level of consciousness monitored and documented every 5 minutes.

- E. Apply cardiac monitor and pulse oximeter if able.

## Paramedic

### ADULTS:

- A. IF a psychiatric/behavioral emergency is present and patient remains agitated:
  - 1. Administer [Ketamine](#) 2 mg/kg IM or 1mg/kg IV if available.
  - 2. As an alternative to Ketamine, administer Midazolam 2.5 mg IV/IM/IN. May repeat once in 5 minutes if agitation persists.
- B. IF Excited Delirium is suspected, use Ketamine or Midazolam per excited delirium protocol.

### PEDIATRICS:

- C. On rare occasion, you may encounter a young child with agitation and/or violent behavior. Such acting out in this age group is more commonly due to psychosocial stressors, disruption of the school or familial environment, or underlying psychiatric or developmental problems rather than drug use. An 8 year-old is much more likely to tear the house apart because of underlying psychiatric illness (e.g. ODD) or home life stressors than methamphetamine use.
- D. Stay calm and be as non-threatening as possible. Get down on the child's level – take a knee to speak to the child if it is safe to do so.
- E. Provided that they are reasonably calm, collected and able to be of assistance, family is your greatest asset. Involve them early and provide the child reassurance.
- F. IF a psychiatric/behavioral emergency is present and patient remains agitated:
  - 1. Administer Midazolam 0.05-0.10 mg/kg IM FIRST. Max dose 2mg IM.
  - 2. If agitation persists, administer Diphenhydramine 1 mg/kg IM SECOND. Max dose 25 mg IM.
  - 3. Do *not* use Ketamine in the field on *agitated* children

## EXCITED DELIRIUM

### GENERAL CONSIDERATIONS

- A. An important consideration for EMS in the pre-hospital management of the extremely combative patient is the condition known as Excited Delirium. These patients are generally extremely agitated and present with bizarre and potentially violent behavior.
  - 1. A stereotypical case would be the middle-aged male who, after stripping naked, is a bloody mess from breaking out all of the windows in his house and is now running through traffic or wandering aimlessly in an unusual location (e.g. PCP).
- B. Law enforcement officers are often called upon to confront and control these patients. Some patients may fall victim to a phenomenon known as sudden, unexpected, in-custody death if excited delirium goes unrecognized and untreated. Many standard law enforcement techniques have taken the blame for these deaths over the years, including pepper spray, prone positioning post-restraint, and most recently, the TASER.
- C. The components of Excited Delirium are:
  - 1. Bizarre behavior
  - 2. Nonsensical speech
  - 3. Constant motion

4. Paranoia
  5. Attraction to shiny objects / lights / glass
  6. Superhuman strength
  7. Decreased pain sensation
  8. Hyperthermia, tachycardia, hypertension, often dilated pupils
- D. It is not unusual for an Excited Delirium patient, once they are subdued, to “crash” and exhibit difficulty breathing, hyperthermia, unresponsiveness, or other signs and symptoms of a medical emergency. Without prompt intervention and treatment, a certain number of these patients may progress to sudden, unexpected, in-custody death. Be prepared for this to occur, despite your aggressive interventions!

The current explanatory theories behind these deaths and the things EMS providers need to be aware of are:

1. Underlying Health Problems - put the patient at an increased risk of sudden death after such extreme exertion.
2. Illicit Stimulant Intoxication - Long term abuse and/or acute severe overdose of illicit stimulants such as cocaine, PCP, bath salts, or methamphetamines can result in Excited Delirium-type behavior and can lead to metabolic acidosis.
3. Metabolic Acidosis - These patients tend to be functioning at a very high metabolic rate. They will eventually “burn out” and suffer an unsurvivable metabolic acidosis, which will lead to end-organ damage and death.
4. Sympathomimetic overload – Patients tend to have hyperpyrexia (elevated body temperature, though their “fever” is not necessarily from an underlying infection), tachycardia, hypertension, and often dilated pupils.
5. Psychiatric Illness - Certain psychiatric illnesses or conditions can lead to a hyper manic state and again cause metabolic acidosis (e.g. bipolar disorder, schizophrenia).
6. Ventilation Problems - The primary means by which the body corrects metabolic acidosis is through (hyper)ventilation. It is debatable, but many believe that certain restraint devices or positions limit adequate ventilation and may exacerbate metabolic acidosis.

<b>TREATMENT</b>
------------------

- A. Patients who are in a state of Excited Delirium are at risk for sudden death and require medical intervention. To prevent the sympathetic overdrive from killing them, the patient must be sedated with benzodiazepines (e.g. Versed) to stop the hyperactive “fight or flight” response that will lead to neurologic excitatory-toxicity and death. Remember that physical restraint alone can worsen the patient’s condition. “Chemical restraint” with medications is key.
- B. Even with aggressive interventions, you must be prepared for the patient to suddenly “crash” and become dyspneic and/or unresponsive. Be ready to support ventilation and resuscitate from respiratory or cardiac arrest.
- C. Patients who are potentially in a state of Excited Delirium should be transported expeditiously to an ED for evaluation and treatment by a physician.

## Paramedic

### A. KETAMINE

For adult patients with *profound* agitation that poses a risk to the patient and providers, administer [Ketamine](#) 4 mg/kg IM or 2 mg/kg IV if an IV is available.

- a. It is prudent to back away after ketamine has been administered for several minutes until the medication has taken effect. Onset: 30 secs IV, 3-4 min IM. Ketamine dosing does not “stack”/is not cumulative. Once patient is sedated, giving them more only increases side-effects; it will not make them “more sedated”. You must wait until it wears off.
- b. Be prepared to suction the airway and/or assist with ventilation with BVM
- c. Administer 500 ml normal saline bolus.

### B. MIDAZOLAM/VERSED

Excited delirium is essentially a sympathetic overdrive, and responds best to benzodiazepines such as Midazolam/Versed that slow the sympathetic system down. Ketamine is a dissociative that will “pause” the excited delirium problem, not stop it. When the Ketamine wears off, the patient may wake up just as agitated as before.

Therefore, either *in place* of Ketamine, or *in addition* to Ketamine, administer Midazolam 5 mg IV/IM/IN to treat excited delirium. May repeat once in 5 minutes. Onset: 3-5 min IV

- a. If using Midazolam *in addition* to Ketamine, recommend giving the Midazolam as the patient is starting to wake up from the Ketamine. This will both keep them sedated for safe transportation and help stop the underlying excited delirium
- b. Be prepared to suction the airway and/or assist with ventilation with BVM
- c. Administer 500 ml normal saline bolus.

C. Medications should be administered cautiously in frail or debilitated patients. Lower doses should be considered.

## TASERED PATIENT

## ASSESSMENT

- A. The Taser device 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 person, typically regardless of pain tolerance or mental focus.
- B. Assessment of a patient who has been “hit” with a taser shall include evaluating:
  1. Possible underlying medical condition for aggressive / agitated behavior (e.g. hypoglycemia, hypoxia, environmental exposure etc.)
  2. For the presence of any injuries sustained after being tasered
  3. Any injuries from the taser barb
- C. Be aware of and suspect injury in the following at risk patients:
  1. Patients exhibiting Excited Delirium
  2. The elderly
  3. Pregnant patients
  4. Patients with known heart disease, pacemaker, and/or AICD

D. Be aware of and suspect injury with high risk barb strikes to the following areas:

1. Eye
2. Open mouth
3. Neck
4. Genitals
5. Large blood vessels in the groin
6. Bone

<b>TREATMENT</b>
------------------

A. Tasered patients do not necessarily require transport. Current medical literature does not support the routine medical evaluation of an individual after Taser application, with some exceptions. Those that should be transported are:

1. Patients from the at risk group
2. Patients with a high risk barb strike
3. Patients with significant, underlying, predisposing medical condition
4. Patients who sustained a significant injury after being tasered
5. If unable to remove barb
6. Advanced EMTs and Paramedics should apply the cardiac monitor and obtain rhythm strip for patients with irregular pulse, palpitations, elderly, cardiac disease history and/or Excited Delirium

B. Treatment for patients that require transport includes:

1. Medical attention for their specific condition(s)
2. Remove barb and bandage sites
3. Refer to Behavioral Emergencies Protocol as indicated for restraints
4. Cardiac monitor (Advanced EMT and Paramedic)
5. Transport

C. Treatment for patients NOT requiring transport includes:

1. Remove barb and bandage sites
2. Tetanus immunization inquiry and recommendation - If last tetanus immunization was more than 10 years ago, patient should receive another immunization within 2-3 days
3. Appropriate documentation of assessment and treatment on Patient Care Report and release of patient to the custody of the specific law enforcement agency

## BEHAVIORAL EMERGENCIES

### KEY

BASIC EMT

ADVANCED EMT

PARAMEDIC

MED CONTROL

- ASSESS AND MANAGE ABC'S
- OBTAIN RELEVANT HISTORY
  - PREVIOUS PSYCH HOSPITALIZATION?
  - WHERE PATIENT RECEIVES PSYCH CARE?
  - WHAT MEDICATIONS DOES THE PATIENT TAKE? WHEN WAS THEIR LAST DOSE?
  - ANY ILLICIT DRUG USE?
- EVALUATE PATIENT CONDITION
- MONITOR VITAL SIGNS
- HYPOPERFUSION (BP < 100 SYSTOLIC)
- REASSURE PATIENT
- TRANSPORT PATIENT TO APPROPRIATE FACILITY
- CONTACT LAW ENFORCEMENT FOR ASSISTANCE WITH VIOLENT PATIENTS
- CONSIDER USE OF RESTRAINTS – SEE RESTRAINT PROTOCOL
- ALL PATIENTS WHO ARE NOT MAKING RATIONAL DECISIONS SHOULD BE TRANSPORTED FOR MEDICAL EVALUATION (I.E THREAT OF SUICIDE, OVERDOSE, DRUGS OR ALCOHOL, AND THREATS TO THE HEALTH OR WELL BEING OF OTHERS)

- CHEMICAL RESTRAINT FOR MILD TO MODERATELY AGITATED PATIENT:  
ADMINISTER **MIDAZOLAM (VERSED)** 2.5 MG IV/IM/IN  
MAY REPEAT ONCE IN 5 MINUTES IF NEEDED
- CHEMICAL RESTRAINT FOR PROFOUNDLY AGITATED PATIENT (EXCITED DELIRIUM):  
ADMINISTER **MIDAZOLAM (VERSED)** 5 MG IV/IM/IN  
MAY REPEAT ONCE IN 5 MINUTES IF NEEDED
- APPLY CARDIAC MONITOR AND PULSE OXIMETER IF ABLE

- CHEMICAL RESTRAINT FOR MILD TO MODERATELY AGITATED PATIENT:  
ADMINISTER **KETAMINE** 2 MG/KG IM OR 1 MG/KG IV
- CHEMICAL RESTRAINT FOR PROFOUNDLY AGITATED PATIENT (EXCITED DELIRIUM):  
ADMINISTER **KETAMINE** 4 MG/KG IM OR 2 MG/KG IV
- ADMINISTER 500 ML **NORMAL SALINE** BOLUS

### EXCITED DELIRIUM:

- THE COMPONENTS OF EXCITED DELIRIUM ARE:
  - BIZARRE BEHAVIOR
  - NONSENSICAL SPEECH
  - CONSTANT MOTION
  - PARANOIA
  - ATTRACTION TO SHINY OBJECTS / LIGHTS
  - SUPERHUMAN STRENGTH
  - DECREASED PAIN SENSATION
  - HYPERTHERMIA
  - TACHYCARDIA
  - HYPERTENSION
  - OFTEN DILATED PUPILS
- PATIENTS WHO ARE IN A STATE OF EXCITED DELIRIUM ARE AT RISK FOR SUDDEN DEATH AND REQUIRE MEDICAL INTERVENTION. BE PREPARED TO SUPPORT VENTILATION AND RESUSCITATE. IF THE PATIENT REQUIRES FURTHER SEDATION, KNOW THAT PHYSICAL RESTRAINT ALONE CAN INTENSIFY THE PATIENT'S CONDITION.
- PATIENTS WHO ARE POTENTIALLY IN A STATE OF EXCITED DELIRIUM SHOULD BE TRANSPORTED EXPEDIENTLY TO AN ED FOR EVALUATION AND TREATMENT BY A PHYSICIAN.
- TREATMENT OF EXCITED DELIRIUM INCLUDES THE ADMINISTRATION OF KETAMINE TO PAUSE THE EVENT AND MIDAZOLAM TO SLOW THE SYMPATHETIC RESPONSE.

## RESTRAINTS

### KEY

BASIC EMT
ADVANCED EMT
PARAMEDIC
MED CONTROL

## PHYSICAL RESTRAINTS

- SOFT RESTRAINTS ARE TO BE USED ONLY IN SITUATIONS WHERE THE PATIENT IS POTENTIALLY VIOLENT AND MAY BE A DANGER TO THEMSELVES OR OTHERS.
- HEALTH CARE MANAGEMENT REMAINS RESPONSIBILITY OF THE EMS PROVIDER
- ALL RESTRAINTS SHOULD HAVE THE ABILITY TO BE RELEASED QUICKLY
- PATIENTS SHALL **NOT** BE TRANSPORTED IN PRONE POSITION.
- RESTRAINED EXTREMITIES SHOULD BE MONITORED EVERY 5 MINUTES FOR:
  - PULSE QUALITY
  - CAP REFILL
  - COLOR
  - MOTOR FUNCTION
  - SENSORY FUNCTION
- DOCUMENTATION INCLUDES:
  - REASONS FOR RESTRAINT
  - AGENCY RESPONSIBLE FOR RESTRAINT APPLICATION
  - CARDIORESPIRATORY STATUS EVERY 5 MINUTES
  - PERIPHERAL NEUROVASCULAR STATUS EVERY 5 MINUTES

**PHYSICAL RESTRAINT SHOULD ONLY EVER BE A BRIDGE TO CHEMICAL RESTRAINT**

## CHEMICAL RESTRAINTS

### MIDAZOLAM (VERSED)

#### MILD-MODERATE AGITATION

- ADMINISTER **MIDAZOLAM (VERSED)** 2.5 MG IV/IM/IN
- PROFOUND AGITATION (EXCITED DELIRIUM)  
ADMINISTER **MIDAZOLAM (VERSED)** 5 MG IV/IM/IN
- APPLY CARDIAC MONITOR AND PULSE OXIMETER IF ABLE

### KETAMINE

#### MILD-MODERATE AGITATION

- ADMINISTER **KETAMINE** 2 MG/KG IM OR 1 MG/KG IV
- PROFOUND AGITATION (EXCITED DELIRIUM)  
ADMINISTER **KETAMINE** 4 MG/KG IM OR 2 MG/KG IV

### PEDIATRIC AGITATION

- 1<sup>st</sup> CHOICE: ADMINISTER **MIDAZOLAM (VERSED)** 0.05-0.10 MG/KG IM, MAX DOSE 2 MG
- 2<sup>nd</sup> CHOICE (IF #1 INSUFFICIENT), ADMINISTER **DIPHENHYDRAMINE (BENADRYL)** 1 MG/KG IM, MAX DOSE 25 MG

# BEHAVIORAL / PSYCHIATRIC EMERGENCIES

**ALL RESPONDERS SHOULD HAVE A HEIGHTENED AWARENESS OF SCENE SAFETY**

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
<ul style="list-style-type: none"> <li>Situational crisis</li> <li>Psychiatric illness / medications</li> <li>Injury to self or threats to others</li> <li>Medic alert tag</li> <li>Substance abuse / overdose</li> <li>Diabetes</li> </ul>	<ul style="list-style-type: none"> <li>Anxiety, agitation, confusion</li> <li>Affect change, hallucinations</li> <li>Delusional thoughts, bizarre behavior</li> <li>Combative violent</li> <li>Expression of suicidal / homicidal thoughts</li> </ul>	<ul style="list-style-type: none"> <li>See <u>Altered Mental Status</u> differential diagnosis</li> <li>Alcohol Intoxication</li> <li>Toxin / substance abuse</li> <li>Medication effect / overdose</li> <li>Withdrawal syndromes</li> <li>Depression</li> <li>Bipolar (manic-depressive)</li> <li>Schizophrenia</li> <li>Anxiety disorders</li> </ul>

**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 chemical restraint use:**

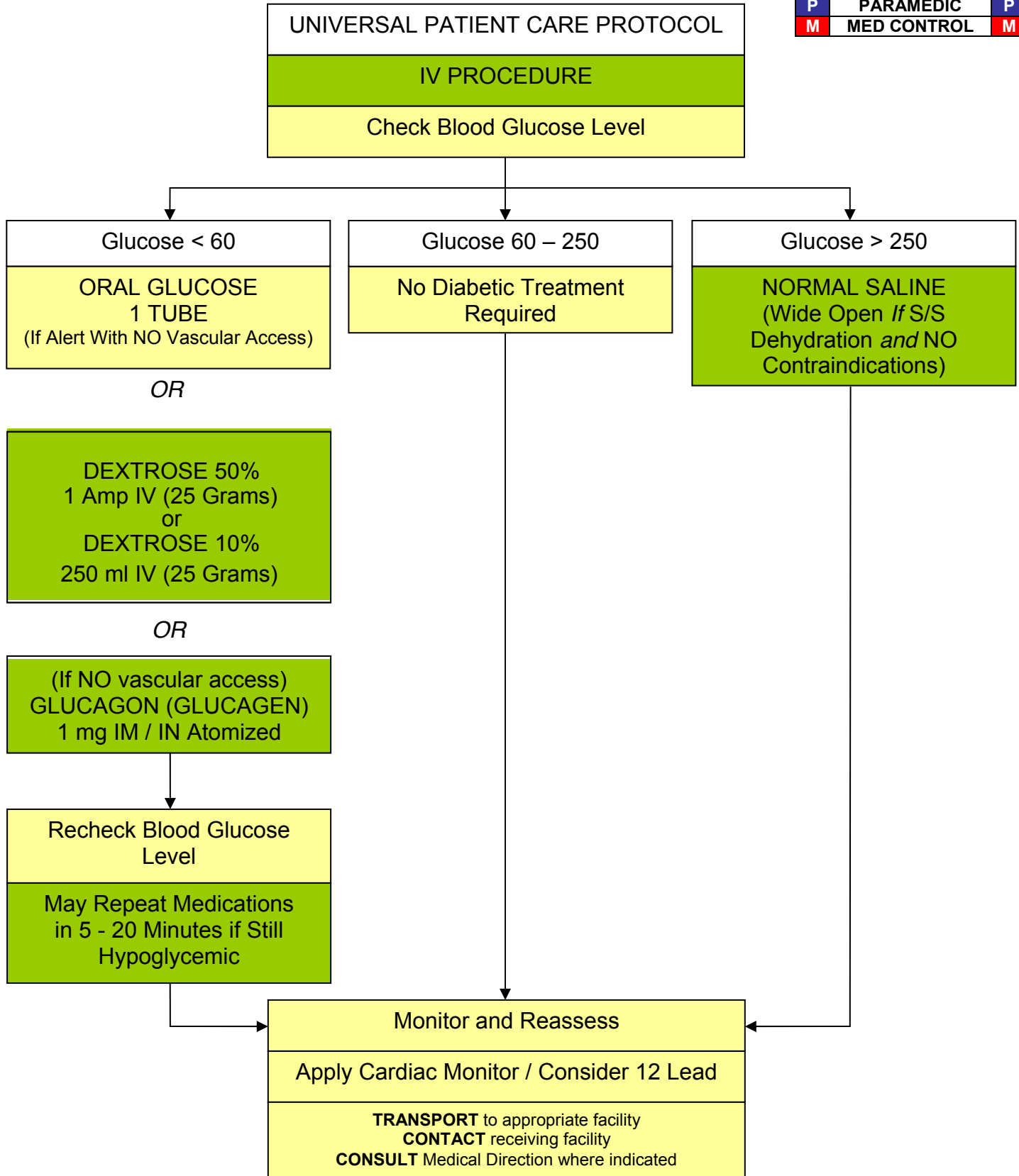
- Patient out of control and may cause harm to self or others.
- Patient is NOT a medical patient (treat underlying causes).
- Patient is an ADULT patient.
- Haloperidol (Haldol) IM can be given safely without harm to patient or EMS.
- Use necessary force required for patient control without causing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

### 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, 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 first 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.

# DIABETIC EMERGENCIES

E	EMT	E
A	AEMT	A
P	PARAMEDIC	P
M	MED CONTROL	M



# DIABETIC EMERGENCIES

## HYPOGLYCEMIA

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
<ul style="list-style-type: none"> <li>Known diabetic, medic alert tag</li> <li>Past medical history</li> <li>Medications</li> <li>Last meal</li> <li>Recent BGL check</li> </ul>	<ul style="list-style-type: none"> <li>Altered level of consciousness</li> <li>Dizziness</li> <li>Irritability</li> <li>Diaphoresis</li> <li>Convulsions</li> <li>Hunger</li> <li>Confusion</li> </ul>	<ul style="list-style-type: none"> <li>ETOH</li> <li>Toxic overdose</li> <li>Trauma</li> <li>Seizure</li> <li>Syncope</li> <li>CSN disorder</li> <li>Stroke</li> <li>Pre-existing condition</li> </ul>

## HYPERGLYCEMIA

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
<ul style="list-style-type: none"> <li>Known diabetic, medic alert tag</li> <li>Past medical history</li> <li>Medications</li> <li>Last meal</li> <li>Recent BGL check</li> </ul>	<ul style="list-style-type: none"> <li>Altered level of consciousness / coma</li> <li>Abdominal pain</li> <li>Nausea / vomiting</li> <li>Dehydration</li> <li>Frequent thirst and urination</li> <li>General weakness malaise</li> <li>Hypovolemic shock</li> <li>Hyperventilation</li> <li>Deep / rapid respirations</li> </ul>	<ul style="list-style-type: none"> <li>ETOH</li> <li>Toxic overdose</li> <li>Trauma</li> <li>Seizure</li> <li>Syncope</li> <li>CSN disorder</li> <li>Stroke</li> <li>Diabetic ketoacidoss</li> </ul>

**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.

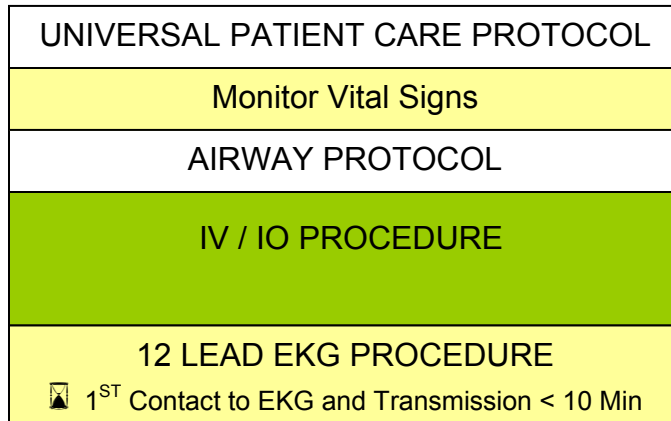
### Hypoglycemia:

- 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.

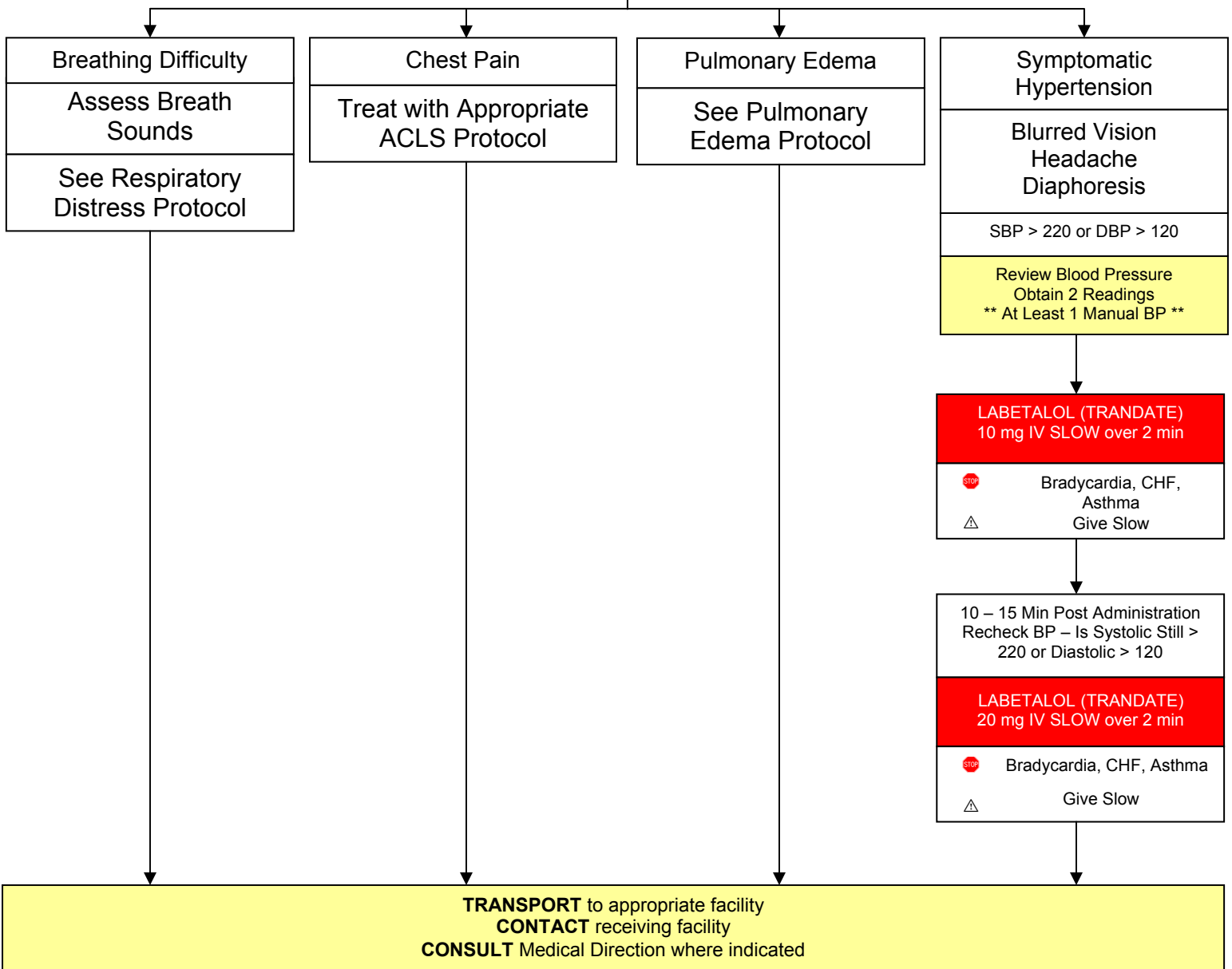
### Miscellaneous:

- If IV access is successful after Glucagon (Glucagen) M and the patient is still symptomatic, Dextrose IV can be administered.
- Shut off wearable insulin pumps if patient is hypoglycemic.

# DIALYSIS / RENAL PATIENT



E	EMT	E
A	AEMT	A
P	PARAMEDIC	P
M	MED CONTROL	M



# DIALYSIS / RENAL PATIENT

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
<ul style="list-style-type: none"> <li>• Renal failure</li> <li>• Dialysis treatment</li> <li>• Anemia</li> <li>• Dialysis treatment schedule</li> <li>• Previous implications</li> <li>• Long term catheter access</li> <li>• Shunt access</li> <li>• Hyperkalemia</li> </ul>	<ul style="list-style-type: none"> <li>• Hypotension</li> <li>• Bleeding</li> <li>• Fever</li> <li>• Electrolyte imbalances</li> <li>• Nausea</li> <li>• Vomiting</li> <li>• Altered mental status</li> <li>• Seizure</li> <li>• Dysrhythmias</li> </ul>	<ul style="list-style-type: none"> <li>• Congestive heart failure</li> <li>• Pericarditis</li> <li>• Diabetic problem</li> </ul>

## 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 mental status, 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
- A dialysis patient may not respond to drug therapy. A renal patient in full cardiac arrest should be treated according to current ACLS guidelines.

**AIRWAY / BREATHING CIRCULATION / SHOCK ACLS MEDICAL TRAUMA**

# ESOPHAGEAL FOREIGN BODY OBSTRUCTION

E	EMT	E
A	AEMT	A
P	PARAMEDIC	P
M	MED CONTROL	M

UNIVERSAL PATIENT CARE PROTOCOL

**Airway Obstruction**

Difficulty Breathing  
Coughing  
Difficulty / Unable to Talk

---

AIRWAY PROTOCOL

vs:  
↔

**Esophageal Obstruction**

Salivation  
Unable to Swallow  
Secretions

---

**Patient is in Distress**

Evaluate Level of Obstruction

LOW (Neck Down)

IV PROCEDURE

HIGH (Neck Up)

Position and Protect Airway

**GLUCAGON (GLUCAGEN)**  
1 mg IV

PROBLEM RESOLVED? May take up to 20 min

**NITROGLYCERINE (NITRO-STAT)**  
0.4 mg SL

If GLUCAGON (GLUCAGEN) Unsuccessful  
STOP ED drug use within 48 hrs

**TRANSPORT** to appropriate facility  
**CONTACT** receiving facility  
**CONSULT** Medical Direction where indicated

# ESOPHAGEAL FOREIGN BODY OBSTRUCTION

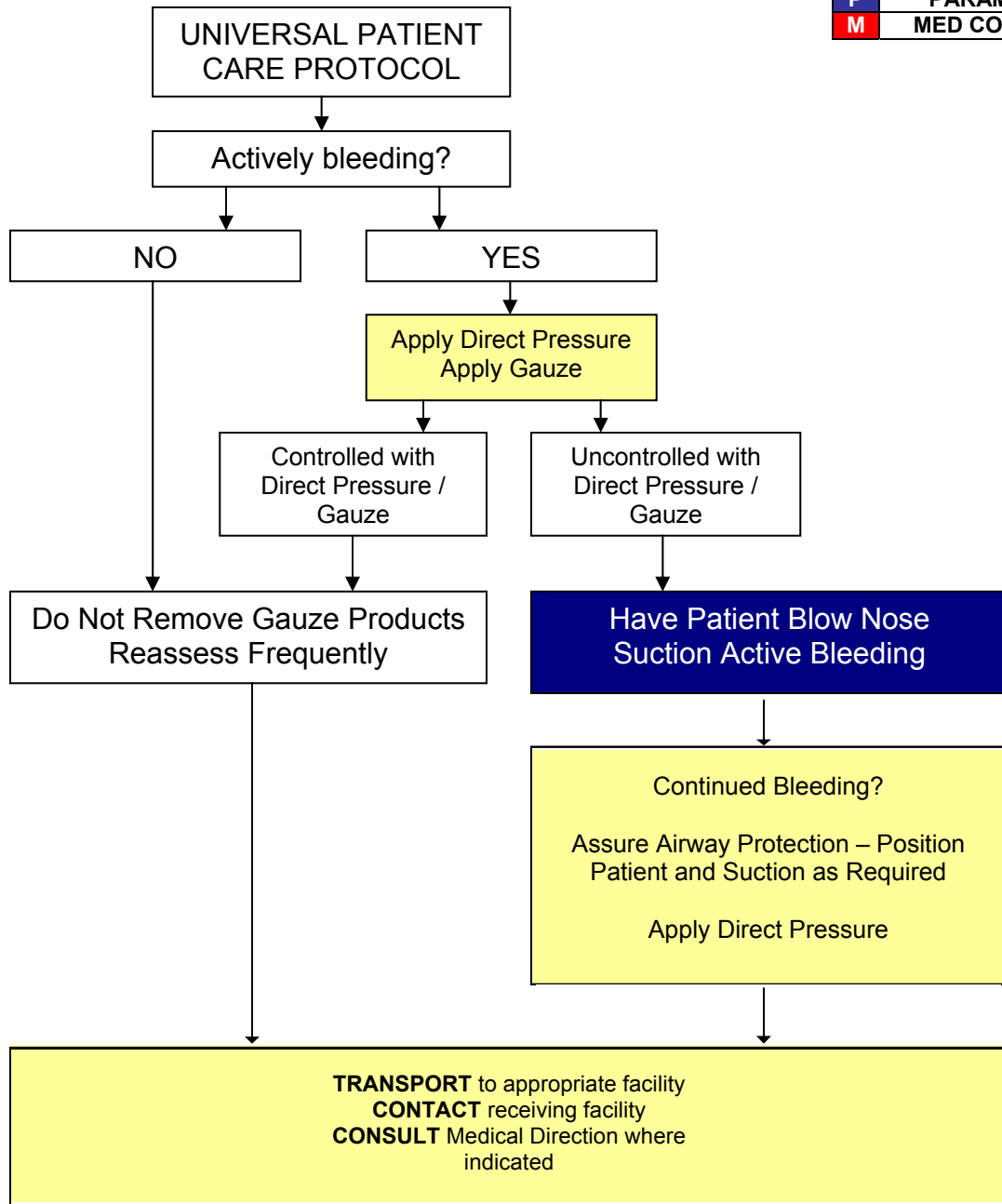
HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
<ul style="list-style-type: none"> <li>Onset during eating or swallowing pills, etc.</li> </ul>	<ul style="list-style-type: none"> <li>Salivation</li> <li>Unable to swallow secretions</li> <li>Distressed patient</li> <li>Able to breathe but may feel impaired</li> </ul>	<ul style="list-style-type: none"> <li>Airway obstruction – coughing, unable to speak, difficulty breathing</li> </ul>

## KEY POINTS

- Rule out airway obstruction first.
- Patient may be helpful in identifying location of bolus obstruction as they can feel it, point to it.
- If bolus is located in neck area, Glucagon (Glucagen) will not work, just monitor and transport.
- If bolus located from neck down, proceed with Glucagon (Glucagen) treatment.
- Glucagon (Glucagen) affect will take from 5 - 20 minutes.
- Administer Nitroglycerine (Nitro-Stat) for its smooth muscle relaxant properties to help pass the bolus if Glucagon (Glucagen) fails.

# EPISTAXIS / NOSE BLEED

E	EMT	E
A	AEMT	A
P	PARAMEDIC	P
M	MED CONTROL	M

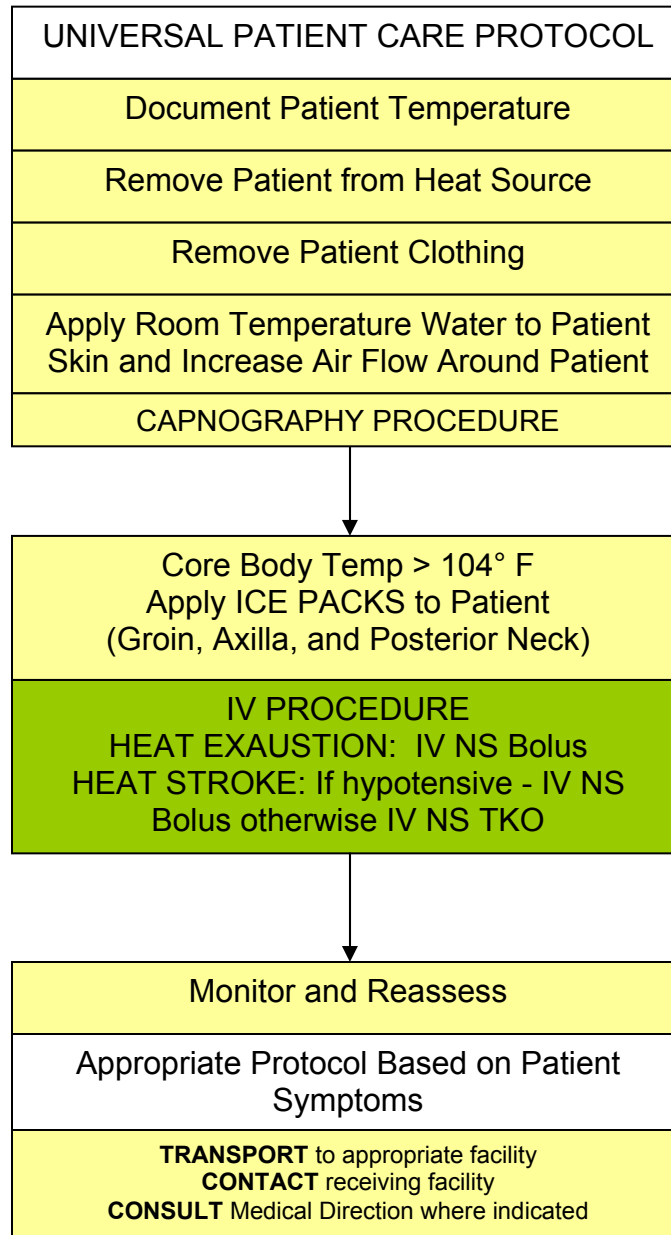


## EPISTAXIS / NOSE BLEED

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
<ul style="list-style-type: none"> <li>• Patient presents with epistaxis unresolved with direct pressure</li> </ul>	<ul style="list-style-type: none"> <li>• Venous bleeding from nose as a result of medical or traumatic injury</li> </ul>	<ul style="list-style-type: none"> <li>• Hypertensive Emergency</li> <li>• Stroke</li> <li>• Anti-coagulant overdose / misuse</li> <li>• Nasal foreign body</li> <li>• Basilar skull fracture</li> </ul>

# HYPERTHERMIA / HEAT EXPOSURE

E	EMT	E
A	AEMT	A
P	PARAMEDIC	P
M	MED CONTROL	M



# HEAT EXPOSURE / HYPERTHERMIA

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
<ul style="list-style-type: none"> <li>• Age</li> <li>• Exposure to increased temperatures and humidity</li> <li>• Past medical history / medications</li> <li>• Extreme exertion</li> <li>• Time and length of exposure</li> <li>• Poor PO intake</li> <li>• Fatigue and / or muscle cramping</li> </ul>	<ul style="list-style-type: none"> <li>• Altered mental status or unconsciousness</li> <li>• Hot, dry, or sweaty skin</li> <li>• Hypotension or shock</li> <li>• Seizures</li> <li>• Nausea</li> </ul>	<ul style="list-style-type: none"> <li>• Fever (infection)</li> <li>• Dehydration</li> <li>• Medications</li> <li>• Hyperthyroidism (storm)</li> <li>• Delirium tremens (DT's)</li> <li>• Heat cramps</li> <li>• Heat exhaustion</li> <li>• Heat stroke</li> <li>• CNS lesions or tumors</li> </ul>

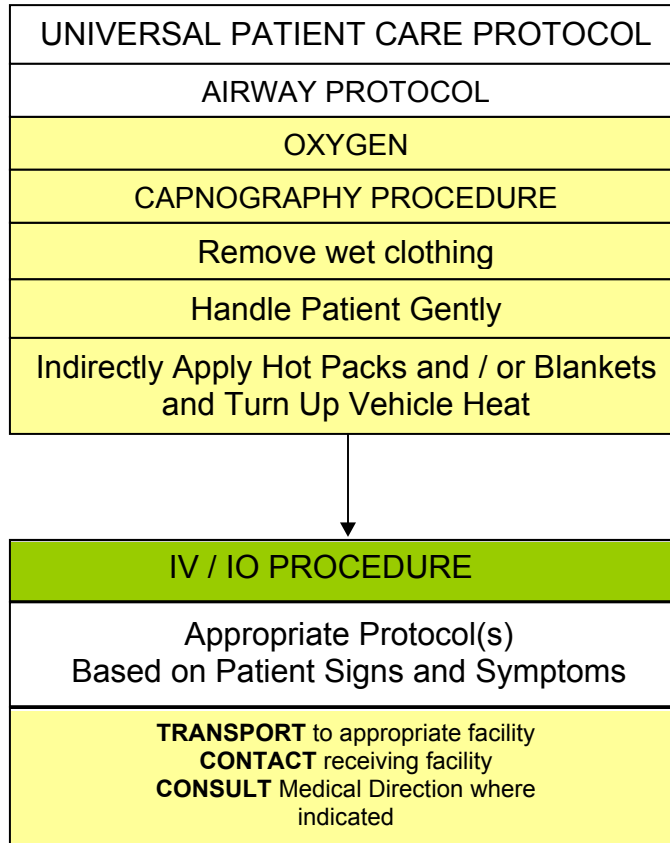
Heat Exhaustion: Dehydration	Heat Stroke: Cerebral Edema
<ul style="list-style-type: none"> <li>• Muscular / abdominal cramping</li> <li>• General weakness</li> <li>• Diaphoresis</li> <li>• Febrile</li> <li>• Confusion</li> <li>• Dry mouth / thirsty</li> <li>• Tachycardia</li> <li>• BP normal or orthostatic hypotension</li> </ul>	<ul style="list-style-type: none"> <li>• Confusion</li> <li>• Bizarre behavior</li> <li>• Skin hot dry, febrile</li> <li>• Tachycardia</li> <li>• Hypotensive</li> <li>• Seizure</li> <li>• Coma</li> </ul>

## 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).
- 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, temperature >104° F (40° C), and an 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 patients 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.

# HYPOTHERMIA / FROSTBITE

E	EMT	E
A	AEMT	A
P	PARAMEDIC	P
M	MED CONTROL	M



# HYPOTHERMIA / FROSTBITE

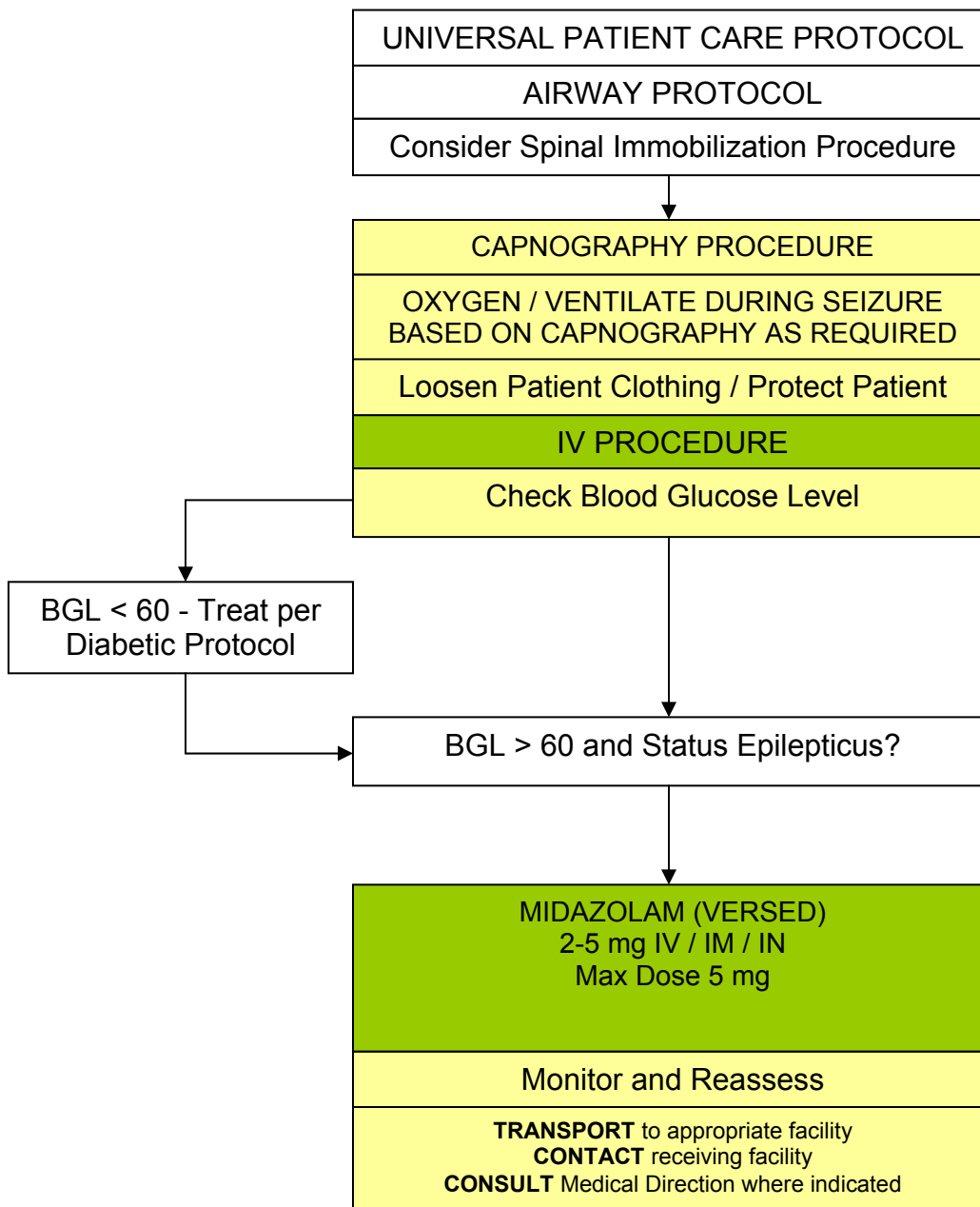
HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
<ul style="list-style-type: none"> <li>• Past medical history</li> <li>• Medications</li> <li>• Exposure to environment even in normal temperatures</li> <li>• Exposure to extreme cold</li> <li>• Extremes of age</li> <li>• Drug use: alcohol, barbiturates</li> <li>• Infections / sepsis</li> <li>• Length of exposure / wetness</li> </ul>	<ul style="list-style-type: none"> <li>• Cold, clammy</li> <li>• Shivering</li> <li>• Mental status changes</li> <li>• Extremity pain or sensory abnormality</li> <li>• Bradycardia</li> <li>• Hypotension or shock</li> </ul>	<ul style="list-style-type: none"> <li>• Sepsis</li> <li>• Environmental exposure</li> <li>• Hypoglycemia</li> <li>• CNS dysfunction</li> <li>• Stroke</li> <li>• Head injury</li> <li>• Spinal cord injury</li> </ul>

## 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 medical control.
- Patients with low core temperatures may not respond to ALS drug interventions. Discuss ACLS drug use with 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.

# SEIZURES

E	EMT	E
A	AEMT	A
P	PARAMEDIC	P
M	MED CONTROL	M



# SEIZURES

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
<ul style="list-style-type: none"> <li>Reported / witnessed seizure activity</li> <li>Previous seizure history</li> <li>Medical alert tag information</li> <li>Seizure medications</li> <li>History of trauma</li> <li>History of diabetes</li> <li>History of pregnancy</li> </ul>	<ul style="list-style-type: none"> <li>Decreased mental status</li> <li>Sleepiness</li> <li>Incontinence</li> <li>Observed seizure activity</li> <li>Evidence of trauma</li> </ul>	<ul style="list-style-type: none"> <li>CNS (head) trauma</li> <li>Tumor</li> <li>Metabolic, hepatic, or renal failure</li> <li>Hypoxia</li> <li>Electrolyte abnormality (na, ca, mg)</li> <li>Drugs, medications, non-compliance</li> <li>Infection / fever</li> <li>Alcohol withdrawal</li> <li>Eclampsia</li> <li>Stroke</li> <li>Hyperthermia</li> </ul>

## Categories of Seizures

<b>Complex = Unconscious</b>	<b>Focal = Partial, Localized</b>
<b>Simple = Conscious</b>	<b>Generalized = All Body</b>

- **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 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 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.

# SEVERE PAIN

**PATIENT HAS:**

- Burns
- Intractable Flank Pain
- Intractable Back Pain
- Musculoskeletal and / or Fracture Pain
- Sickle Cell Pain Crisis (Use Supplemental O2)
- Unremitting Abdominal Pain (NOT OB)
- Chest Pain

E	EMT	E
A	AEMT	A
P	PARAMEDIC	P
M	MED CONTROL	M

Yes

No

**HYDROMORPHONE (DILAUDID)**  
0.5 mg – 1 mg IV / IM  
*IF*

OVER AGE 65, Liver, or Renal Failure:  
GIVE TITRATED DOSE UP TO 0.5 mg IV

**ONDANSETRON (ZOFRAN) as Needed**  
4 mg IM / IV over 2 - 4 minutes

May Repeat X1 if Needed in 15 minutes

*OR*

**ONDANSETRON (ZOFRAN) Dissolving Tabs**  
8 mg Oral

**Pain Other Than Listed**  
**CONTACT MED CONTROL**

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

**CAPNOGRAPHY REQUIRED**  
If Administering Analgesics to Trauma Patients Not Listed Above

**CAPNOGRAPHY PROCEDURE**

Repeat if Pain Persists and Vitals Stable  
**HYDROMORPHONE (DILAUDID)**  
0.5 mg – 1 mg IV / IM  
*IF*

OVER AGE 65, Liver, or Renal Failure:  
GIVE TITRATED DOSE UP TO 0.5 mg IV

Monitor Airway, Breathing, Vitals

**TRANSPORT** to appropriate facility  
**CONTACT** receiving facility  
**CONSULT** Medical Direction where indicated

# SEVERE PAIN

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
<ul style="list-style-type: none"> <li>• Age / onset</li> <li>• Location</li> <li>• Duration</li> <li>• Severity (0 - 10)</li> <li>• Past medical history</li> <li>• Medications</li> <li>• Drug allergies</li> </ul>	<ul style="list-style-type: none"> <li>• Severity (pain scale)</li> <li>• Quality (sharp, dull, etc.)</li> <li>• Radiation</li> <li>• Relation to movement, respiration</li> <li>• Increased with palpation of area</li> </ul>	<ul style="list-style-type: none"> <li>• Per the specific protocol</li> <li>• Musculoskeletal</li> <li>• Visceral (abdominal)</li> <li>• Cardiac</li> <li>• Pleuritic (respiratory)</li> <li>• Neurogenic</li> <li>• Renal (colic)</li> </ul>

## 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. It offers a visual description for those who don't have the verbal skills to explain how their symptoms make them feel.



To use this scale, 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 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 Dilaudid (Hydromorphone) 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) administration. Be prepared to ventilate.
- DO NOT administer narcotic analgesics if there is any suspicion of a head injury.

# STROKE / CVA

E	EMT	E
A	AEMT	A
P	PARAMEDIC	P
M	MED CONTROL	M

**CincinnatiPlus  
Pre-Hospital Stroke Assessment**

**Facial Droop** – Have patient smile

- Normal – both sides equal
- Abnormal – one side does not move as well

**Arm Drift** – Patient closes eyes and holds both arms out for 10 seconds

- Normal – both arms move or don't move equally
- Abnormal – one arm doesn't move or drifts down compared to the other

**Speech** – Have patient say “you can't teach an old dog new tricks”

- Normal – patient says correctly with no slurring
- Abnormal – patient slurs words, used wrong words or is unable to speak

**Visual Fields** – Have patient detect movement in peripheral vision

- Normal – patient correctly identifies movement on both sides
- Abnormal – patient cannot correctly identifies movement on both sides

**Visual Following** – Have patient follow light or finger with eyes only left to right and back

- Normal – Patient able to follow
- Abnormal – Patient not able to follow with eyes only

**Visual Acuity** – Have patient touch finger to their nose, then your finger, then nose again

- Normal – Able to perform without missing
- Abnormal – Unable to make correct alignment

Reduce Blood Pressure with Labetalol (Trandate) to 185 systolic or 110 diastolic but NOT GREATER than 20% Overall from Baseline

UNIVERSAL PATIENT CARE PROTOCOL

AIRWAY PROTOCOL

OXYGEN

CAPNOGRAPHY PROCEDURE

IV PROCEDURE  
Large Bore in AC if Possible for TPA

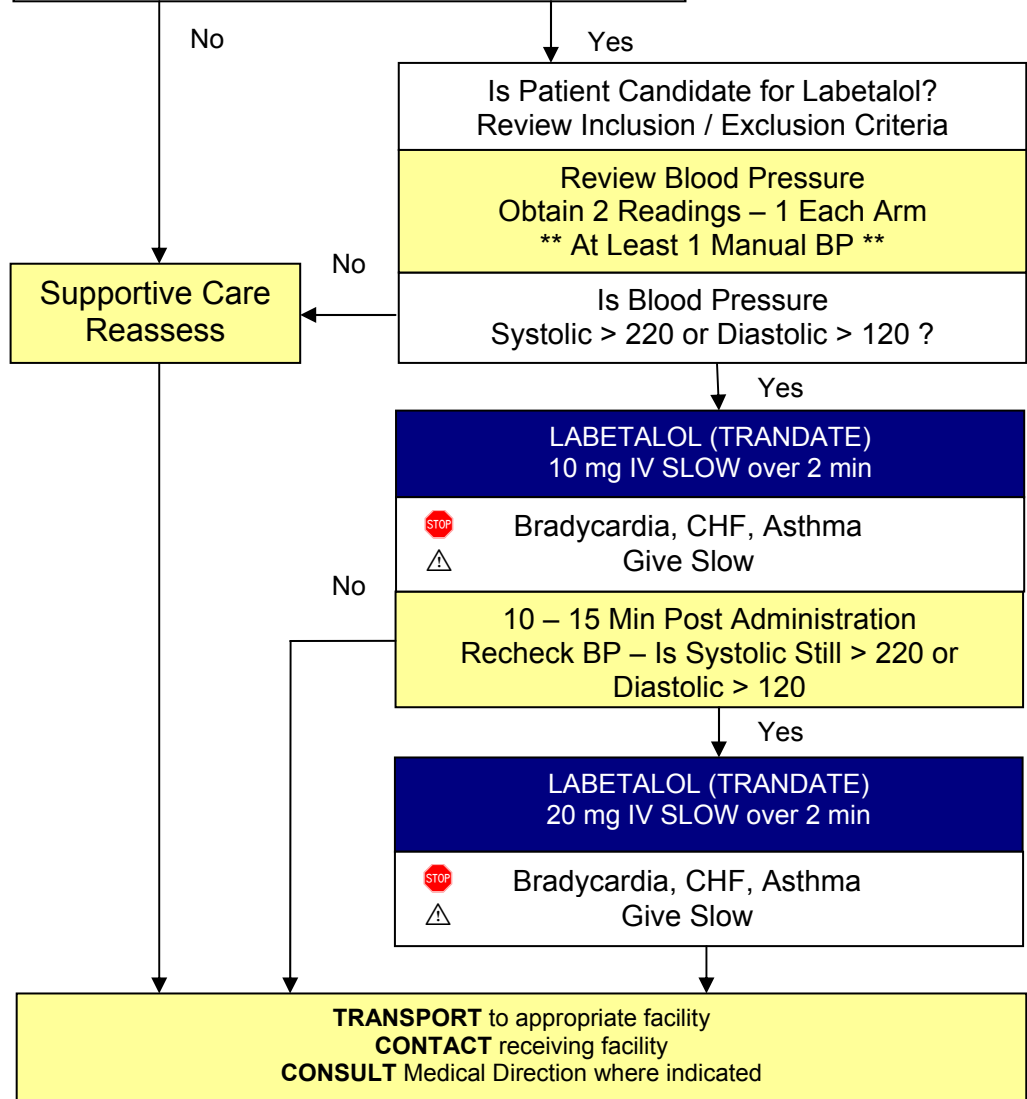
Check Blood Glucose Level

Prehospital Stroke Screen

12 Lead EKG Procedure

🕒 1<sup>ST</sup> Contact to EKG and Transmission < 10 Min

S & S of Stroke / CVA Less Than 3 1/2 Hours in Duration?



# STROKE / CVA

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
<ul style="list-style-type: none"> <li>• Previous CVA, TIA's</li> <li>• Previous cardiac / vascular surgery</li> <li>• Associated diseases: diabetes, hypertension, CAD</li> <li>• Atrial fibrillation</li> <li>• Medications (blood thinners)</li> <li>• History of trauma</li> </ul>	<ul style="list-style-type: none"> <li>• Altered mental status</li> <li>• Weakness / paralysis</li> <li>• Blindness or other sensory loss</li> <li>• Aphasia</li> <li>• Syncope</li> <li>• Vertigo / dizziness</li> <li>• Vomiting</li> <li>• Headache</li> <li>• Seizures</li> <li>• Respiratory pattern change</li> <li>• Hyper / hypotension</li> </ul>	<ul style="list-style-type: none"> <li>• <u>See Altered Mental Status</u></li> <li>• TIA (transient ischemic attack)</li> <li>• Seizure</li> <li>• Hypoglycemia</li> <li>• Stroke</li> <li>• Thrombotic</li> <li>• Embolic</li> <li>• Hemorrhagic</li> <li>• Tumor</li> <li>• Trauma</li> </ul>

## **DOCUMENT THE LAST TIME THE PATIENT WAS NORMAL**

Inclusion Criteria Labetalol	Exclusion Criteria for Labetalol
<ul style="list-style-type: none"> <li>• Over 18 years of age</li> <li>• Has neurologic deficits</li> <li>• Patient was last normal within 3 1/2 hours</li> </ul>	<ul style="list-style-type: none"> <li>• History of Intracranial hemorrhage</li> <li>• Known arteriovenous malformation, tumor, or aneurysm</li> <li>• Noncompressable arterial punctures</li> <li>• Active internal bleeding or recent trauma (fractures)</li> <li>• Intracranial, intraspinal, serious head trauma, or previous stroke within 3 months</li> </ul>

### KEY POINTS

<ul style="list-style-type: none"> <li>• Exam: Mental Status, HEENT, Heart, Lungs, Abdomen, Extremities, Neuro</li> <li>• 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)</li> <li>• The differential diagnosis listed on the <u>Altered Mental Status Protocol</u> should also be considered.</li> <li>• Elevated blood pressure is commonly present with stroke. Treat only if systolic is &gt; 220 and / or diastolic is &gt; 120 mmHg and signs <b>and</b> symptoms of stroke are present.</li> <li>• Treat chest pain / discomfort per <u>ACS protocol</u>.</li> <li>• Treat pulmonary edema per <u>CHF / Pulmonary Edema</u> protocol.</li> <li>• Be alert for airway problems (swallowing difficulty, vomiting, diminished or absent gag reflex).</li> <li>• Hypoglycemia can present as a localized neurological deficit, especially in the elderly.</li> <li>• 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.</li> <li>• Document the time of onset for the symptoms, or the last time the patient was seen "normal" for them.</li> <li>• 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, and seizure activity.</li> <li>• 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.</li> <li>• Blood pressures MUST be taken bilaterally and be similar, contact Medical Control if they vary more than 20 mmHg.</li> <li>• Accurate BP's are key to this protocol. Verify automated BP readings with manual cuff.</li> <li>• Document pts GCS score.</li> <li>• Check patient's pupils and rule out head trauma.</li> <li>• All symptomatic patients with hypertension should be transported with their head elevated.</li> <li>• If the patient becomes hypotensive from Labetalol (Trandate) administration, place the patient in the trendelenburg position and administer a normal saline bolus.</li> <li>• Toxic ingestion such as cocaine, may present as a hypertensive emergency.</li> <li>• Hypertension can be a neuroprotective reflex in patients with increased intracranial pressure.</li> </ul>
--

# TOXIC INGESTION / EXPOSURE / OVERDOSE

## UNIVERSAL PATIENT CARE PROTOCOL

### AIRWAY PROTOCOL

### OXYGEN

### CAPNOGRAPHY PROCEDURE

### IV / IO PROCEDURE

### Check Blood Glucose Level

### 12 Lead EKG Procedure

### CAUSE?

E	EMT	E
A	AEMT	A
P	PARAMEDIC	P
M	MED CONTROL	M

Cyanide or Carbon Monoxide  
Refer to  
Toxic Inhalation / Ingestion Cyanide 5-32  
or  
Toxic Inhalation Carbon Monoxide 5-34

Hypotension  
Seizures  
Dysrhythmias  
Mental Status Changes  
Respiratory Depression

TREAT PER APPROPRIATE PROTOCOL

Beta Blocker or Calcium Channel Blocker Overdose (Bradycardic)

Immediate Transcutaneous Pacing for Severe Cases Hypotension / AMS

**NORMAL SALINE**  
Bolus to Maintain SBP 90 or Radial Pulses

**GLUCAGON (GLUCAGEN) 3 mg IV**  
For Mild / Moderate Beta Blocker Bradycardia Cases Only

⚠ Adjunctive Treatment – Stabilize with TCP / Dopamine / Fluids First

Tricyclic Ingestion (Wide QRS)

Patient noted to be on any TRICYCLIC listed below and QRS complex wider than .12 msec

Brand Name	Generic Name
Adapin	doxepin
Anafranil	clomipramine
Elavil	amitriptyline
Endep	amitriptyline
Ludomil	maprotiline
Norpramin	desipramine
Pamelor	nortriptyline
Pertofrane	desipramine
Sinequan	doxepin
Surmontil	trimipramine
Tofranil	imipramine
Vivactil	protriptyline

**SODIUM BICARBONATE 1 amp IV**  
(until the QRS complex narrows to less than .12msec and the patient condition improves)

Organophosphates or Carbamates (SLUDGE)

**ATROPINE 1 mg IV**  
Repeat every 3 - 5 minutes

⚠ Given to Dry Secretions  
⚠ No Max Dose

**TRANSPORT** to appropriate facility **CONTACT** receiving facility **CONSULT** Medical Direction where indicated

## TOXIC INGESTION / EXPOSURE / OVERDOSE

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
<ul style="list-style-type: none"> <li>Ingestion or suspected ingestion of a potentially toxic substance</li> <li>Substance ingested, route, quantity</li> <li>Time of ingestion</li> <li>Reason (suicidal, accidental, criminal)</li> <li>Available medications in home</li> <li>Past medical history, medications</li> </ul>	<ul style="list-style-type: none"> <li>Mental status changes</li> <li>Hypo / hypertension</li> <li>Decreased respiratory rate</li> <li>Tachycardia, dysrhythmias</li> <li>Seizures</li> </ul>	<ul style="list-style-type: none"> <li>Tricyclic antidepressants (TCAs)</li> <li>Acetaminophen (Tylenol)</li> <li>Depressants</li> <li>Stimulants</li> <li>Anticholinergic</li> <li>Cardiac medications</li> <li>Solvents, alcohols, Cleaning agents</li> <li>Insecticides (organophosphates)</li> <li>Respiratory depression</li> <li>Other organophosphates</li> <li>Carbamates</li> </ul>

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 CALCIUM 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	

**Summit County Poison Control Center - Akron Children's Hospital 330-543-1000**

KEY POINTS
<ul style="list-style-type: none"> <li>Exam: Mental Status, Skin, HEENT, Heart, Lungs, Abdomen, Extremities, Neuro</li> <li>Do not rely on patient history of ingestion, especially in suicide attempts.</li> <li>Bring bottles, contents, and emesis to ED.</li> <li><b>Tricyclic:</b> 4 major areas of toxicity: seizures, dysrhythmias, hypotension, decreased mental status or coma; rapid progression from alert mental status to death.</li> <li><b>Acetaminophen:</b> initially normal or nausea / vomiting. If not detected and treated, causes irreversible liver failure.</li> <li><b>Depressants:</b> decreased HR, decreased BP, decreased temperature, decreased respirations, non-specific pupils.</li> <li><b>Stimulants:</b> increased HR, increased BP, increased temperature, dilated pupils, and seizures.</li> <li><b>Anticholinergics:</b> increased HR, increased temperature, dilated pupils, and mental status changes.</li> <li><b>Cardiac Medications:</b> dysrhythmias and mental status changes.</li> <li><b>Solvents:</b> nausea, vomiting, and mental status changes.</li> <li><b>Insecticides:</b> increased or decreased HR, increased secretions, nausea, vomiting, diarrhea, pinpoint pupils.</li> <li>Consider restraints if necessary for patient's and / or personnel's protection per the <u>Restraint Procedure</u>.</li> <li>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.</li> <li>If applicable, DO NOT transport a patient to the hospital until properly decontaminated.</li> </ul> <p style="text-align: center;"><b>CARBON MONOXIDE POISONING OR CYANIDE POISONING – SEE SPECIFIC PROTOCOL</b></p>

# 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 - 2 IV's  
BOLUS TO MAINTAIN SBP 90 or RADIAL PULSES  
1 IV Main Line / 1 IV for CYANOKIT ONLY

If Seizures Treat Per Seizure Protocol

HYDROXOCOBALAMIN (CYANOKIT)  
in Its **Own IV**  
70 mg / kg over 15 Minutes  
(5 grams max)  
May Be Repeated Once At Same Dose

TRANSPORT to appropriate facility  
CONTACT receiving facility  
CONSULT Medical Direction where indicated

E	EMT	E
A	AEMT	A
P	PARAMEDIC	P
M	MED CONTROL	M

**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.

## TOXIC INHALATION / INGESTION CYANIDE

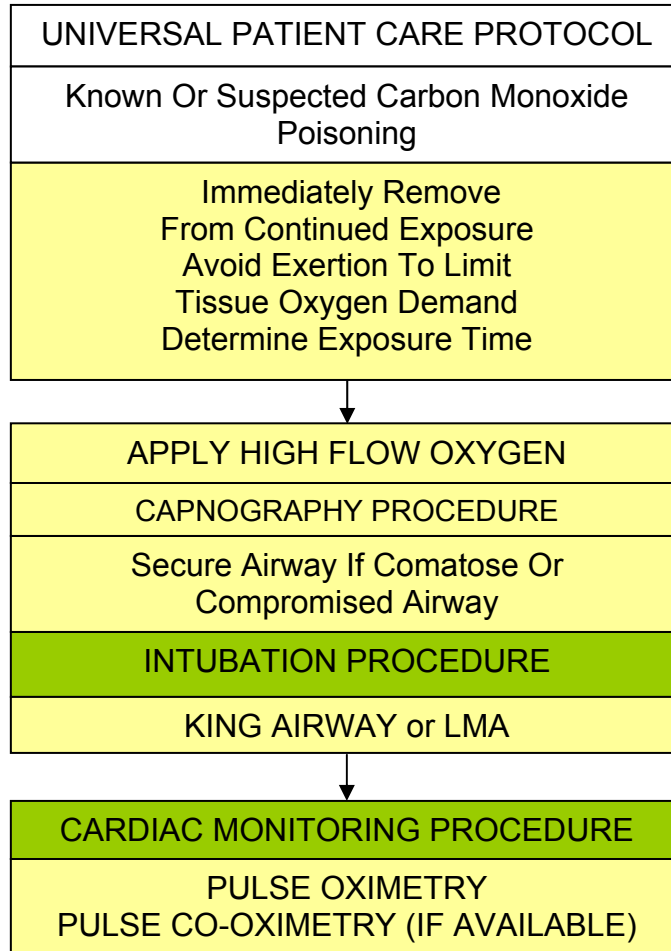
HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
<ul style="list-style-type: none"> <li>• Inhalation or ingestion of cyanides</li> <li>• Duration of exposure</li> <li>• Reason (suicidal, accidental, criminal)</li> <li>• Past medical history, medications</li> </ul>	<ul style="list-style-type: none"> <li>• Malaise, fatigue, drowsiness</li> <li>• Reddened skin</li> <li>• Dyspnea</li> <li>• Chest pain</li> <li>• Nausea / vomiting</li> <li>• Abdominal pain</li> <li>• Dizziness / vertigo</li> <li>• Memory disturbances</li> <li>• Syncope</li> <li>• Seizures</li> <li>• Coma</li> </ul>	<ul style="list-style-type: none"> <li>• Flu / severe cold</li> <li>• Chronic fatigue</li> <li>• Migraine</li> <li>• Myocardial infarction / ACS</li> <li>• Encephalitis</li> <li>• Anaphylaxis</li> <li>• Other ingested toxins</li> <li>• Pulmonary embolism</li> </ul>

Summit County Poison Control Center - Akron Children's Hospital 330-543-1000

KEY POINTS
<ul style="list-style-type: none"> <li>• Exam: Mental Status, Skin, HEENT, Heart, Lungs, Abdomen, Extremities, Neuro</li> <li>• Cyanide is generally considered to be a rare source of poisoning.</li> <li>• Cyanide exposure occurs relatively frequently in patients with smoke inhalation from fires.</li> <li>• 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.</li> <li>• A number of synthesized (polyacrylonitrile, polyurethane, polyamide, urea-formaldehyde, melamine) and natural (wool, silk) compounds produce HCN when burned.</li> <li>• 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.</li> <li>• Cyanide poisoning also may occur in other industries, particularly in the metal trades, mining, electroplating, jewelry manufacturing, and x-ray film recovery.</li> <li>• Depending on its form, cyanide may cause toxicity through parenteral administration, inhalation, ingestion, or dermal absorption.</li> <li>• Rapid aggressive therapy, consisting of supportive care and antidote administration, is lifesaving.</li> <li>• 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.</li> </ul>

# TOXIC INHALATION CARBON MONOXIDE

E	EMT	E
A	AEMT	A
P	PARAMEDIC	P
M	MED CONTROL	M



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

## TOXIC INHALATION CARBON MONOXIDE

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
<ul style="list-style-type: none"> <li>• Inhalation of potentially carbon monoxide containing atmosphere</li> <li>• Duration of exposure</li> <li>• Reason (suicidal, accidental, criminal)</li> <li>• Past medical history, medications</li> </ul>	<ul style="list-style-type: none"> <li>• Malaise, fatigue, drowsiness</li> <li>• Flu like symptoms</li> <li>• Headache</li> <li>• Dyspnea</li> <li>• Nausea / vomiting</li> <li>• Diarrhea</li> <li>• Abdominal pain</li> <li>• Dizziness</li> <li>• Visual disturbances</li> <li>• Memory disturbances</li> <li>• Syncope</li> <li>• Seizures</li> <li>• Coma</li> <li>• Incontinence</li> </ul>	<ul style="list-style-type: none"> <li>• Flu / severe cold</li> <li>• Chronic fatigue</li> <li>• Migraine</li> <li>• Myocardial infarction</li> <li>• Diabetic emergencies</li> <li>• Altitude sickness</li> <li>• Ingested toxins</li> <li>• Meningitis</li> <li>• Hypothyroidism</li> </ul>

### 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. "When you're red your dead"!
- 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.



# TRAUMA PROTOCOLS

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# TRAUMA EMERGENCIES

## The Golden Hour

### 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 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 HOUR 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.

**An Adult Trauma Victim is a person 16 years of age or older (including geriatric patients) exhibiting one or more of the following physiologic or anatomic conditions:**

<p><b>Physiologic conditions</b></p> <ul style="list-style-type: none"> <li>• Glasgow Coma Scale &lt; 14;</li> <li>• Loss of consciousness &gt; 5 greater minutes;</li> <li>• Deterioration in level of consciousness at the scene or during transport;</li> <li>• Failure to localize to pain;</li> <li>• Respiratory rate &lt; 10 or &gt; 29;</li> <li>• Requires endotracheal intubation;</li> <li>• Requires relief of tension pneumothorax;</li> <li>• Pulse &gt; 120 in combination with evidence of hemorrhagic shock;</li> <li>• Systolic blood pressure &lt; 100, or absent radial pulse with carotid pulse present;</li> </ul>	<p><b>Anatomic conditions</b></p> <ul style="list-style-type: none"> <li>• Penetrating trauma to the head, neck, or torso;</li> <li>• Significant, penetrating trauma to extremities proximal to the knee or elbow with evidence of neurovascular compromise;</li> <li>• Injuries to the head, neck, or torso where the following physical findings are present:             <ul style="list-style-type: none"> <li>○ Visible crush injury;</li> <li>○ Abdominal tenderness, distention, or seatbelt sign;</li> <li>○ Pelvic fracture;</li> <li>○ Flail chest;</li> </ul> </li> <li>• Injuries to the extremities where the following physical findings are present:</li> <li>• Amputations proximal to the wrist or ankle;             <ul style="list-style-type: none"> <li>○ Visible crush injury;</li> <li>○ <b>Fractures of proximal long bones;</b></li> <li>○ Evidence of neurovascular compromise.</li> </ul> </li> <li>• Signs or symptoms of spinal cord injury;</li> <li>• 2<sup>nd</sup> or 3<sup>rd</sup> Degree &gt; 10% total BSA, or other significant burns involving the face, feet, hands, genitalia, or airway.</li> <li>• <b>Injury sustained in two or more body regions</b></li> </ul>
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## Field Trauma Triage Criteria: Mechanism of Injury (MOI) & Special Considerations

<p><b>Co-Morbid Diseases and Special Considerations:</b></p> <ul style="list-style-type: none"> <li>• Age &lt; 5 or &gt; 55</li> <li>• Cardiac disease</li> <li>• Respiratory disease</li> <li>• Diabetes</li> <li>• Immunosuppression</li> <li>• Morbid obesity</li> <li>• Pregnancy</li> <li>• Substance abuse / intoxication</li> <li>• Liver disease</li> <li>• Renal disease</li> <li>• Bleeding disorder / anticoagulation</li> </ul>	<p><b>Mechanisms of Injury (MOI)</b></p> <ul style="list-style-type: none"> <li>• High speed MVC</li> <li>• Ejection from vehicle</li> <li>• Vehicle rollover</li> <li>• Death in same passenger compartment</li> <li>• Extrication time &gt; 20 minutes</li> <li>• Falls greater than 20 feet</li> <li>• Vehicle versus bicycle / pedestrian</li> <li>• Pedestrian <b>struck</b>, thrown or run over</li> <li>• Motorcycle crash &gt; 20 mph with separation of rider from bike</li> <li>• <b>Fall from any height, including standing, with signs of traumatic brain injury</b></li> </ul>
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## 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.

### TRAUMA ALERT PROCEDURE

1. EMS Prehospital Response
2. EMS Notifies E.D. of Potential Trauma Victim(s)
3. E.D. Charge Nurse Activates "Trauma Standby"
4. Group Page Activated
5. EMS Notifies E.D. - Trauma Patient(s) Report
6. Patient Enroute to Hospital - ETA Given
7. E.D. Charge Nurse Activates "Trauma Alert"
8. Overhead Page in Hospital E.D. Physician Determines Anesthesia
9. "Trauma Alert, Room Trauma Level I or II Paged ETA Minutes
10. Trauma Attending Surgeon Paged
11. Trauma House Surgeon Arrives
12. Trauma Team Members Respond to E.D.
13. Arrival of Patient(s)
14. Team Care / Treatment

<b>INFANT</b> <i>Birth to age 4</i>	<b>Glascow Coma Scale</b> <b>Eye Opening</b>	<b>ADULT</b> <i>Age 4 to Adult</i>
4 Spontaneously		Spontaneously 4
3 To speech		To command 3
2 To pain		To pain 2
1 No response		No Response 1
	<b>Best Verbal Response</b>	
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
	<b>Best Motor Response</b>	
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	GCS ≤ 8? Intubate!	TOTAL = ___

## Pre-hospital Spinal Motion Restriction Guidelines

### Adult (≥16 Years Old) Trauma Patients

**Maintain manual in-line spinal stabilization until completing a patient assessment**

- **Patients with only penetrating trauma, regardless of whether deficits are present, should not be placed in SMR**
- Assume spinal motion restriction is indicated until proven otherwise
- When in doubt, utilize full spinal motion restriction

**NOTS Trauma Triage Center:  
216.778.7850**

**Reference:**

- NAEMSP and ACS COT Position Statement- EMS Spinal Precautions and the Use of the Long Backboard (12-2012)
- NEXUS and Canadian C-spine Rule

**Patients exhibiting:**

- Blunt trauma and altered level of consciousness
- Any level spinal pain/tenderness and/or significant findings (crepitus, deformity or other irregular findings during palpation of the spine)
- Neurological complaint (i.e. numbness, tingling, motor weakness, etc)
- High-energy mechanism of injury and the presence of:
  - Drug or alcohol impairment
  - Inability to communicate
  - Distracting injury
  - Inability to ambulate

YES  
➔

**Full Spinal Motion Restriction**

- A variety of methods can be used to achieve full SMR. Page 2 of the guideline outlines some acceptable methods

NO  
➔

**Patients exhibiting:**

- **Cervical pain/tenderness** during palpation without neurological findings
- Patients must have:
  - Normal level of consciousness (GCS = 15)
  - Ability to communicate
  - Ability to ambulate
  - No drug or alcohol impairment
  - No distracting injuries

YES  
➔

**Limited Spinal Motion Restriction**

- A variety of methods can be used to achieve limited SMR. Page 2 of the guideline outlines some acceptable methods

NO  
➔

**Patients exhibiting:**

- **No** spine tenderness or anatomic abnormality
- Patients must have:
  - Normal level of consciousness (GCS = 15)
  - Ability to communicate
  - Ability to ambulate
  - No drug or alcohol impairment
  - No distracting injuries

YES  
➔

**No Spinal Motion Restriction is indicated**

- Special considerations are listed on Page 2 of this guideline. Review special considerations that may apply

**High Risk Factors:**

*See bottom High Risk Factors at the bottom of page 2*

*“right patient, right place, right time”*

## Methods of Achieving Spinal Motion Restriction Adult (>16 Years Old) Trauma Patients

**Penetrating Trauma** without other mechanism of injury (with or without deficits) - **Spinal Motion Restriction not indicated**

Appropriate full spinal motion restriction can be achieved using **ANY** one of the following options:

- Cervical collar or towels and blankets minimizing the movement of the cervical spine **AND**:
  - A long backboard or Reeves stretcher (with sheet under the patient) with voids padded appropriately secured with a minimum of three straps **OR**
  - A vacuum mattress (with sheet under patient) molded to patient's body to minimize motion **OR**
  - Laying supine on a firm mattress as warranted by assessment, provided efforts are made to reduce spinal motion

*In cases where there is concern that full SMR increases pain or symptoms, secure in a position of comfort (with or without c-collar, long board, etc.)*

**Providers must document pertinent positive and/or negative findings supporting the above decision**

Appropriate cervical motion restriction can be achieved using **ANY** one of the following options:

- Cervical collar or towels and blankets minimizing the movement of the cervical spine
- Patient's may be transported in a supine or semi-fowler's position depending on the individual patient need

**Providers must document pertinent positive and/or negative findings supporting the above decision**

**Consider High Risk Factors:**

- Patients  $\geq 65$  years of age, specifically patients with obvious head trauma (hematoma, lacerations, abrasions, etc.), consider cervical motion restriction
- Osteoporosis or ankylosing spondylitis (inflammatory disease which can fuse the spine, reducing flexibility)
- Chronic steroid use
- Axial loading
- Inability to ambulate

**NOTS Trauma Triage Center:**  
**216.778.7850**

**Reference:**

- NAEMSP and ACS COT Position Statement- EMS Spinal Precautions and the Use of the Long Backboard (12-2012)
- NEXUS and Canadian C-spine Rule

**High Risk/Suspicion**

- Document pertinent positive and/or negative findings supporting the need for full SMR
- If clinical indications warrant (i.e. respiratory distress), may place patient with longboard or Reeves in reverse Trendelenberg position up to 30 degrees. Pad voids below device.

**Moderate/Low risk/Suspicion**

- Document pertinent positive and/or negative findings supporting the need for limited SMR

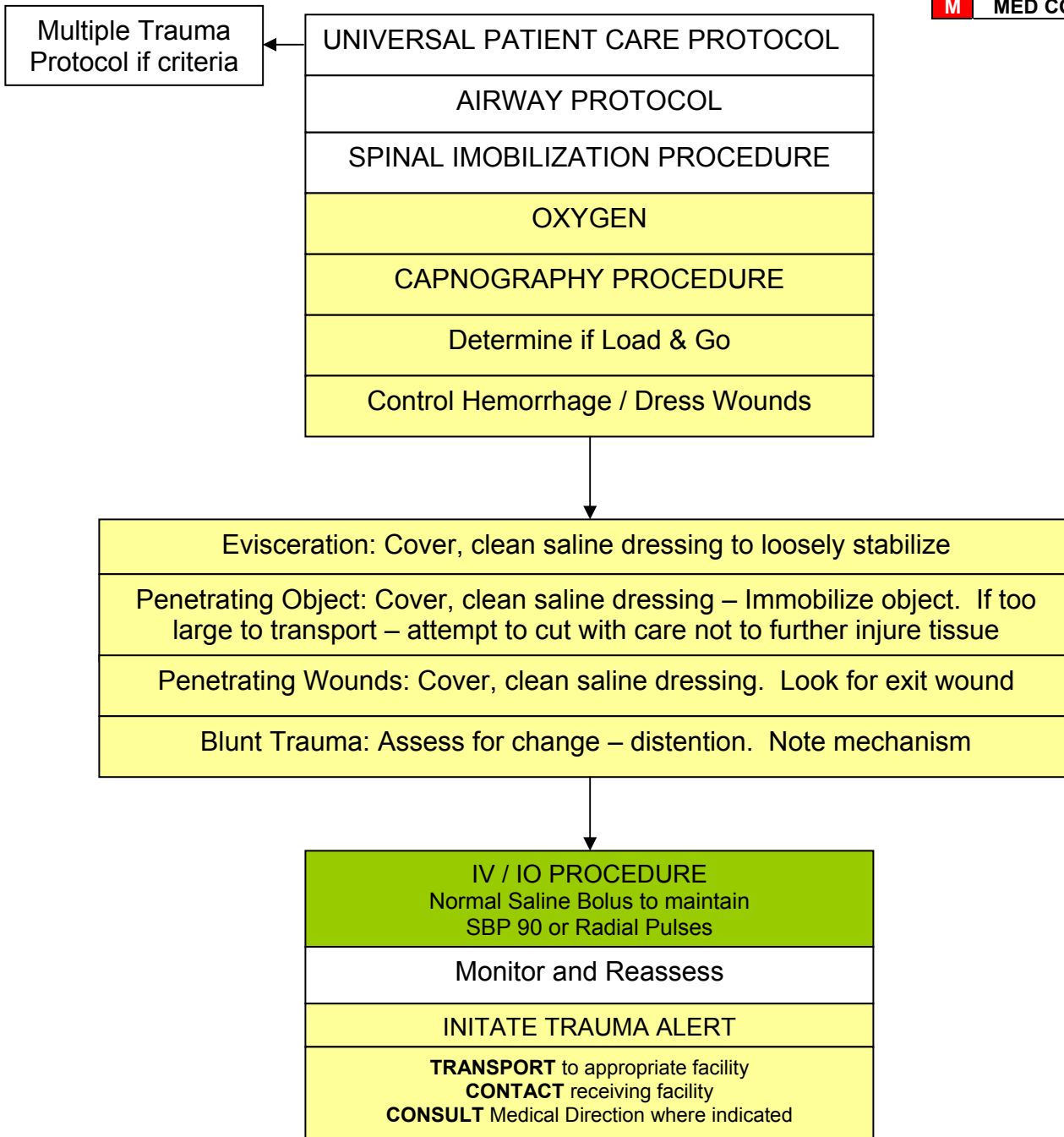
**EMS Provider Judgment:**

- If unsure of appropriate level of SMR, always make determination to protect the patient
- Evaluate SMR patients before and after restriction and document

*"right patient, right place, right time"*

# ABDOMINAL TRAUMA

E	EMT	E
A	AEMT	A
P	PARAMEDIC	P
M	MED CONTROL	M



May consider TXA IF E idence o current or pre ious uncontrolled hemorrhage HR 120 and or SBP 90 and ithin 60 mins o in ury Consider TRANEXAMIC ACID (TXA) 1 Gram mixed in 100 ml D5 o er 10 mins

## ABDOMINAL TRAUMA

MECHANISM	SIGNS & SYMPTOMS
<ul style="list-style-type: none"> <li>• Blunt</li>   <li>• Penetrating</li> </ul>	<ul style="list-style-type: none"> <li>• Altered mental status</li> <li>• Shock</li> <li>• Distention</li> <li>• Swelling</li> <li>• Bulging</li> <li>• Nausea and vomiting</li>   <li>• Altered mental status</li> <li>• Bleeding</li> <li>• Tenderness</li> <li>• Pain</li> <li>• Distention</li> <li>• Eviseration</li> <li>• Discoloration</li> <li>• Entrance / exit wounds</li> <li>• Nausea &amp; vomiting</li> </ul>

### 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.

# BURNS

E	EMT	E
A	AEMT	A
P	PARAMEDIC	P
M	MED CONTROL	M

UNIVERSAL PATIENT CARE PROTOCOL

CONSIDER SPINAL IMOBILIZATION PROCEDURE

AIRWAY PROTOCOL

OXYGEN

CAPNOGRAPHY PROCEDURE

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

Remove rings, bracelets, and other constricting items

**Parkland Burn Formula**

**Fluid for first 24 hours (ml) = 4 x Patient's weight in kg x %BSA**

The first half of this amount is delivered within 8 hours from the burn incident, and the remaining fluid is delivered in the next 16 hours

**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  
Normal Saline per Parkland Formula

SEVERE PAIN PROTOCOL

**Chemical**

Tetracaine (Pontocaine, Ophthalmic)  
1-2 drops in effected eye every 5-10 minutes then 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

# BURNS

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
<ul style="list-style-type: none"> <li>Type of exposure (heat, gas, chemical)</li> <li>Inhalation injury</li> <li>Time of injury</li> <li>Past medical history</li> <li>Medications</li> <li>Other trauma</li> <li>Loss of consciousness</li> <li>Tetanus / immunization status</li> </ul>	<ul style="list-style-type: none"> <li>Burns, pain, swelling</li> <li>Dizziness</li> <li>Loss of consciousness</li> <li>Hypotension / shock</li> <li>Airway compromise / distress</li> <li>Singed facial or nasal hair</li> <li>Hoarseness / wheezing</li> </ul>	<ul style="list-style-type: none"> <li>Superficial (1°) red and painful</li> <li>Partial thickness (2°) superficial partial thickness, deep partial thickness, blistering</li> <li>Full thickness (3°) painless and charred or leathery skin</li> <li>Chemical</li> <li>Thermal</li> <li>Electrical</li> <li>Radiation</li> </ul>

## KEY POINTS

- Exam: Mental Status, HEENT, Neck, Heart, Lungs, Abdomen, Extremities, Back, Neuro
  - Early intubation is required in significant inhalation injuries.**
  - 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.
  - Administer IV Fluids per the Parkland Burn Formula: **Fluid for first 24 hours (ml) = 4 x Patient's weight in kg x %BSA**
- Thermal (dry and moist):**
    - Stop burning process: i.e. remove patient from heat source, cool skin, remove clothing
    - If patient starts to shiver or skin is cool, stop cooling process.
    - 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.
  - Radiation Burns:**
    - Treat as thermal burns except when burn is contaminated with radioactive source, then treat as chemical burn.
    - Wear appropriate protective clothing when dealing with contamination.
    - Contact HAZ MAT TEAM for assistance in contamination cases.
  - Chemical Burns:**
    - Wear appropriate protective clothing and respirators.
    - Remove patient from contaminated area to decontamination site (NOT SQUAD).
    - Determine chemicals involved; contact appropriate agency for chemical information.
    - Remove patient's clothing and flush skin.
    - Leave contaminated clothes at scene. Cover patient over and under before loading into squad.
    - Patient should be transported by personnel not involved in decontamination process.
    - Determine severity (see chart), contact Medical Control and transport accordingly.
    - Relay type of substance involved to Medical Control.
  - Electrical Burns:**
    - Shut down electrical source; do not attempt to remove patient until electricity is CONFIRMED to be shut off.
    - Assess for visible entrance and exit wounds and treat as thermal burns.
    - Assess for internal injury, i.e., vascular damage, tissue damage, fractures, and treat accordingly.
    - Determine severity of burn, contact Medical Control and transport accordingly.
  - Inhalation Burns:**
    - 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.
    - 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 Akron Children's Hospital 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.

# CHEST TRAUMA

E	EMT	E
A	AEMT	A
P	PARAMEDIC	P
M	MED CONTROL	M

UNIVERSAL PATIENT CARE PROTOCOL
CERVICAL SPINE IMOBILIZATION 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 90 / Radial Pulses
APPLY CARDIAC MONITOR

↓

<b>Cardiac Tamponade:</b> Assess for + Beck's Triad (Hypotension, +JVD and muffled heart sounds). Paradoxical Pulse (no radial pulse when breathing in) is likely. LOAD AND GO
<b>Massive Hemothorax:</b> Shock, then difficulty breathing. No JVD, decreased breath sounds, dull to percussion. LOAD AND GO
<b>Open Pneumothorax:</b> Close wound with occlusive dressing secured on THREE SIDES, allowing air escape. Prepare for tension pneumothorax. LOAD AND GO
<b>Flail Chest:</b> Stabilize flail segment with manual pressure then apply bulky dressing and tape. LOAD AND GO
<b>Suspected:</b> Traumatic Aortic Rupture, Tracheal or Bronchial Tree Injury, Myocardial Contusion, Diaphragmatic Tears, Esophageal Injury, Pulmonary Contusion: Ensure an Airway, Administer Oxygen, LOAD AND GO

↓

INITIATE TRAUMA ALERT
<b>TRANSPORT</b> to appropriate facility <b>CONTACT</b> receiving facility <b>CONSULT</b> Medical Direction where indicated

May consider TXA 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 D5 over 10 mins

# CHEST TRAUMA

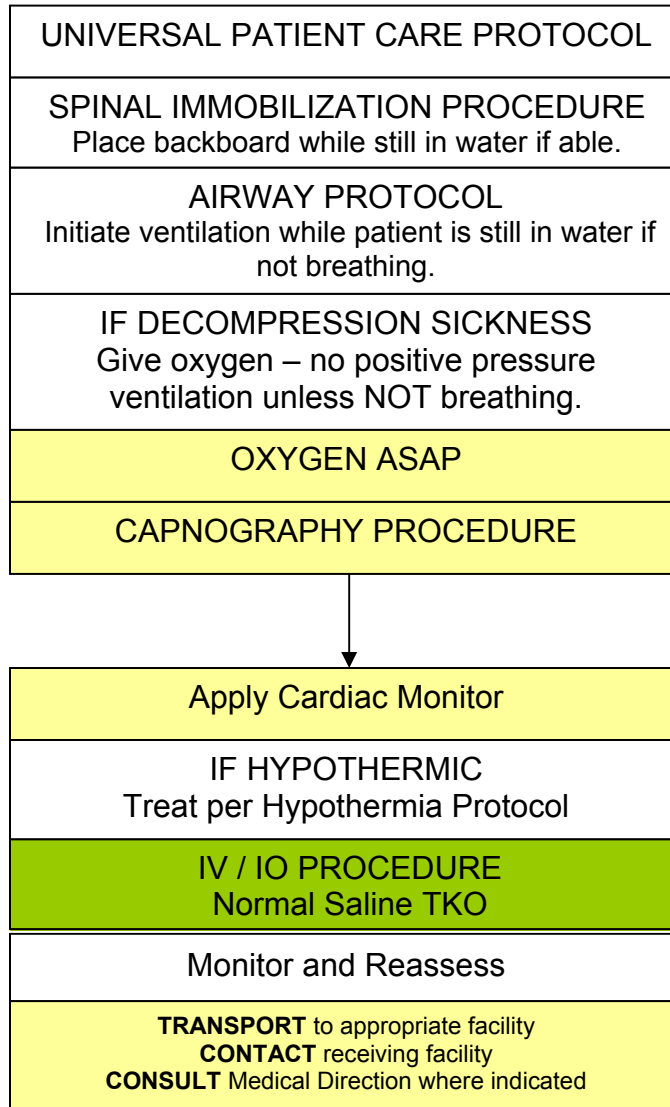
SIGNS AND SYMPTOMS			
SIMPLE PNEUMOTHORAX	OPEN PNEUMOTHORAX	TENSION PNEUMOTHORAX	HEMOTHORAX
<ul style="list-style-type: none"> <li>Shortness of breath</li> <li>Dyspnea</li> <li>Tachypnea</li> <li>Cyanosis</li> <li>Chest pain</li> <li>Absent diminished Lung sounds on the affected side</li> </ul>	<ul style="list-style-type: none"> <li>Shortness of breath</li> <li>Dyspnea</li> <li>Cyanosis</li> <li>Sucking chest wound</li> <li>Shock</li> <li>Absent / diminished Lung sounds on affected side</li> </ul>	<ul style="list-style-type: none"> <li>Shortness of breath</li> <li>Cyanosis</li> <li>Shock</li> <li>Absent / diminished Lung sounds</li> <li>Tracheal deviation</li> <li>Hypotension</li> <li>JVD</li> <li>Tachycardia</li> <li>Dyspnea (late sign)</li> </ul>	<ul style="list-style-type: none"> <li>Shortness of breath</li> <li>Dyspnea</li> <li>Cyanosis</li> <li>Dullness to Percussion sounds</li> <li>Flat neck veins</li> <li>Hypotension</li> <li>Shock</li> <li>Absent / diminished breath sounds</li> <li>Tachycardia</li> </ul>

CARDIAC TAMPONADE	TRAUMATIC ASPHYXIA	FLAIL CHEST
<ul style="list-style-type: none"> <li>Hypotension</li> <li>Decreasing pulse pressure</li> <li>Elevated neck veins</li> <li>Muffled heart tones</li> <li>Bruising over the sternum</li> <li>Tachycardia</li> </ul>	<ul style="list-style-type: none"> <li>Bloodshot, bulging eyes</li> <li>Blue, bulging tongue</li> <li>JVD</li> <li>Cyanotic upper body</li> </ul>	<ul style="list-style-type: none"> <li>Paradoxical chest wall movement</li> <li>Asymmetric chest movement Upon inspiration</li> <li>Dyspnea</li> <li>Unstable chest segment</li> <li>Significant chest wall pain</li> </ul>

KEY POINTS
<p>Thoracic injuries have been called the deadly dozen. The first six are obvious at the primary assessment.</p> <ol style="list-style-type: none"> <li>Airway obstruction</li> <li>Flail chest</li> <li>Cardiac tamponade</li> <li>Massive hemothorax</li> <li>Open pneumothorax</li> <li>Tension pneumothorax</li> </ol> <p>The second six injuries may be more subtle and not easily found in the field:</p> <ol style="list-style-type: none"> <li>Traumatic aortic rupture</li> <li>Esophageal injury</li> <li>Myocardial contusion</li> <li>Diaphragmatic tears</li> <li>Tracheal / bronchial tree injury</li> <li>Pulmonary contusion</li> </ol> <ul style="list-style-type: none"> <li>A <b>sucking chest wound</b> 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.</li> <li>A <b>flail chest</b> 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.</li> <li>A <b>penetrating object</b> 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.</li> <li>A <b>tension pneumothorax</b> is life threatening, look for <i>HYPOTENSION</i>, 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 2<sup>nd</sup> and 3<sup>rd</sup> ribs, midclavicular placing the catheter over the 3<sup>rd</sup> rib. Once the catheter is placed, watch closely for reocclusion. Repeat if needed to prevent reocclusion. Decompress with 2"- 3.25" catheter biased on patient's size.</li> </ul>

# DROWNING / NEAR DROWNING

E	EMT	E
A	AEMT	A
P	PARAMEDIC	P
M	MED CONTROL	M



# DROWNING / NEAR DROWNING

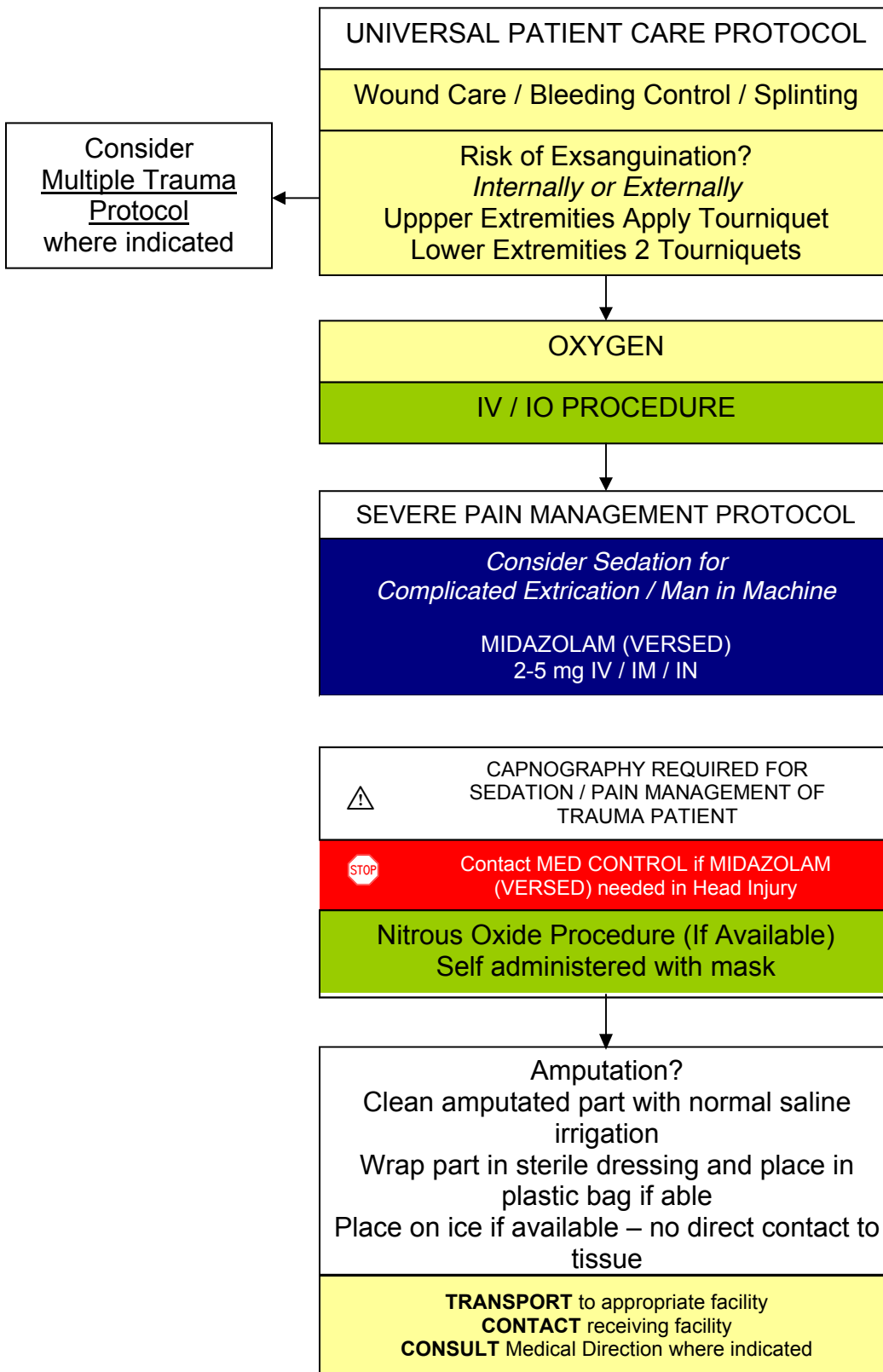
HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
<ul style="list-style-type: none"> <li>• Submersion in water regardless of depth</li> <li>• Possible trauma i.e.; fall, diving board</li> <li>• Duration of immersion</li> <li>• Temperature of water</li> <li>• Salt vs. fresh water</li> </ul>	<ul style="list-style-type: none"> <li>• Period of unconsciousness</li> <li>• Unresponsive</li> <li>• Mental status changes</li> <li>• Decreased or absent vital signs</li> <li>• Vomiting</li> <li>• Coughing</li> </ul>	<ul style="list-style-type: none"> <li>• Trauma</li> <li>• Pre-existing medical problem</li> <li>• Barotrauma (diving)</li> <li>• Decompression sickness</li> </ul>

## 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.

# EXTREMITY TRAUMA / AMPUTATION

E	EMT	E
A	AEMT	A
P	PARAMEDIC	P
M	MED CONTROL	M



# EXTREMITY TRAUMA / AMPUTATION

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
<ul style="list-style-type: none"> <li>Type of injury</li> <li>Mechanism: crush / penetrating / amputation</li> <li>Time of injury</li> <li>Open vs. closed wound / fracture</li> <li>Wound contamination</li> <li>Medical history</li> <li>Medications</li> </ul>	<ul style="list-style-type: none"> <li>Pain, swelling</li> <li>Deformity</li> <li>Altered sensation / motor function</li> <li>Diminished pulse / capillary refill</li> <li>Decreased extremity temperature</li> </ul>	<ul style="list-style-type: none"> <li>Abrasion</li> <li>Contusion</li> <li>Laceration</li> <li>Sprain</li> <li>Dislocation</li> <li>Fracture</li> <li>Amputation</li> </ul>

## 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

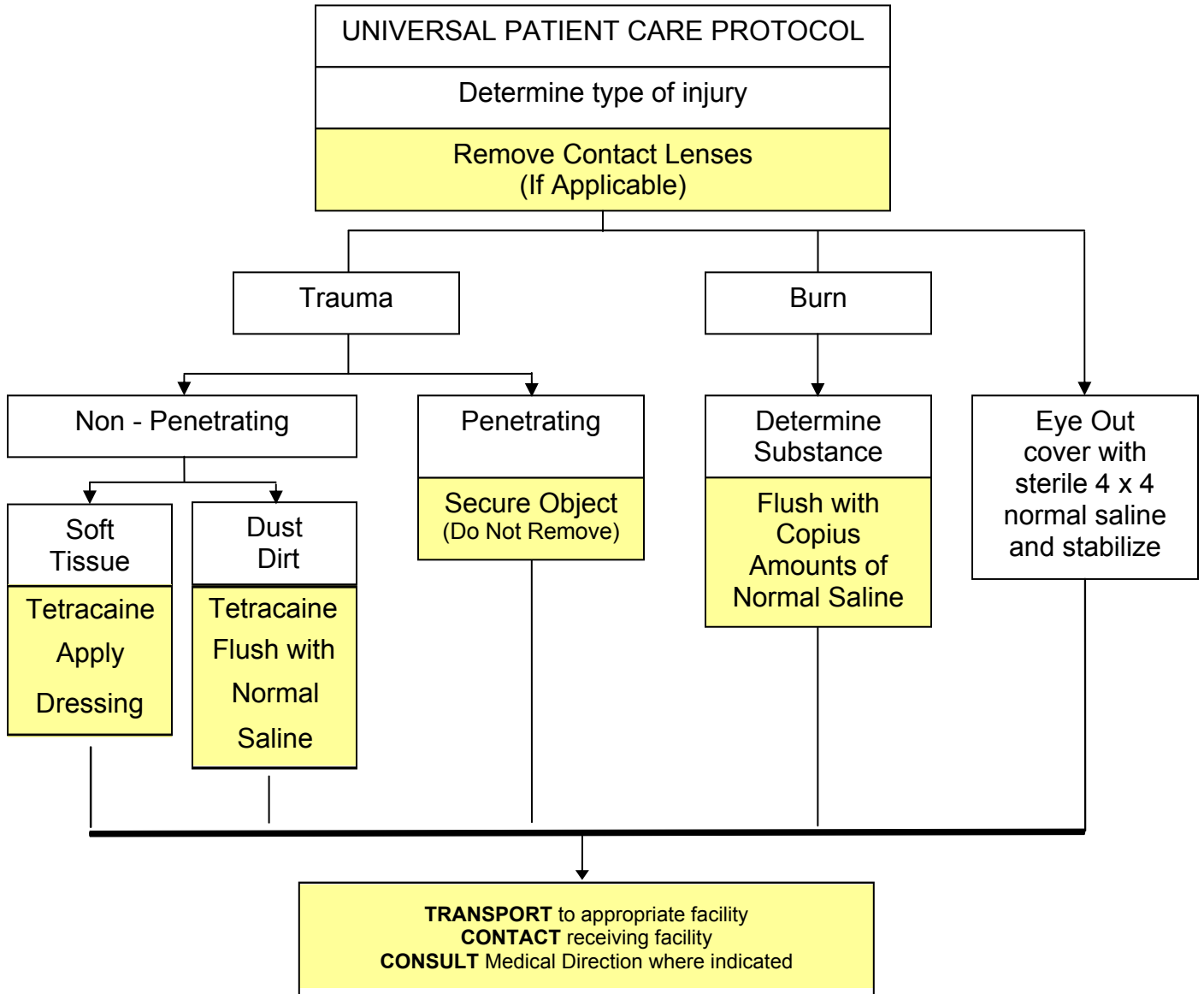
- In cases of major trauma, the backboard can work as a whole body splint.
- DO NOT take the time to splint injured extremities in major trauma patients unless it does not delay the scene time or prevents you from performing more pertinent patient care.
- Splint the extremity if the patient has signs 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.

# EYE INJURY

E	EMT	E
A	AEMT	A
P	PARAMEDIC	P
M	MED CONTROL	M



# EYE INJURY

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
<ul style="list-style-type: none"> <li>Trauma of any type that results in injury to one or both eyes.</li> </ul>	<ul style="list-style-type: none"> <li>Irritation to eye</li> <li>Visual disturbances</li> <li>Obvious penetrating injury</li> <li>Burn (chemical, thermal)</li> <li>Loss of vision</li> <li>Dizziness</li> <li>Loss of consciousness</li> <li>Nausea</li> </ul>	<ul style="list-style-type: none"> <li>Hypertension</li> <li>Contact lens problem</li> </ul>

## 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.

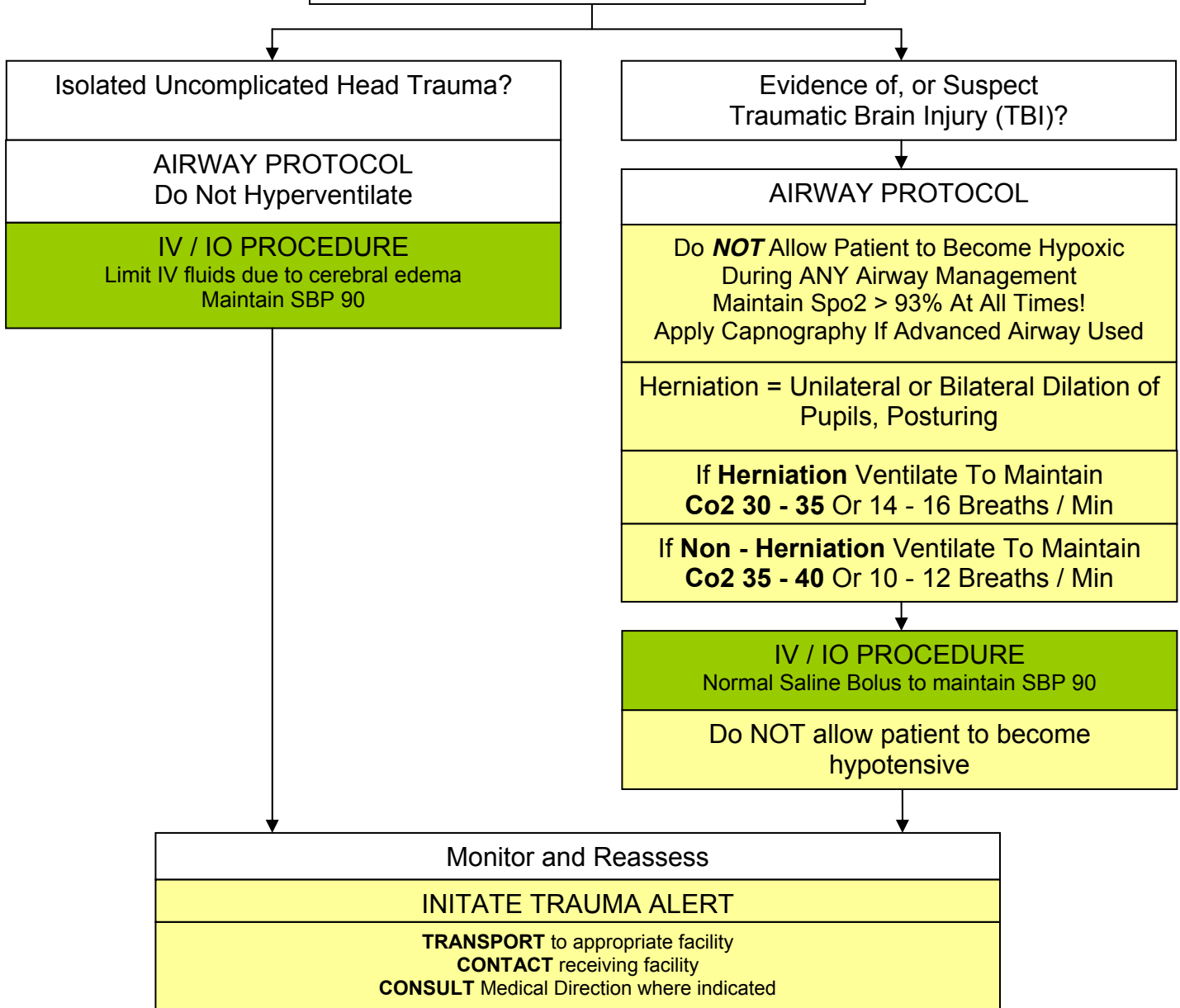
### ACUTE, UNILATERAL VISION LOSS

- 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.

# HEAD TRAUMA

E	EMT	E
A	AEMT	A
P	PARAMEDIC	P
M	MED CONTROL	M

UNIVERSAL PATIENT CARE PROTOCOL Oxygen for all head trauma
SPINAL IMOBILIZATION PROCEDURE
Control Bleeding, Apply Dressing
Determine and <b>Trend</b> GCS
Consider Other Protocols  <u>Multiple Trauma Protocol</u> (if Not Isolated Head Trauma) <u>Altered Mental Status Protocol</u> <u>Seizure Protocol</u> (if Seizure Activity)



# HEAD TRAUMA

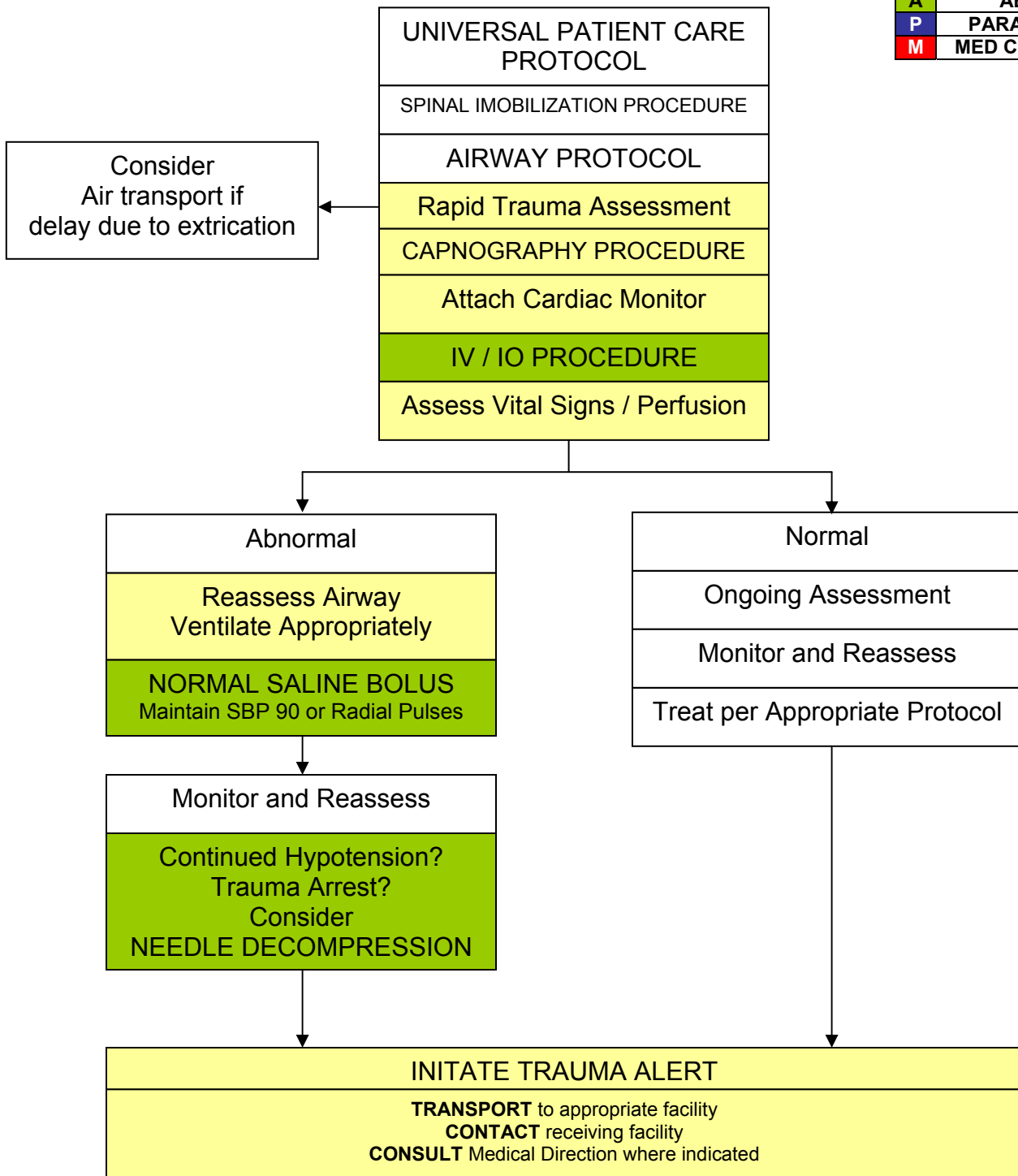
HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
<ul style="list-style-type: none"> <li>• Time of injury</li> <li>• Mechanism: blunt / penetrating</li> <li>• Loss of consciousness</li> <li>• Bleeding</li> <li>• Medical history</li> <li>• Medications</li> <li>• Evidence of multi-trauma</li> <li>• Helmet use or damage to helmet</li> </ul>	<ul style="list-style-type: none"> <li>• Pain, swelling, bleeding</li> <li>• Altered mental status</li> <li>• Unconscious</li> <li>• Respiratory distress / failure</li> <li>• Vomiting</li> <li>• Significant mechanism of injury</li> </ul>	<ul style="list-style-type: none"> <li>• Skull fracture</li> <li>• Brain injury (concussion, contusion, hemorrhage, or laceration)</li> <li>• Epidural hematoma</li> <li>• Subdural hematoma</li> <li>• Subarachnoid hemorrhage</li> <li>• Spinal injury</li> <li>• Abuse</li> </ul>

INFANT <i>Birth to age 4</i>	GLASCOW COMA SCALE Eye Opening	ADULT <i>Age 4 to Adult</i>
4 Spontaneously		Spontaneously 4
3 To speech		To command 3
2 To pain		To pain 2
1 No response		No Response 1
	<b>Best Verbal Response</b>	
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
	<b>Best Motor Response</b>	
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	GCS ≤ 8? Intubate!	TOTAL = ___

KEY POINTS
<ul style="list-style-type: none"> <li>• <b>Exam: Mental Status, HEENT, Heart, Lungs, Abdomen, Extremities, Back, Neuro</b></li> <li>• If GCS &lt; 12 consider air / rapid transport and if GCS &lt; 9 intubation should be anticipated.</li> <li>• <b>GCS ≤ 8? Intubate!</b></li> <li>• DO NOT allow patients to become hypoxic, maintain Spo2 &gt; 93%, abandon intubation attempts if this cannot be maintained. Secure airway by other means.</li> <li>• Increased intracranial pressure (ICP) may cause <b>hypertension</b> and bradycardia (Cushing's Reflex).</li> <li>• <b>Hypotension</b> usually indicates injury or shock unrelated to the head injury and should be aggressively treated.</li> <li>• Limit IV fluids unless patient is hypotensive ( systolic BP &lt; 90) fluid resuscitate if necessary to maintain BP, Do NOT allow patients to become hypotensive.</li> <li>• <b>DO NOT</b> attempt to lower the blood pressure in hypertensive head injured patients with medications such as Nitroglycerine (Nitro-Stat) or Labetalol (Trandate).</li> <li>• Be alert for c-spine injuries with head trauma.</li> <li>• Continually reassess the patient, including pupils, LOC, and neurological status.</li> <li>• Any decrease in GCS suggests a TBI surgical emergency, transport to trauma center</li> <li>• Capnography is critical! Maintain the Co2 ranges indicated in protocol, 1 point of Co2 change = 3% decrease in cerebral perfusion.</li> <li>• The most important item to monitor, trend, and document is a change in the level of consciousness / GCS.</li> <li>• Herniation may occur. Signs are:             <ul style="list-style-type: none"> <li>○ Cushing's reflex; Bradycardia, hypertension, widening pulse pressure</li> <li>○ Decreasing level of consciousness progressing towards coma.</li> <li>○ Dilation of pupils – may be unilateral or bilateral</li> <li>○ Decerebrate posturing (extension of arms and legs)</li> <li>○ Decorticate posturing (flexion arms and legs)</li> </ul> </li> <li>• 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.</li> <li>• Consider <b>Restraints</b> if necessary for patient's and / or personnel's protection per the <u>RESTRAINT PROCEDURE</u>.</li> </ul>

# MULTIPLE TRAUMA

E	EMT	E
A	AEMT	A
P	PARAMEDIC	P
M	MED CONTROL	M



# MULTIPLE TRAUMA

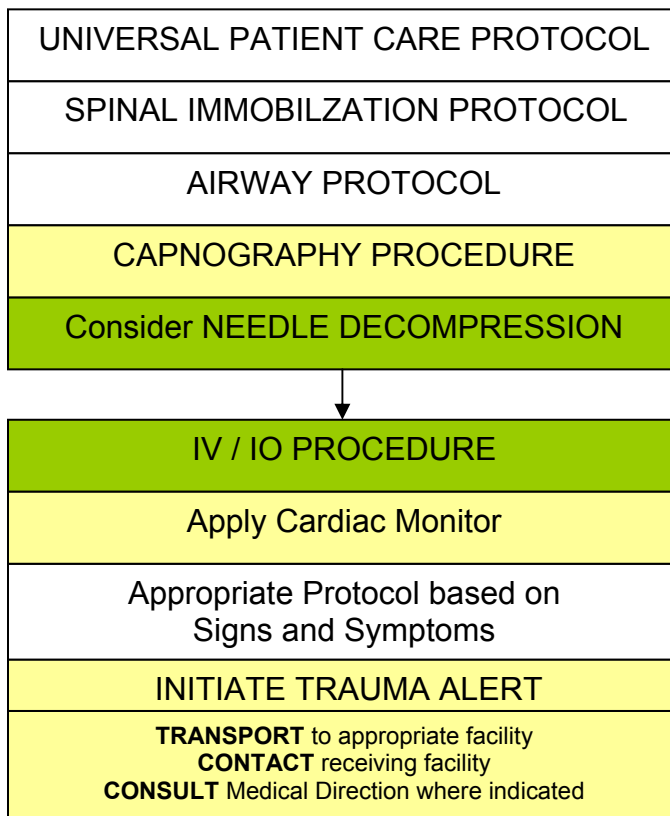
HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
<ul style="list-style-type: none"> <li>• Time and mechanism of injury</li> <li>• Damage to structure or vehicle</li> <li>• Location in structure or vehicle</li> <li>• Others injured or dead</li> <li>• Speed and details of MVC</li> <li>• Restraints / protective equipment</li> <li>• Past medical history</li> <li>• Medications</li> </ul>	<ul style="list-style-type: none"> <li>• Pain, swelling</li> <li>• Deformity, lesions, bleeding</li> <li>• Altered mental status or unconscious</li> <li>• Hypotension or shock</li> <li>• Arrest</li> </ul>	<ul style="list-style-type: none"> <li>• Flail chest</li> <li>• Tension pneumothorax</li> <li>• Pericardial tamponade</li> <li>• Open chest wound</li> <li>• Hemothorax</li> <li>• Intra-abdominal bleeding</li> <li>• Pelvis / femur fracture</li> <li>• Spine fracture / spinal cord injury</li> <li>• Head injury</li> <li>• Extremity fracture / dislocation</li> <li>• HEENT (airway obstruction)</li> <li>• Hypothermia</li> </ul>

## 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

# TRAUMA ARREST

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
<ul style="list-style-type: none"> <li>• Time of injury</li> <li>• Mechanism: blunt / penetrating</li> <li>• Loss of consciousness</li> <li>• Bleeding</li> <li>• Medications</li> <li>• Evidence of multi-trauma</li> </ul>	<ul style="list-style-type: none"> <li>• Excessive bleeding</li> <li>• Unresponsive; not breathing</li> <li>• Cardiac arrest</li> <li>• Significant mechanism of injury</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Obvious DOA</b></li> <li>• <b>Death</b></li> </ul>



E	EMT	E
A	AEMT	A
P	PARAMEDIC	P
M	MED CONTROL	M

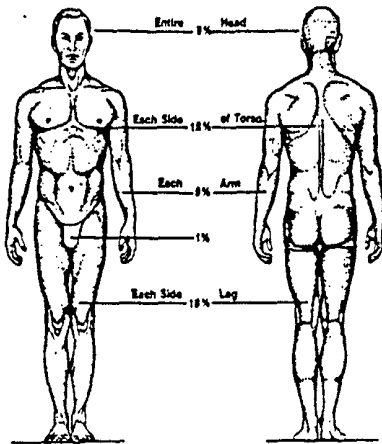
Consider DOA / Termination of Efforts

KEY POINTS
<ul style="list-style-type: none"> <li>• Immediately transport traumatic cardiac arrest patients.</li> <li>• With the exception of airway management, traumatic cardiac arrests are “load and go” situations.</li> <li>• 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.</li> <li>• 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 minute after arrival of the ambulance on the scene.</li> </ul>

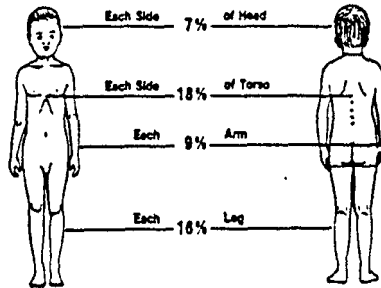
TRAUMA ASSESSMENT CHARTS		
GLASCOW COMA SCALE		
		GCS
EYES	SPONTANEOUSLY	4
	TO VERBAL COMMAND	3
	TO PAIN	2
	NO RESPONSE	1
BEST MOTOR RESPONSE	OBEYS VERBAL COMMAND	6
	PURPOSEFUL MOVEMENT TO PAIN	5
	FLEXION - WITHDRAWAL	4
	FLEXION - ABNORMAL	3
	EXTENSION	2
	NO RESPONSE	1
BEST VERBAL RESPONSE	ORIENTED & 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

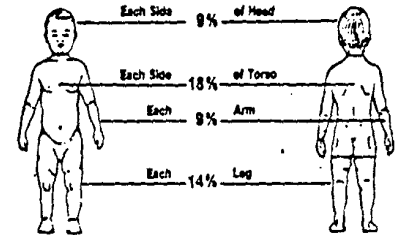
# RULE OF NINES



Percentage of Adult Body Surface



Percentage of Child Body Surface



Percentage of Infant Body Surface

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 less than 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

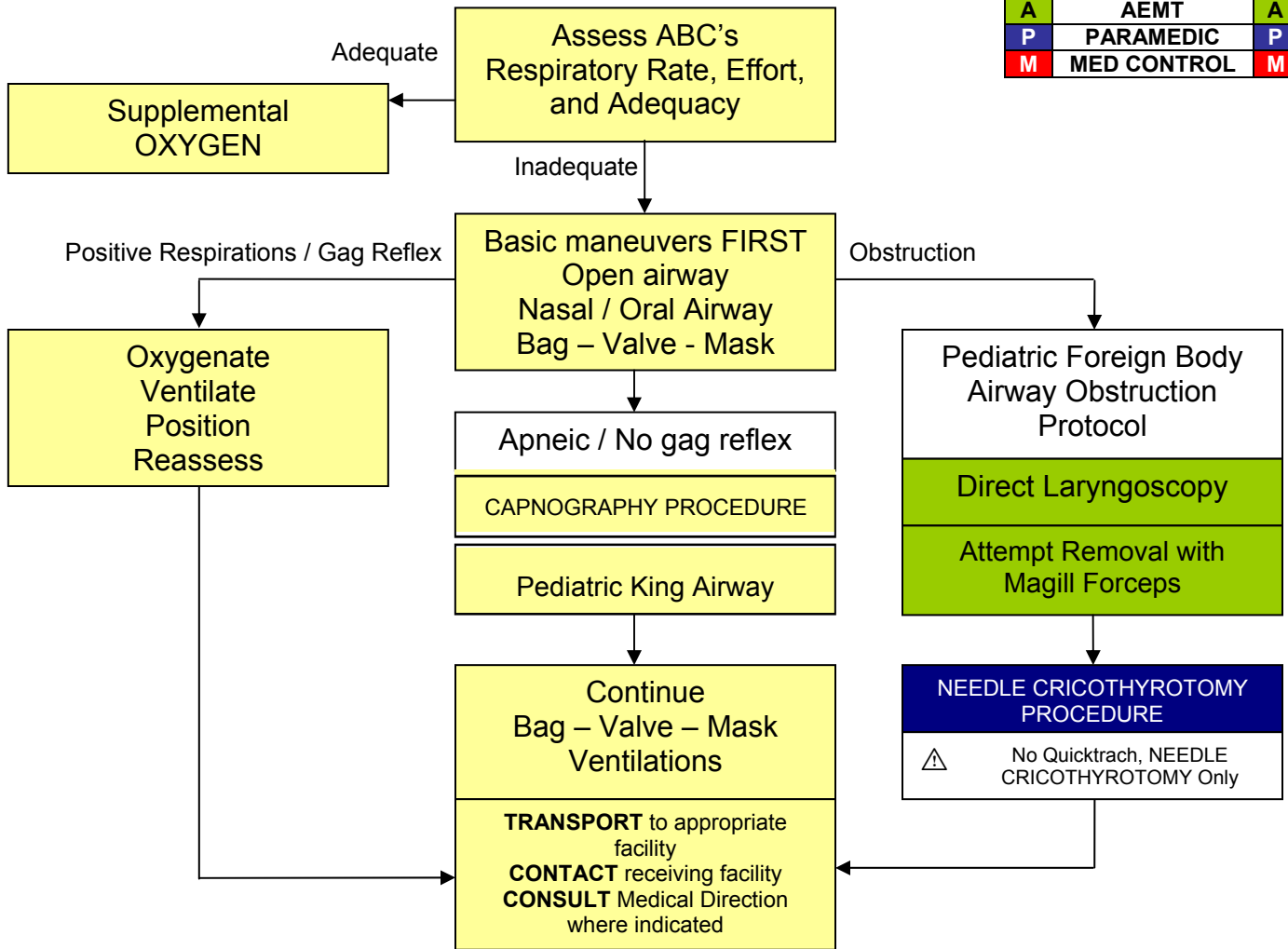


# PEDIATRIC AIRWAY / BREATHING

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

# PEDIATRIC AIRWAY

E	EMT	E
A	AEMT	A
P	PARAMEDIC	P
M	MED CONTROL	M



## KEY POINTS

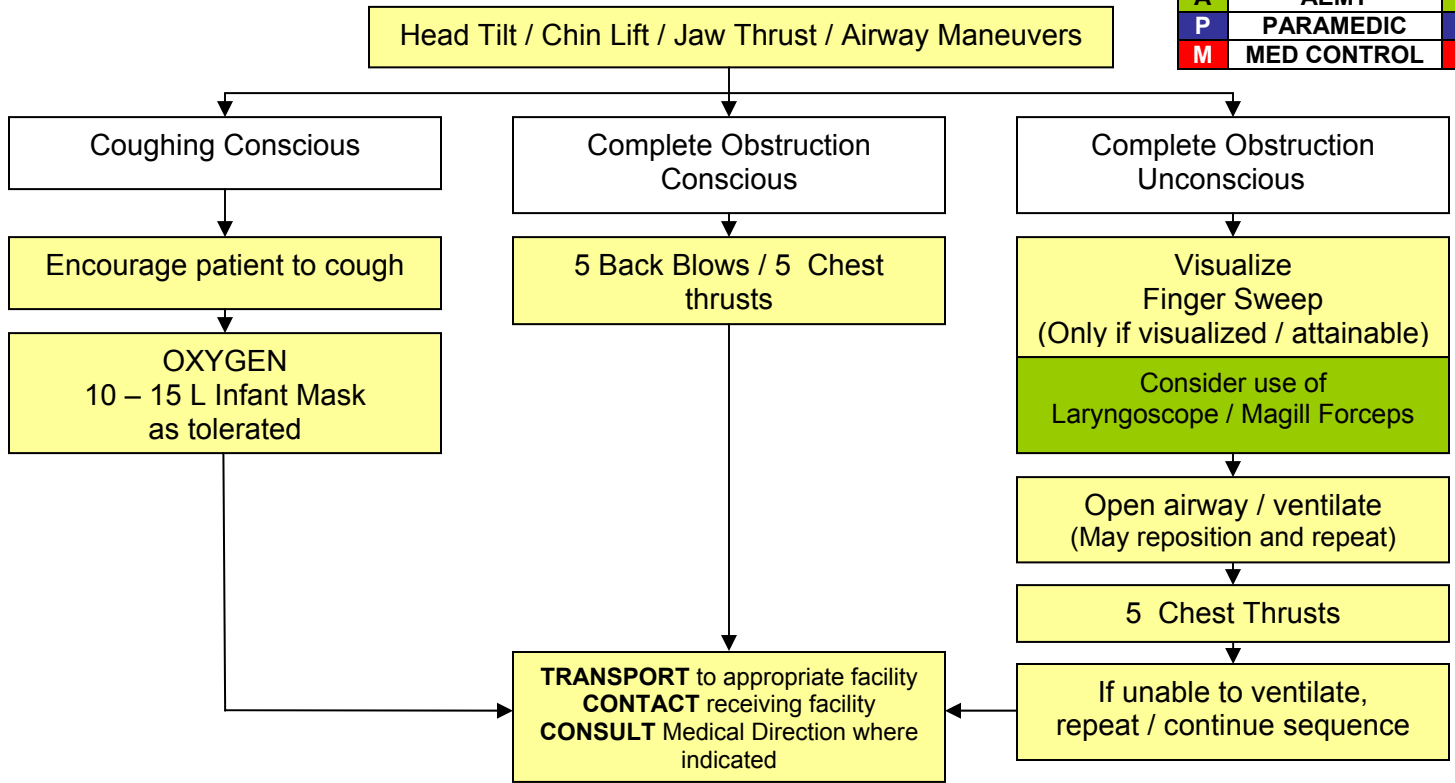
- **EtCo2** measurement is mandatory with all methods of intubation. Document results of SpO<sub>2</sub>.
- **Limit intubation attempts to 2 per patient max.**
- **BVM and oral airway is acceptable means of airway control and ventilation during prehospital care.**
- If unable to intubate, continue BVM ventilations, transport rapidly, and **notify receiving hospital early.**
- 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.
- Continuous pulse oximetry should be utilized in all patients with an inadequate respiratory function.

# PEDIATRIC

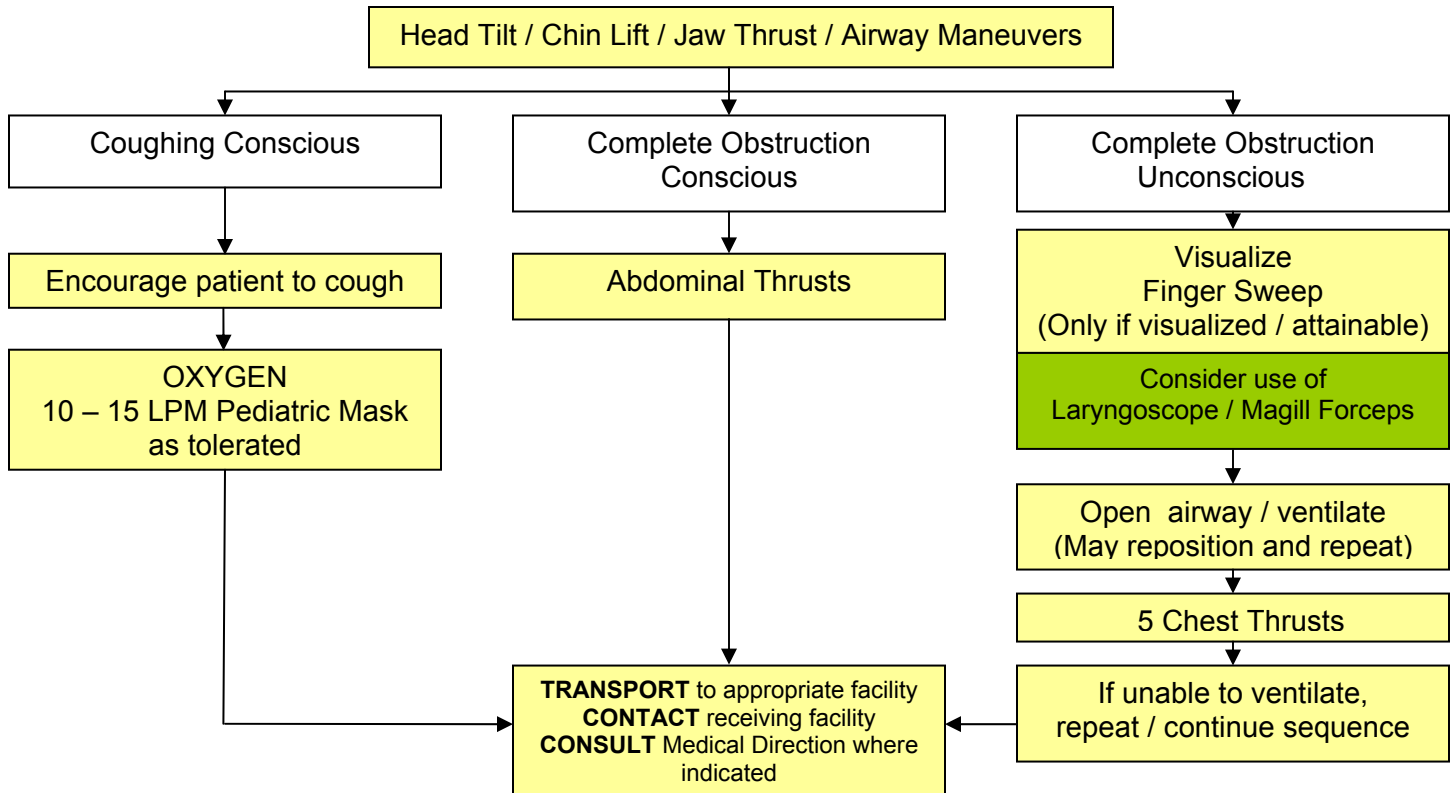
## FOREIGN BODY AIRWAY OBSTRUCTION (FBAO)

Infant (0 – 12 months)

E	EMT	E
A	AEMT	A
P	PARAMEDIC	P
M	MED CONTROL	M



Child (1 – 8 years)



**PEDIATRIC**

**FOREIGN BODY AIRWAY OBSTRUCTION (FBAO)**

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
<ul style="list-style-type: none"> <li>• Coughing</li> <li>• Choking</li> <li>• Inability to speak</li> <li>• Unresponsive</li> </ul>	<ul style="list-style-type: none"> <li>• Witnessed aspiration</li> <li>• Sudden episode of choking</li> <li>• Audible stridor</li> <li>• Change in skin color</li> <li>• Decreased LOC</li> <li>• Increased / decreased Respiratory rate</li> <li>• Labored breathing</li> <li>• Unproductive cough</li> </ul>	<ul style="list-style-type: none"> <li>• Cardiac arrest</li> <li>• Respiratory arrest</li> <li>• Anaphylaxis</li> </ul>

**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

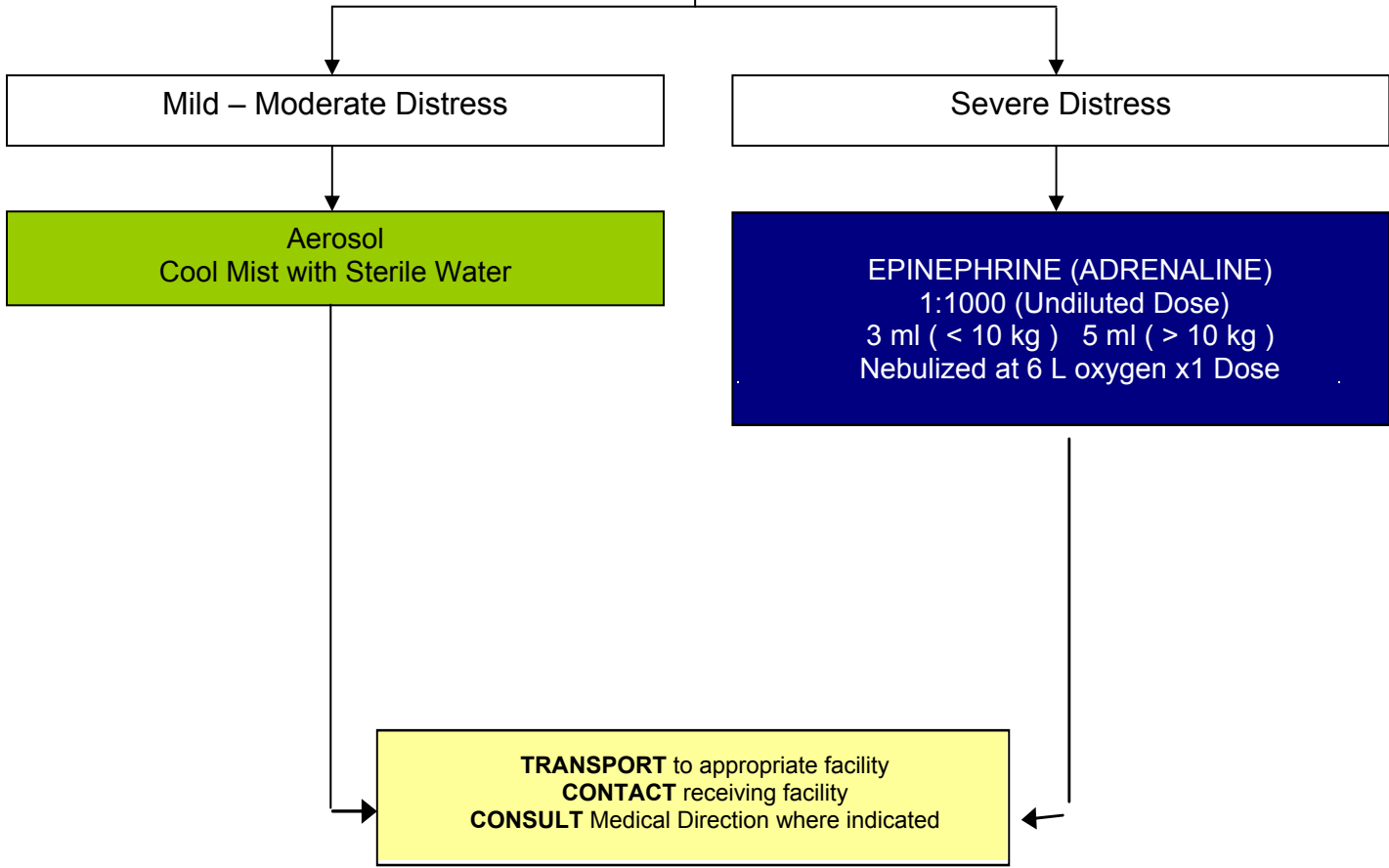
## Respiratory Distress Upper Airway – CROUP

E	EMT	E
A	AEMT	A
P	PARAMEDIC	P
M	MED CONTROL	M

UNIVERSAL PATIENT CARE PROTOCOL

Calm Patient  
Position Patient Sitting Upright  
Do not Lay Patient Down  
Do Not Perform Digital Airway Exam

PULSE OXIMETERY PROCEDURE



# PEDIATRIC

## Respiratory Distress Upper Airway - CROUP

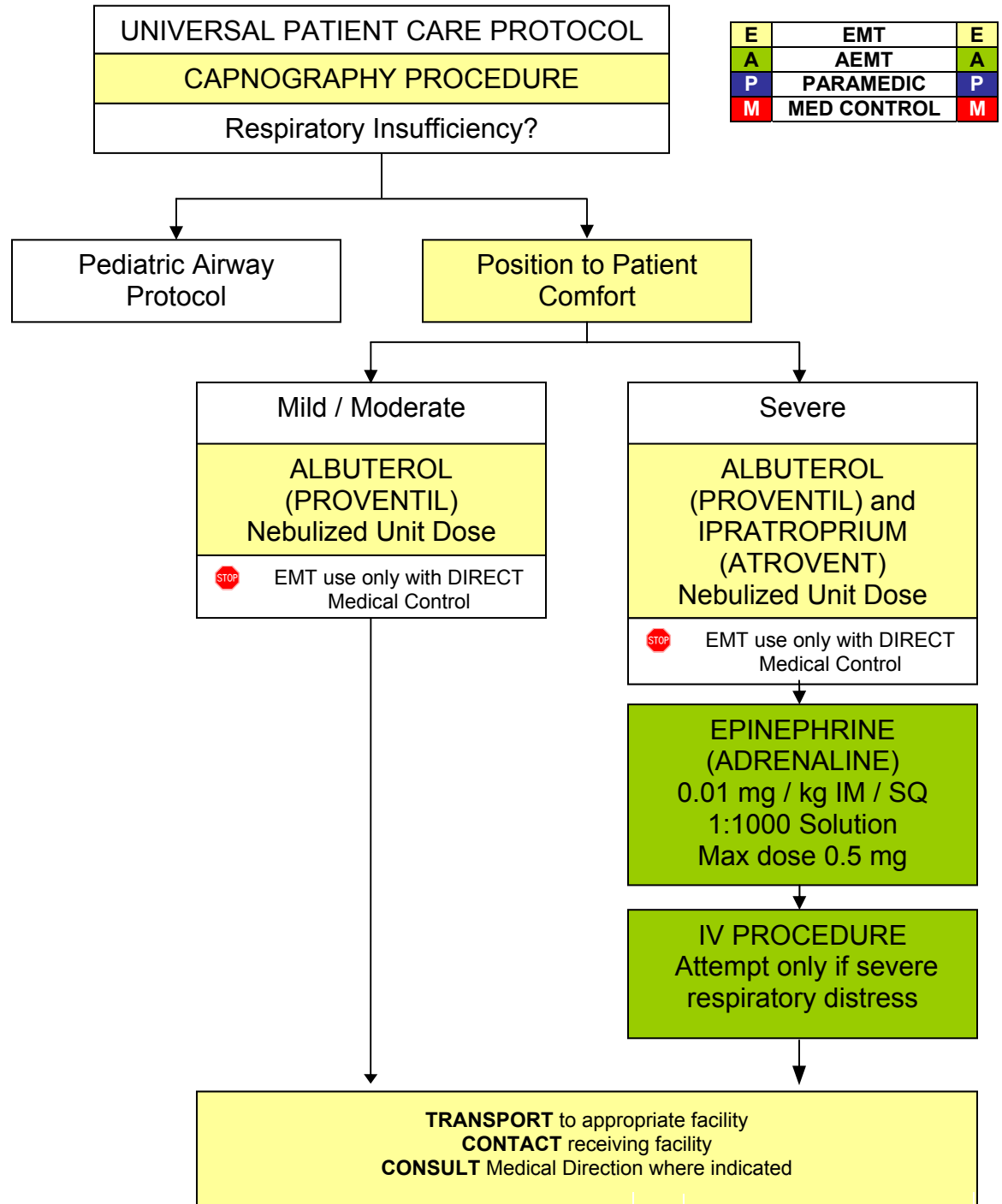
HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL
<ul style="list-style-type: none"> <li>• Time of onset</li> <li>• Possibility of foreign body</li> <li>• Medical history</li> <li>• Medications</li> <li>• Fever or respiratory infection</li> <li>• Other sick siblings</li> <li>• History of trauma</li> </ul>	<ul style="list-style-type: none"> <li>• Anxious appearance</li> <li>• Barking cough</li> <li>• Stridor</li> <li>• Gagging</li> <li>• Drooling</li> <li>• Inability to swallow</li> <li>• Increased respiratory effort</li> </ul>	<ul style="list-style-type: none"> <li>• Asthma</li> <li>• Aspiration</li> <li>• Foreign body</li> <li>• Infection</li> <li>• Pneumonia</li> <li>• Epiglottitis</li> <li>• Congenital heart disease</li> <li>• Medication or toxin</li> <li>• Trauma</li> </ul>

### 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** typically affects children > 2 years of age. 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 epiglottitis.
- DO NOT attempt an invasive airway procedure unless the patient is in respiratory arrest.
- **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

## RESPIRATORY DISTRESS LOWER AIRWAY



# PEDIATRIC

## RESPIRATORY DISTRESS - LOWER AIRWAY

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL
<ul style="list-style-type: none"> <li>• Time of onset</li> <li>• Possibility of foreign body</li> <li>• Medical history</li> <li>• Medications</li> <li>• Fever or respiratory infection</li> <li>• Other sick siblings</li> <li>• History of trauma</li> </ul>	<ul style="list-style-type: none"> <li>• Wheezing or stridor</li> <li>• Respiratory retractions</li> <li>• Increased heart rate</li> <li>• Altered level of consciousness</li> <li>• Anxious appearance</li> </ul>	<ul style="list-style-type: none"> <li>• Asthma</li> <li>• Aspiration</li> <li>• Foreign body</li> <li>• Infection</li> <li>• Pneumonia</li> <li>• Croup</li> <li>• Epiglottitis</li> <li>• Congenital heart disease</li> <li>• Medication or toxin</li> <li>• Trauma</li> </ul>

### 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. Consider 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.
- Contact Medical Direction for patients with a cardiac history.

# PEDIATRIC CIRCULATION / SHOCK

Pediatric Shock..... 8-2

**AIRWAY / BREATHING    CIRCULATION / SHOCK    ACLS    MEDICAL    TRAUMA**

# PEDIATRIC SHOCK

E	EMT	E
A	AEMT	A
P	PARAMEDIC	P
M	MED CONTROL	M

**DO NOT CONFUSE**  
EPI 1:1000 ETT ONLY  
and 1:10,000 IV

Pediatric Trauma Protocols

UNIVERSAL PATIENT CARE PROTOCOL

Evidence or history of trauma?

CAPNOGRAPHY PROCEDURE

IV / IO PROCEDURE

Anaphylaxis

Hypovolemic / Septic / Neurogenic Shock

Respiratory Distress

Allergic Reaction  
Hives

Impending Arrest  
Anaphylatic Shock

EPI PEN

EPINEPHRINE  
(ADRENALINE)  
0.01 mg / kg SQ  
1:1000  
Max Dose 0.5 mg

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

EPI PEN

EPINEPHRINE  
(ADRENALINE)  
0.01 mg / kg SQ  
1:1000  
Max Dose 0.5 mg

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

EPINEPHRINE  
(ADRENALINE)  
0.1 ml / kg IV / IO  
1:10,000 solution  
*OR*  
0.1 ml / kg ETT  
1:1000 solution  
Max Dose 1 mg / Dose

⚠ Assure Correct  
Concentration

NORMAL SALINE  
BOLUS 20 ml / kg

Monitor and Reassess

Blood Glucose Analysis

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

DEXTROSE 25%  
(D25) 2 ml / kg IV / IO  
*OR*  
DEXTROSE 10%  
(D10) 5 ml / kg IV / IO

GLUCAGON  
(GLUCAGEN)  
0.1 mg / kg IM / IN  
(If no IV Access)  
Maximum Dose 1 mg  
May repeat if no change

ALBUTEROL  
(PROVENTIL)  
Nebulized Unit Dose

STOP EMT use only with  
DIRECT Medical Control

**TRANSPORT** to appropriate facility  
**CONTACT** receiving facility  
**CONSULT** Medical Direction where indicated

# PEDIATRIC SHOCK

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
<ul style="list-style-type: none"> <li>Blood loss</li> <li>Fluid loss</li> <li>Vomiting</li> <li>Diarrhea</li> <li>Fever</li> <li>Infection</li> </ul>	<ul style="list-style-type: none"> <li>Restlessness, confusion, weakness</li> <li>Dizziness</li> <li>Increased HR, rapid pulse</li> <li>Decreased BP</li> <li>Pale, cool, clammy skin</li> <li>Delayed capillary refill</li> </ul>	<ul style="list-style-type: none"> <li>Trauma</li> <li>Infection</li> <li>Dehydration</li> <li>Vomiting</li> <li>Diarrhea</li> <li>Fever</li> <li>Congenital heart disease</li> <li>Medication or toxin</li> </ul>

## ALLERGIC REACTION / ANAPHYLAXIS

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
<ul style="list-style-type: none"> <li>Onset and location</li> <li>Insect sting or bite</li> <li>Food allergy / exposure</li> <li>Medication allergy / exposure</li> <li>New clothing, soap, detergent</li> <li>Past history of reactions</li> <li>Past medical history</li> <li>Medication history</li> </ul>	<ul style="list-style-type: none"> <li>Warm burning feeling</li> <li>Itching</li> <li>Rhinorrhea</li> <li>Hoarseness</li> <li>Stridor</li> <li>Wheezing</li> <li>Respiratory distress</li> <li>Altered LOC / coma</li> <li>Cyanosis</li> <li>Pulmonary edema</li> <li>Facial / airway edema</li> <li>Urticaria / hives</li> <li>Dyspnea</li> </ul>	<ul style="list-style-type: none"> <li>Urticaria (rash only)</li> <li>Anaphylaxis (systemic effect)</li> <li>Shock (vascular effect)</li> <li>Angioedema (drug induced)</li> <li>Aspiration / airway obstruction</li> <li>Vasovagal event</li> <li>Asthma</li> </ul>

**Do Not Confuse Epinephrine 1:1000 and 1:10,000**

### KEY POINTS

<ul style="list-style-type: none"> <li><b>Exam: Mental Status, Skin, HEENT, Heart, Lung, Abdomen, Extremities, Back, Neuro</b></li> <li>Consider all possible causes of shock and treat per appropriate protocol.</li> <li>Decreasing heart rate is a sign of impending collapse.</li> <li>Most maternal medications pass through breast milk to the infant. Examples: Narcotics, Benzodiazepines.</li> <li>Be sure to use the appropriate sized BP cuff.</li> <li>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.</li> <li>Shock is not only caused by blood loss. The EMT must evaluate for fluid loss from other causes such as excessive vomiting and / or diarrhea, heat exposure and malnutrition.</li> <li>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</li> <li>Routinely reassess the patient and provide supportive care.</li> <li>Use caution when using Epinephrine (Adrenaline) for patients with a cardiac history.</li> <li>Use caution when using Epinephrine (Adrenaline) for patients with a heart rate greater than 120 bpm.</li> </ul>
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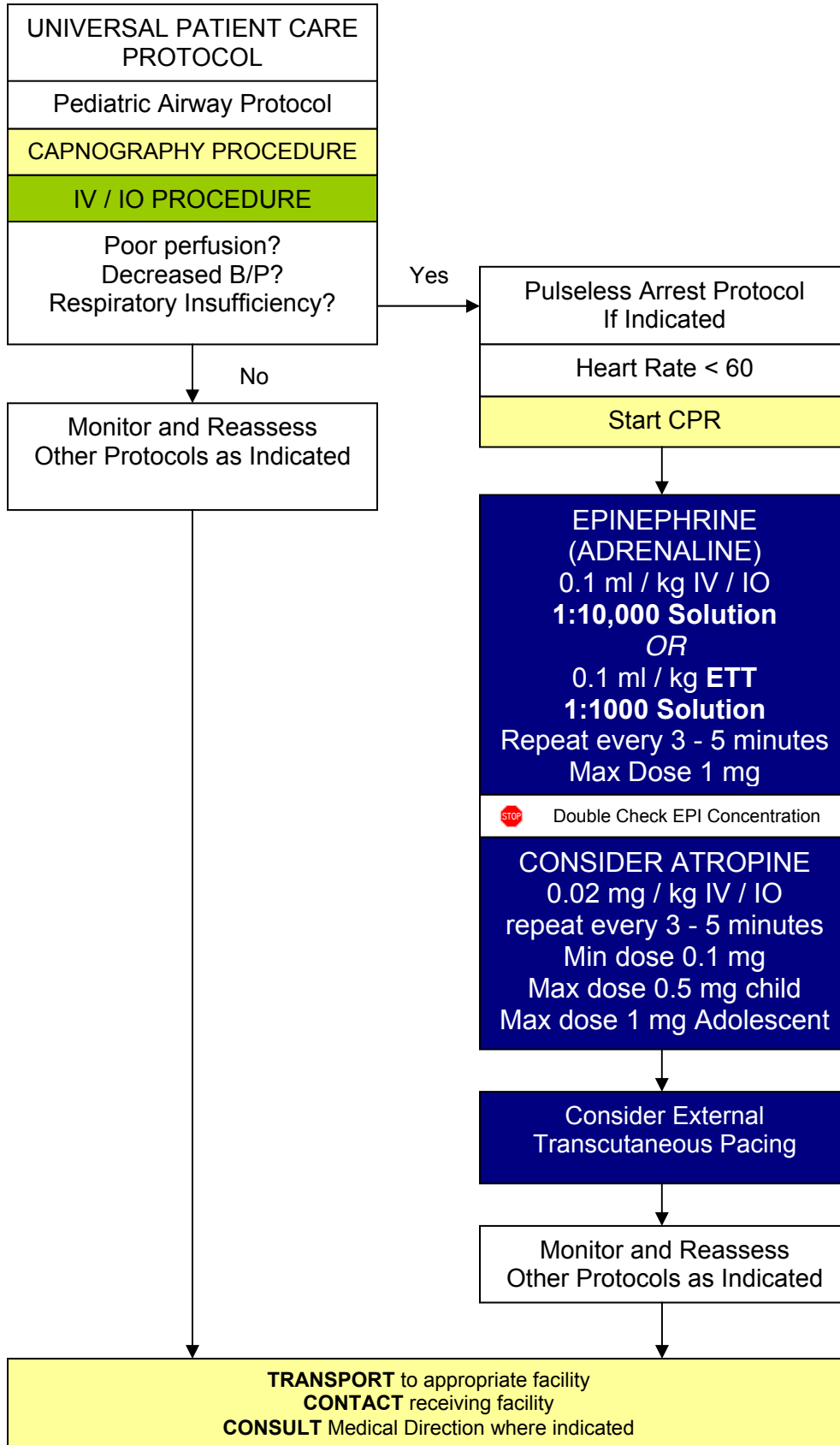
# PEDIATRIC ACLS

Pediatric Bradycardia .....	9-2
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# PEDIATRIC BRADYCARDIA

E	EMT	E
A	AEMS	A
P	PARAMEDIC	P
M	MED CONTROL	M

**DO NOT CONFUSE**  
EPI 1:1000 ETT ONLY  
and 1:10,000 IV



# PEDIATRIC BRADYCARDIA

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
<ul style="list-style-type: none"> <li>• Past medical history</li> <li>• Foreign body exposure</li> <li>• Respiratory distress or arrest</li> <li>• Apnea</li> <li>• Possible toxic or poison exposure</li> <li>• Congenital disease</li> <li>• Medication (maternal or infant)</li> </ul>	<ul style="list-style-type: none"> <li>• Hypoxia</li> <li>• Decreased heart rate</li> <li>• Delayed capillary refill or cyanosis</li> <li>• Mottled, cool skin</li> <li>• Hypotension or arrest</li> <li>• Altered level of consciousness</li> <li>• Poor Perfusion</li> <li>• Shock</li> <li>• Short of breath</li> <li>• Pulmonary fluid</li> </ul>	<ul style="list-style-type: none"> <li>• Respiratory effort</li> <li>• Respiratory obstruction</li> <li>• Foreign body / secretions</li> <li>• Croup / epiglottis</li> <li>• Hypovolemia</li> <li>• Hypothermia</li> <li>• Infection / sepsis</li> <li>• Medication or toxin</li> <li>• Hypoglycemia</li> <li>• Trauma</li> </ul>

**Do Not Confuse Epinephrine 1:1000 and 1:10,000**

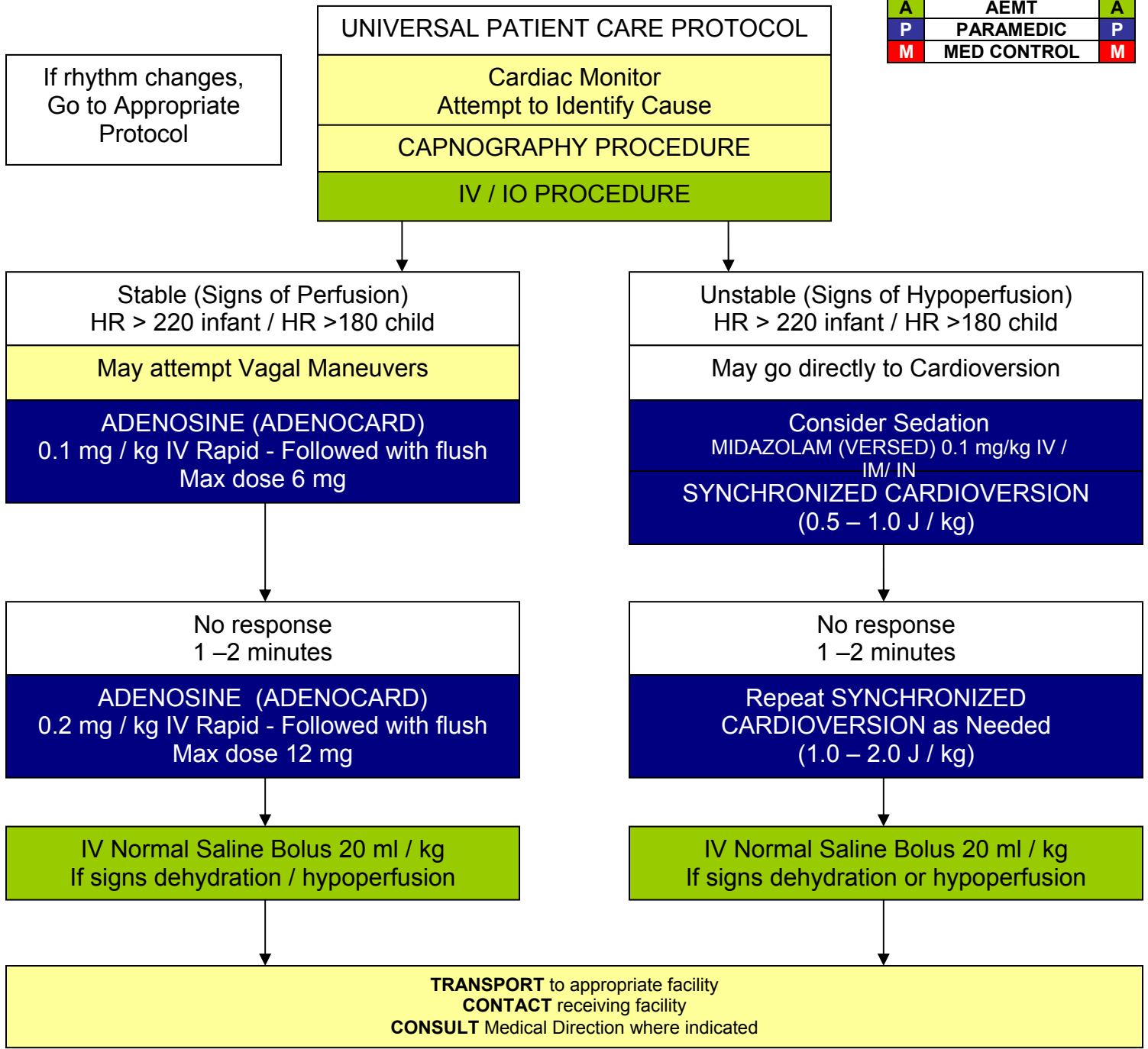
## KEY POINTS

- 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.

# PEDIATRIC

## NARROW – COMPLEX TACHYCARDIA

E	EMT	E
A	AEMT	A
P	PARAMEDIC	P
M	MED CONTROL	M



# PEDIATRIC

## NARROW – COMPLEX TACHYCARDIA

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
<ul style="list-style-type: none"> <li>• Past medical history</li> <li>• Medications or toxic ingestion (Aminophylline, diet pills, thyroid supplements, decongestants, digoxin)</li> <li>• Drugs (nicotine, cocaine)</li> <li>• Congenital heart disease</li> <li>• Respiratory distress</li> <li>• Syncope or near syncope</li> </ul>	<ul style="list-style-type: none"> <li>• HR: Child &gt; 180/bpm Infant &gt; 220/bpm</li> <li>• Pale or cyanosis</li> <li>• Diaphoresis</li> <li>• Tachypnea</li> <li>• Vomiting</li> <li>• Hypotension</li> <li>• Altered level of consciousness</li> <li>• Pulmonary congestion</li> <li>• Syncope</li> </ul>	<ul style="list-style-type: none"> <li>• Heart disease (congenital)</li> <li>• Hypo / hyperthermia</li> <li>• Hypovolemia or anemia</li> <li>• Electrolyte imbalance</li> <li>• Anxiety / pain / emotional stress</li> <li>• Fever / infection / sepsis</li> <li>• Hypoxia</li> <li>• Hypoglycemia</li> <li>• Medication / toxin / drugs (see HX)</li> <li>• Pulmonary embolus</li> <li>• Trauma</li> <li>• Tension pneumothorax</li> </ul>

### 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 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 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.

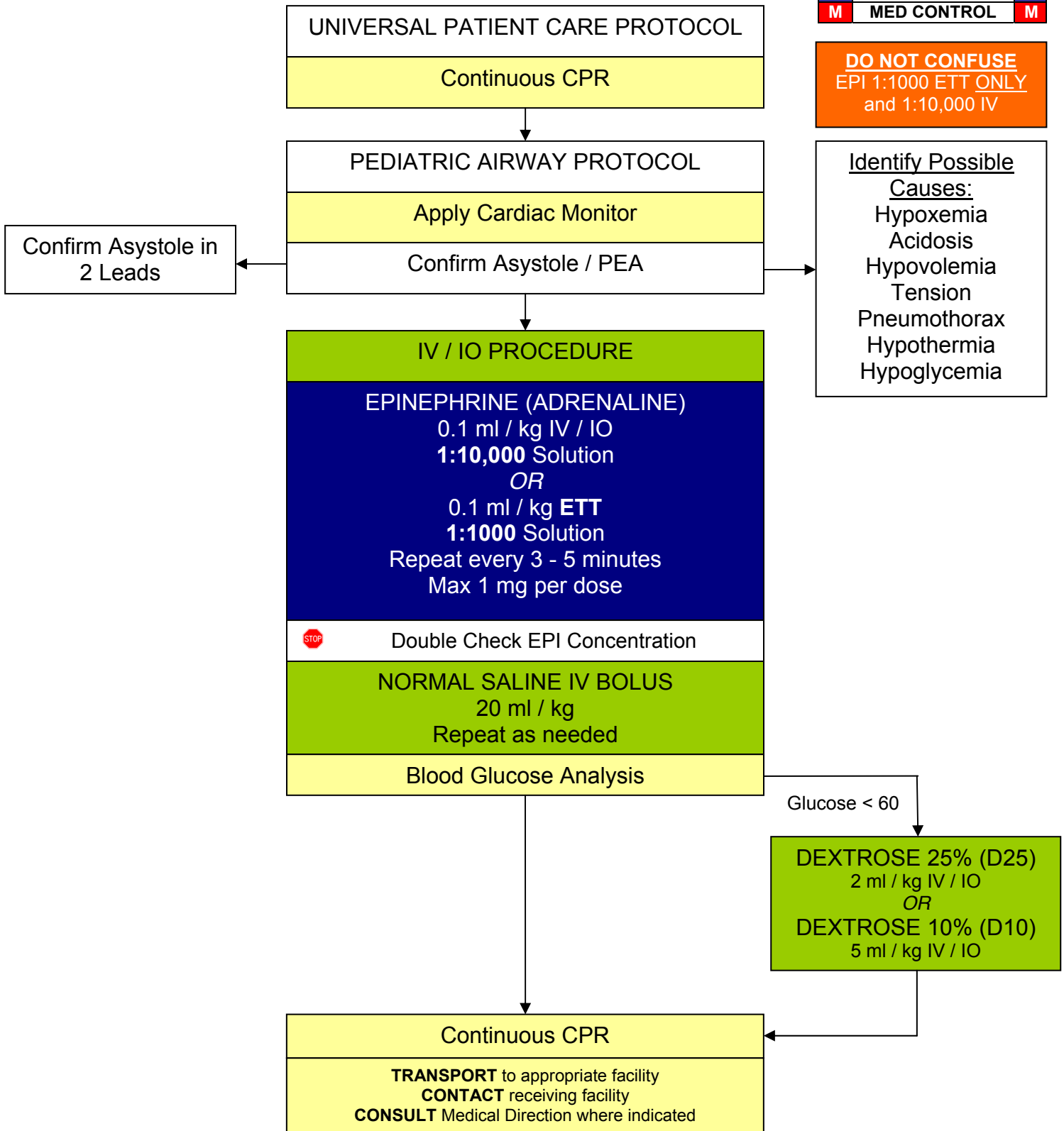
# PEDIATRIC

## ASYSTOLE / PULSELESS ELECTRICAL ACTIVITY (PEA)

E	EMT	E
A	EMT - I	A
P	PARAMEDIC	P
M	MED CONTROL	M

**DO NOT CONFUSE**  
EPI 1:1000 ETT ONLY  
and 1:10,000 IV

Identify Possible Causes:  
Hypoxemia  
Acidosis  
Hypovolemia  
Tension  
Pneumothorax  
Hypothermia  
Hypoglycemia



# PEDIATRIC

## ASYSTOLE / PULSELESS ELECTRICAL ACTIVITY (PEA)

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
<ul style="list-style-type: none"> <li>• Time of arrest</li> <li>• Medical history</li> <li>• Medications</li> <li>• Possibility of foreign body</li> <li>• Hypothermia</li> </ul>	<ul style="list-style-type: none"> <li>• Pulseless</li> <li>• Apneic or agonal Respirations</li> <li>• Cyanosis</li> </ul>	<ul style="list-style-type: none"> <li>• Ventricular fibrillation</li> <li>• Pulseless ventricular tachycardia</li> </ul>

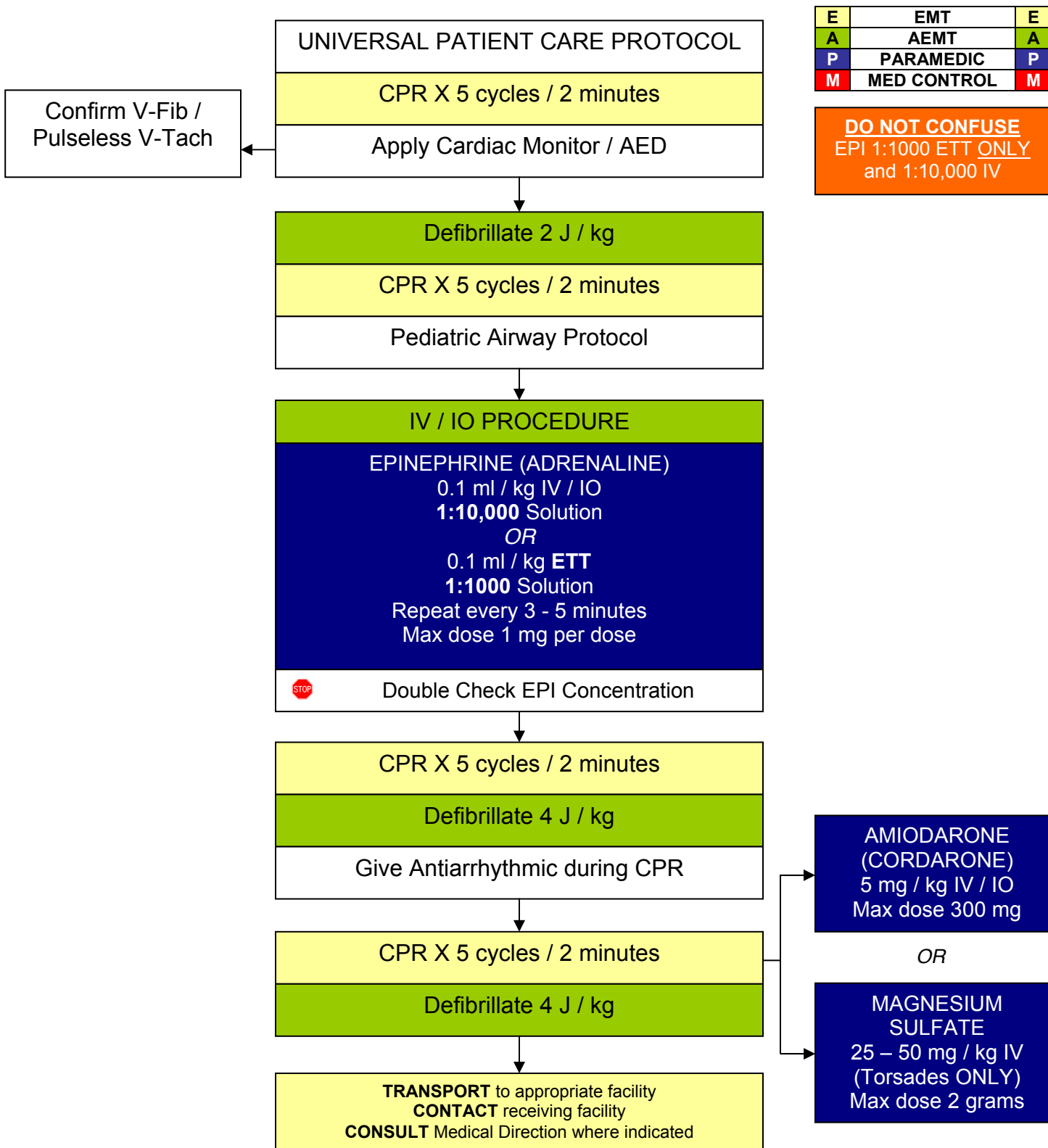
CONSIDER TREATABLE CAUSES	
<ul style="list-style-type: none"> <li>• Hypovolemia</li> <li>• Tension pneumothorax</li> <li>• Myocardial infarction</li> <li>• Drug overdose</li> <li>• Hypothermia</li> <li>• Acidosis</li> </ul>	<ul style="list-style-type: none"> <li>• Cardiac tamponade</li> <li>• Pulmonary embolism</li> <li>• Tricyclic overdose</li> <li>• Hypoxia</li> <li>• Hypoglycemia</li> <li>• Hyperkalemia</li> </ul>

**Do Not Confuse Epinephrine 1:1000 and 1:10,000**

KEY POINTS
<ul style="list-style-type: none"> <li>• <b>Exam: Mental Status</b></li> <li>• Always confirm asystole in more than one lead.</li> <li>• Cardiac arrest in children is primarily due to lack of an adequate airway, resulting in hypoxia.</li> <li>• If the patient converts to another rhythm or has a return of circulation, refer to the appropriate protocol and treat accordingly.</li> <li>• When assessing for a pulse palpate the brachial or femoral arteries for infants and the carotid or femoral artery for children.</li> <li>• Continue BLS procedures throughout the resuscitation.</li> <li>• If the patient is intubated, be sure to routinely reassess tube placement.</li> <li>• If the patient has an IO, routinely reassess for patency.</li> </ul>

# PEDIATRIC

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



# PEDIATRIC

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

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
<ul style="list-style-type: none"> <li>• Time of arrest</li> <li>• Medical history</li> <li>• Medications</li> <li>• Possibility of foreign body</li> <li>• Hypothermia</li> </ul>	<ul style="list-style-type: none"> <li>• Unresponsive</li> <li>• Cardiac arrest</li> </ul>	<ul style="list-style-type: none"> <li>• Respiratory failure</li> <li>• Foreign body</li> <li>• Secretions</li> <li>• Infection (croup, epiglottitis)</li> <li>• Hypovolemia (dehydration)</li> <li>• Congenital heart disease</li> <li>• Trauma</li> <li>• Tension pneumothorax</li> <li>• Hypothermia</li> <li>• Toxin or medication</li> <li>• Hypoglycemia</li> <li>• Acidosis</li> </ul>

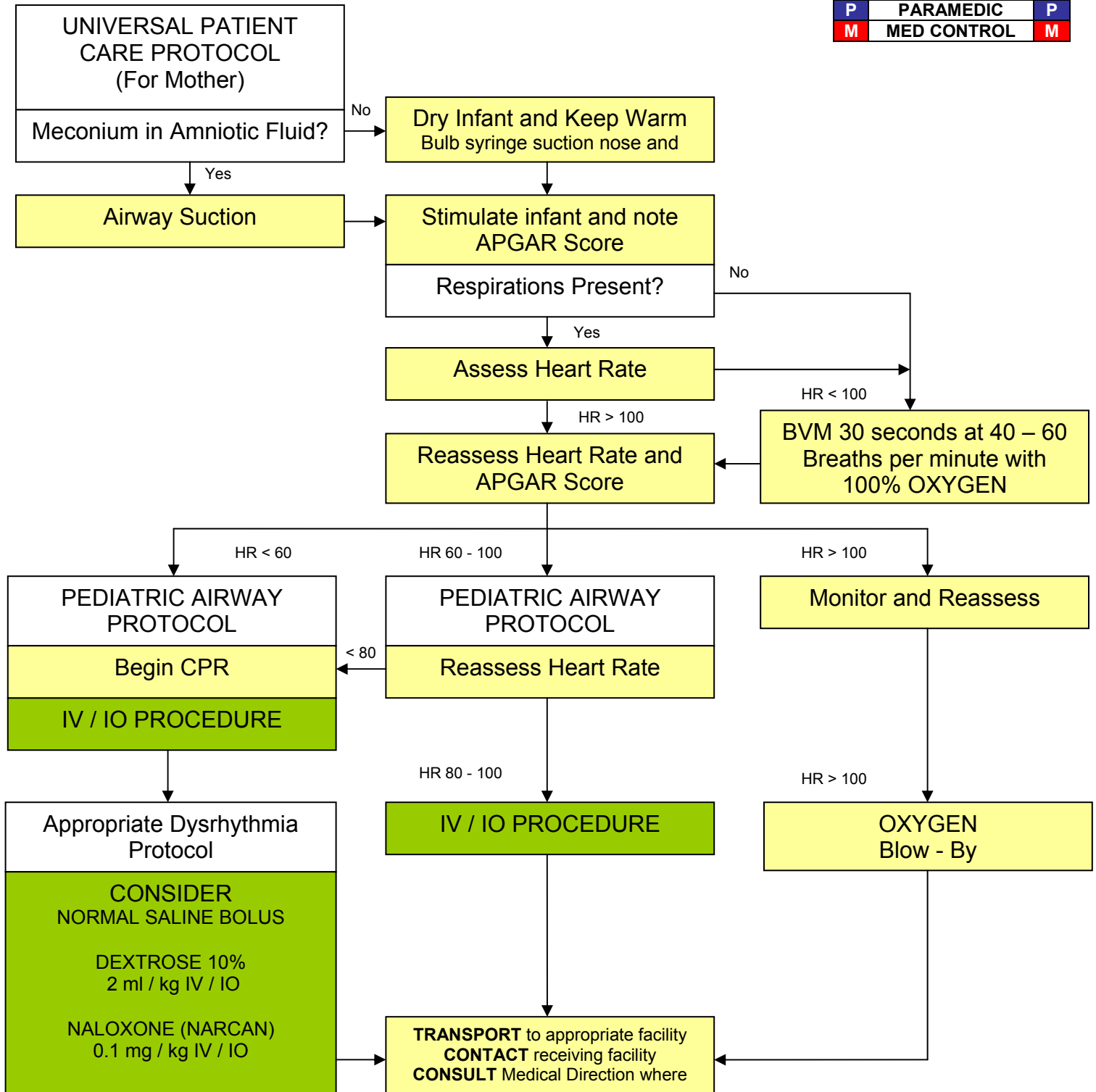
**Do Not Confuse Epinephrine 1:1000 and 1:10,000**

### 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 shock, drug, shock, and drug.

# PEDIATRIC NEONATAL RESUSCITATION

E	EMT	E
A	AEMT	A
P	PARAMEDIC	P
M	MED CONTROL	M



# PEDIATRIC

## NEONATAL RESUSCITATION

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
<ul style="list-style-type: none"> <li>• Due date and gestational age</li> <li>• Multiple gestation (twins etc.)</li> <li>• Meconium</li> <li>• Delivery difficulties</li> <li>• Congenital disease</li> <li>• Medications (maternal)</li> <li>• Maternal risk factors substance abuse smoking</li> </ul>	<ul style="list-style-type: none"> <li>• Respiratory distress</li> <li>• Peripheral cyanosis or mottling (normal)</li> <li>• Central cyanosis (abnormal)</li> <li>• Altered level of responsiveness</li> <li>• Bradycardia</li> </ul>	<ul style="list-style-type: none"> <li>• Airway failure</li> <li>• Secretions</li> <li>• Respiratory drive</li> <li>• Infection</li> <li>• Maternal medication effect</li> <li>• Hypovolemia</li> <li>• Hypoglycemia</li> <li>• Congenital heart disease</li> <li>• Hypothermia</li> </ul>

### KEY POINTS

- **Exam: Mental Status, Skin, HEENT, Neck, Chest, Heart, Abdomen, Extremities, Neuro**
- Maternal sedation or narcotics will sedate infant Naloxone (Narcan) will be effective.
- Consider hypoglycemia in infant.
- Document 1 and 5 minute APGAR scores.
- If the patient is in distress, consider causes such as; hypovolemia. Administer a 10 ml / kg fluid bolus of normal saline.
- If the BGL less than 40 mg / dl go to the Pediatric Diabetic Protocol.
- Hypothermia is a common complication of home and field deliveries. Keep the baby warm and dry.
- If there is a history of recent maternal narcotic use, consider Naloxone (Narcan) 0.1 mg / kg every 2 - 5 minutes until patient responds.
- Meconium may need to be suctioned several times to clear airway. Use bulb syringe.
- Intubation of child is only done when the infant is **NOT** vigorous.
- 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
<b>COLOR</b>	Blue / Pale	Pink Body, Blue Extremities	Completely Pink
<b>HEART RATE</b>	Absent	Below 100	Above 100
<b>IRRITABILITY (Response to Stimulation)</b>	No Response	Grimace	Cries
<b>MUSCLE TONE</b>	Limp	Flexion of Extremities	Active Motion
<b>RESPIRATORY EFFORT</b>	Absent	Slow and Regular	Strong Cry



# PEDIATRIC MEDICAL EMERGENCIES PROTOCOLS

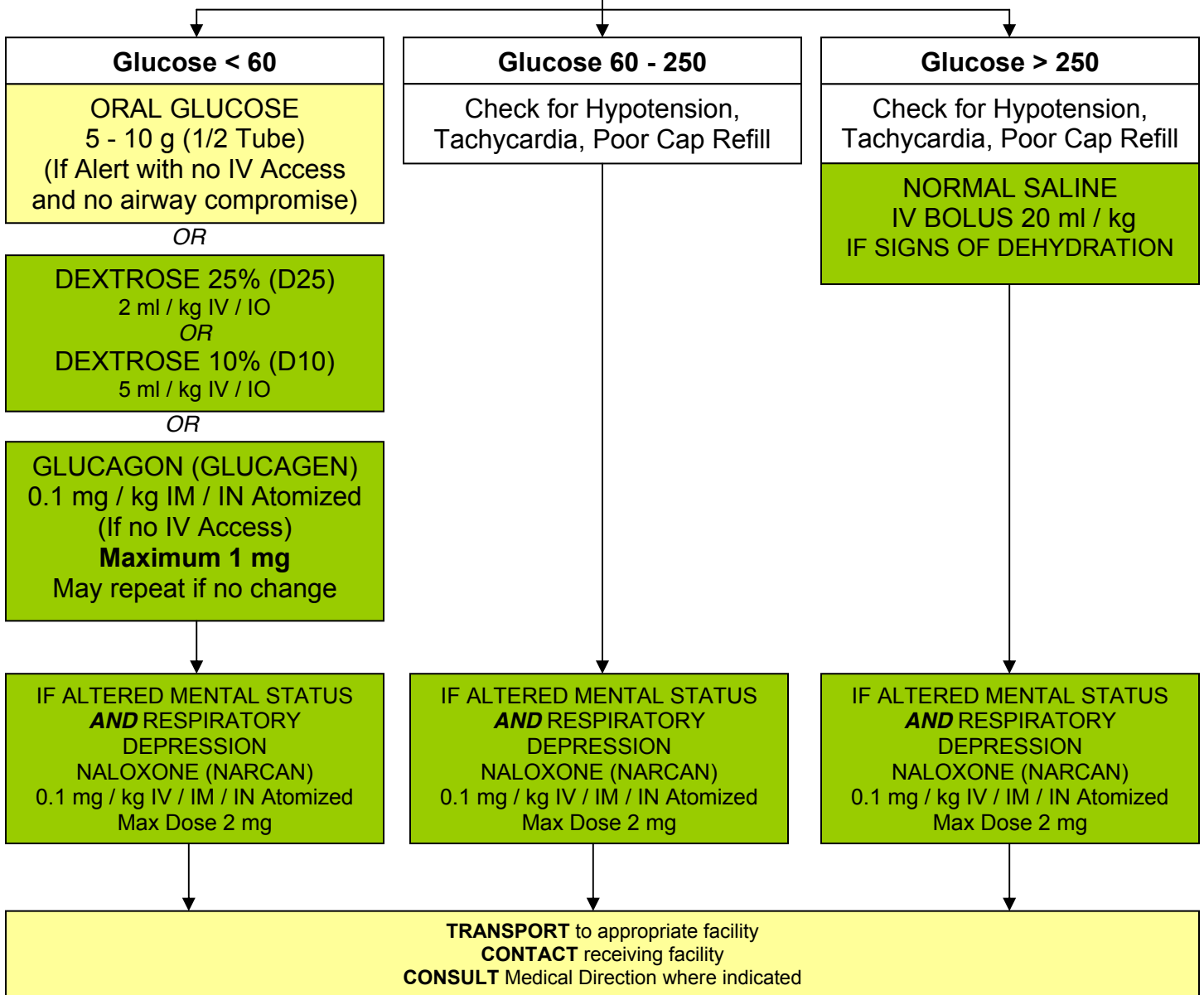
Pediatric Altered Level of Consciousness .....	10-2
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Pediatric Esophageal Foreign Body Obstruction .....	10-13
Pediatric Seizure .....	10-15
Pediatric Severe Pain Management.....	10-17
Pediatric Toxic Ingestion / Exposure / Overdose.....	10-19

# PEDIATRIC

## ALTERED LEVEL OF CONSCIOUSNESS

E	EMT	E
A	AEMT	A
P	PARAMEDIC	P
M	MED CONTROL	M

UNIVERSAL PATIENT CARE PROTOCOL
See Pediatric Airway Protocol
Spinal Immobilization Protocol
<b>IV / IO PROTOCOL</b>
Blood Glucose Analysis



# PEDIATRIC

## ALTERED LEVEL OF CONSCIOUSNESS

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
<ul style="list-style-type: none"> <li>• Known diabetic, medic alert tag</li> <li>• Drugs, drug paraphernalia</li> <li>• Report of illicit drug use or toxic ingestion</li> <li>• Past medical history</li> <li>• Medications</li> <li>• History of trauma</li> </ul>	<ul style="list-style-type: none"> <li>• Unresponsive</li> <li>• Decreased responsiveness</li> <li>• Inadequate respirations</li> <li>• Confusion</li> <li>• Agitation</li> <li>• Decreased mental status</li> <li>• Change in baseline mental status</li> <li>• Hypoglycemia (cool, diaphoretic skin)</li> </ul>	<ul style="list-style-type: none"> <li>• Head trauma</li> <li>• CNS (stroke, tumor, seizure, infection)</li> <li>• Infection</li> <li>• Shock (septic, metabolic, traumatic)</li> <li>• Diabetes (hyper / hypoglycemia)</li> <li>• Toxicologic</li> <li>• Acidosis / alkalosis</li> <li>• Environmental exposure</li> <li>• Pulmonary (Hypoxia)</li> <li>• Electrolyte abnormality</li> <li>• Psychiatric disorder</li> </ul>

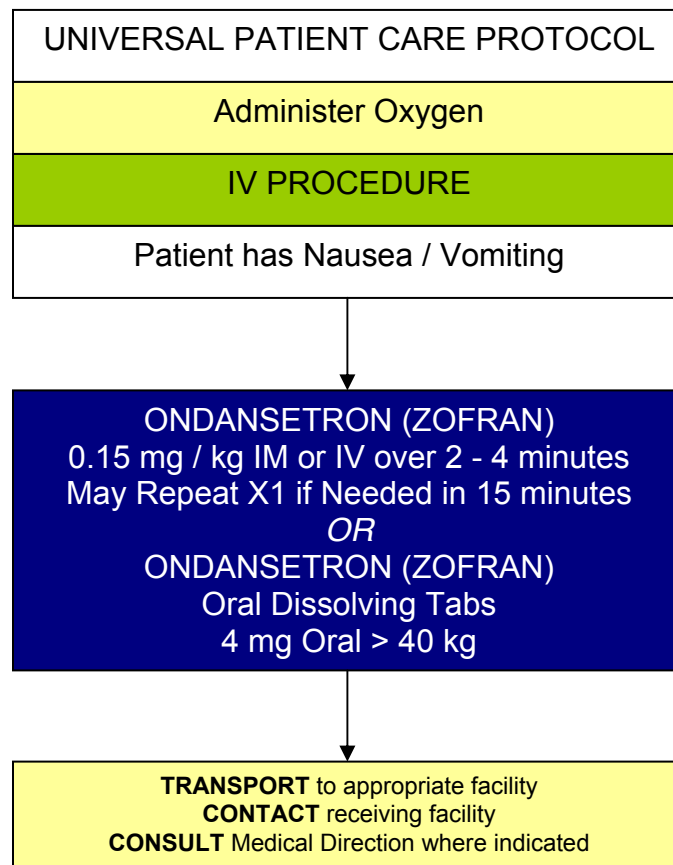
### KEY POINTS

- Protect the patient airway and support ABCs.
- Document the patient's initial Glasgow Coma Score.
- Narcan administration may cause acute opiate withdraw, which includes vomiting, agitation, or combative behavior. Be prepared for the possibility of combative behavior to ensure crew safety.
- Naloxone (Narcan) may wear off in as little as 20 minutes causing the patient to become more sedate and possibly hypoventilate. Prepare for repeat dosing if necessary.
- All patients receiving Naloxone (Narcan) MUST be transported.

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

# PEDIATRIC ANTI-EMETIC

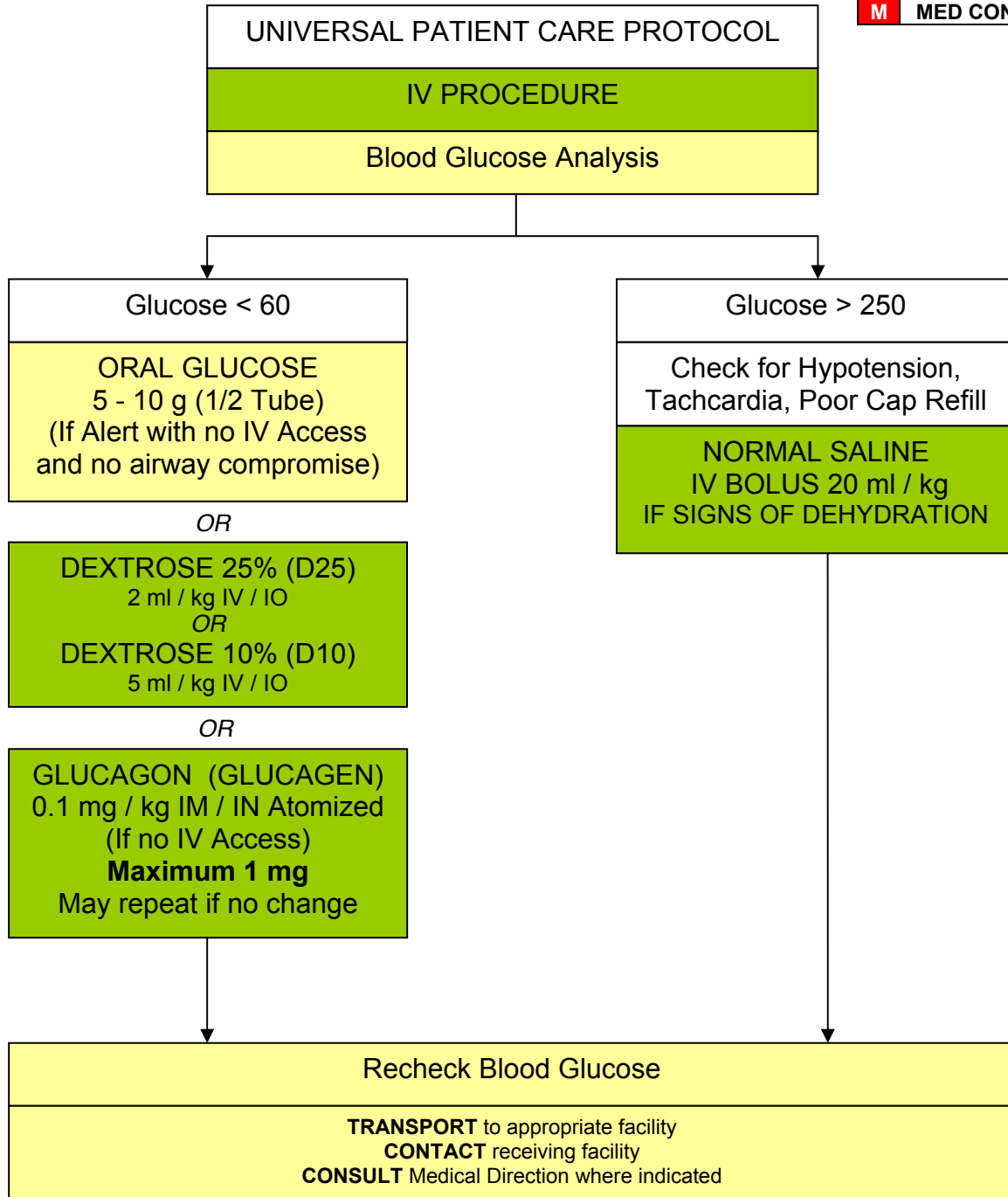
E	EMT	E
A	AEMT	A
P	PARAMEDIC	P
M	MED CONTROL	M



**PEDIATRIC**

**DIABETIC EMERGENCIES**

E	EMT	E
A	AEMT	A
P	PARAMEDIC	P
M	MED CONTROL	M



# PEDIATRIC

## DIABETIC EMERGENCIES

### HYPOGLYCEMIA

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
<ul style="list-style-type: none"> <li>Known diabetic, medic alert tag</li> <li>Past medical history</li> <li>Medications</li> <li>Recent BGL</li> </ul>	<ul style="list-style-type: none"> <li>Altered level of consciousness</li> <li>Dizziness</li> <li>Irritability</li> <li>Diaphoresis</li> <li>Convulsions</li> <li>Hunger</li> <li>Confusion</li> </ul>	<ul style="list-style-type: none"> <li>ETOH</li> <li>Toxic overdose</li> <li>Trauma</li> <li>Seizure</li> <li>Syncope</li> <li>CSN disorder</li> <li>Stroke</li> <li>Tumor</li> <li>Pre-existing condition</li> </ul>

### HYPERGLYCEMIA

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
<ul style="list-style-type: none"> <li>Known diabetic, medic alert tag</li> <li>Past medical history</li> <li>Medications</li> <li>Recent BGL</li> </ul>	<ul style="list-style-type: none"> <li>Altered level of Consciousness / coma</li> <li>Abdominal pain</li> <li>Nausea / vomiting</li> <li>Dehydration</li> <li>Frequent thirst and urination</li> <li>General weakness malaise</li> <li>Hypovolemic shock</li> <li>Hyperventilation</li> <li>Deep / rapid respirations</li> </ul>	<ul style="list-style-type: none"> <li>ETOH</li> <li>Toxic overdose</li> <li>Trauma</li> <li>Seizure</li> <li>Syncope</li> <li>CSN disorder</li> <li>Stroke</li> <li>Diabetic ketoacidoss</li> </ul>

### 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 (D25), Dextrose 10% (D10), 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 (D25), Dextrose 10% (D10), Glucagon (Glucagen), or after any attempt to raise the patient's BGL.

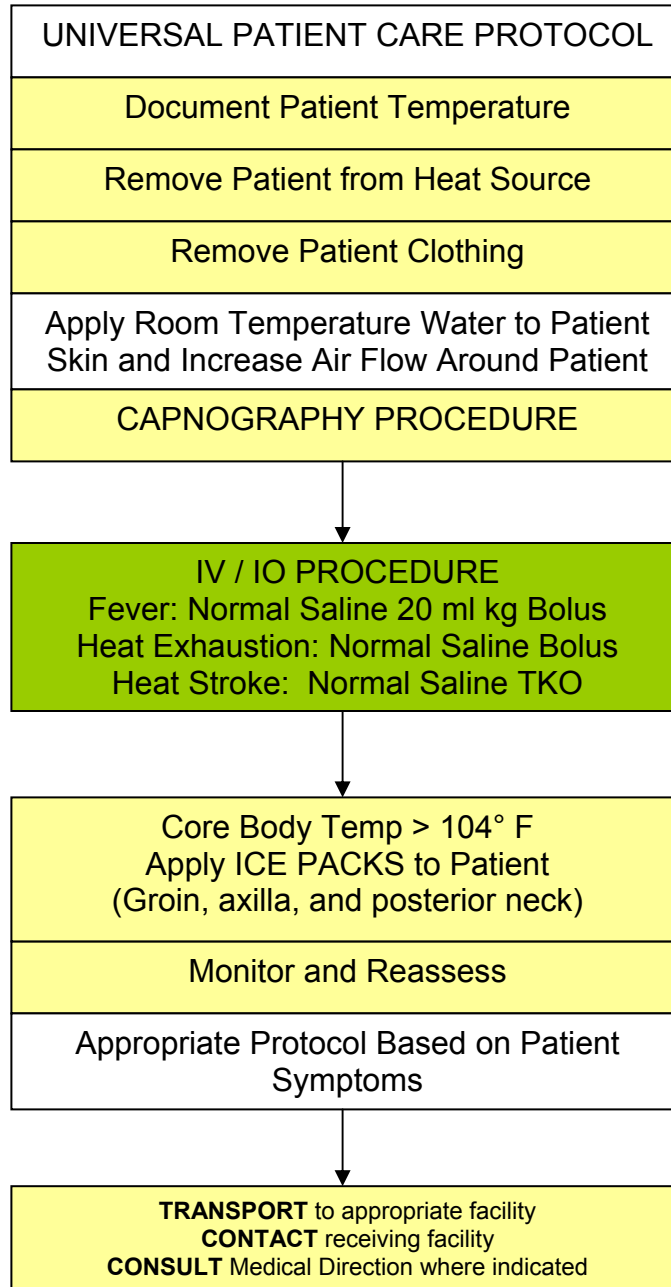
#### Miscellaneous:

- If IV access is successful after Glucagon (Glucagen) IM / IN and the patient is still symptomatic, Dextrose 25% (D25) 2 ml / kg IV / IO or Dextrose 10% (D10) 5 ml / kg IV / IO should be administered.

# PEDIATRIC

## HYPERTHERMIA / HEAT EXPOSURE

E	EMT	E
A	AEMT	A
P	PARAMEDIC	P
M	MED CONTROL	M



# PEDIATRIC

## HYPERTHERMIA / HEAT EXPOSURE

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
<ul style="list-style-type: none"> <li>• Age</li> <li>• Exposure to increased temperatures and humidity</li> <li>• Past medical history / medications</li> <li>• Extreme exertion</li> <li>• Time and length of exposure</li> <li>• Poor PO intake</li> <li>• Fatigue and / or muscle cramping</li> </ul>	<ul style="list-style-type: none"> <li>• Altered mental status or unconsciousness</li> <li>• Hot, dry or sweaty skin</li> <li>• Hypotension or shock</li> <li>• Seizures</li> <li>• Nausea</li> </ul>	<ul style="list-style-type: none"> <li>• Fever (infection)</li> <li>• Dehydration</li> <li>• Medications</li> <li>• Hyperthyroidism (storm)</li> <li>• Delirium tremens (DT's)</li> <li>• Heat cramps</li> <li>• Heat exhaustion</li> <li>• Heat stroke</li> <li>• CNS lesions or tumors</li> </ul>

Heat Exhaustion: Dehydration	Heat Stroke: Cerebral Edema
<ul style="list-style-type: none"> <li>• Muscular/abdominal cramping</li> <li>• General weakness</li> <li>• Diaphoresis</li> <li>• Febrile</li> <li>• Confusion</li> <li>• Dry mouth / thirsty</li> <li>• Tachycardia</li> <li>• BP normal or orthostatic hypotension</li> </ul>	<ul style="list-style-type: none"> <li>• Confusion</li> <li>• Bizarre behavior</li> <li>• Skin hot, dry, febrile</li> <li>• Tachycardia</li> <li>• Hypotensive</li> <li>• Seizure</li> <li>• Coma</li> </ul>

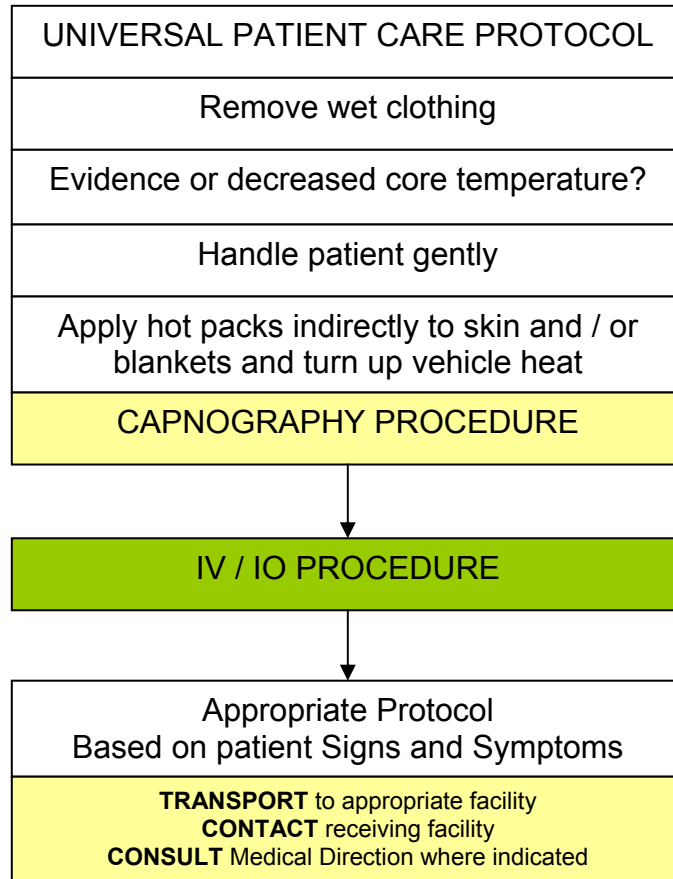
### KEY POINTS

- **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

## HYPOTHERMIA / FROSTBITE

E	EMT	E
A	AEMT	A
P	PARAMEDIC	P
M	MED CONTROL	M



# PEDIATRIC

## HYPOTHERMIA / FROSTBITE

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
<ul style="list-style-type: none"> <li>• Past medical history</li> <li>• Medications</li> <li>• Exposure to environment even in normal temperatures</li> <li>• Exposure to extreme cold</li> <li>• Extremes of age</li> <li>• Drug use: Alcohol, barbituates</li> <li>• Infections / sepsis</li> <li>• Length of exposure / wetness</li> </ul>	<ul style="list-style-type: none"> <li>• Cold, clammy</li> <li>• Shivering</li> <li>• Mental status changes</li> <li>• Extremity pain or sensory abnormality</li> <li>• Bradycardia</li> <li>• Hypotension or shock</li> </ul>	<ul style="list-style-type: none"> <li>• Sepsis</li> <li>• Environmental exposure</li> <li>• Hypoglycemia</li> <li>• CNS dysfunction</li> <li>• Stroke</li> <li>• Head injury</li> <li>• Spinal cord injury</li> </ul>

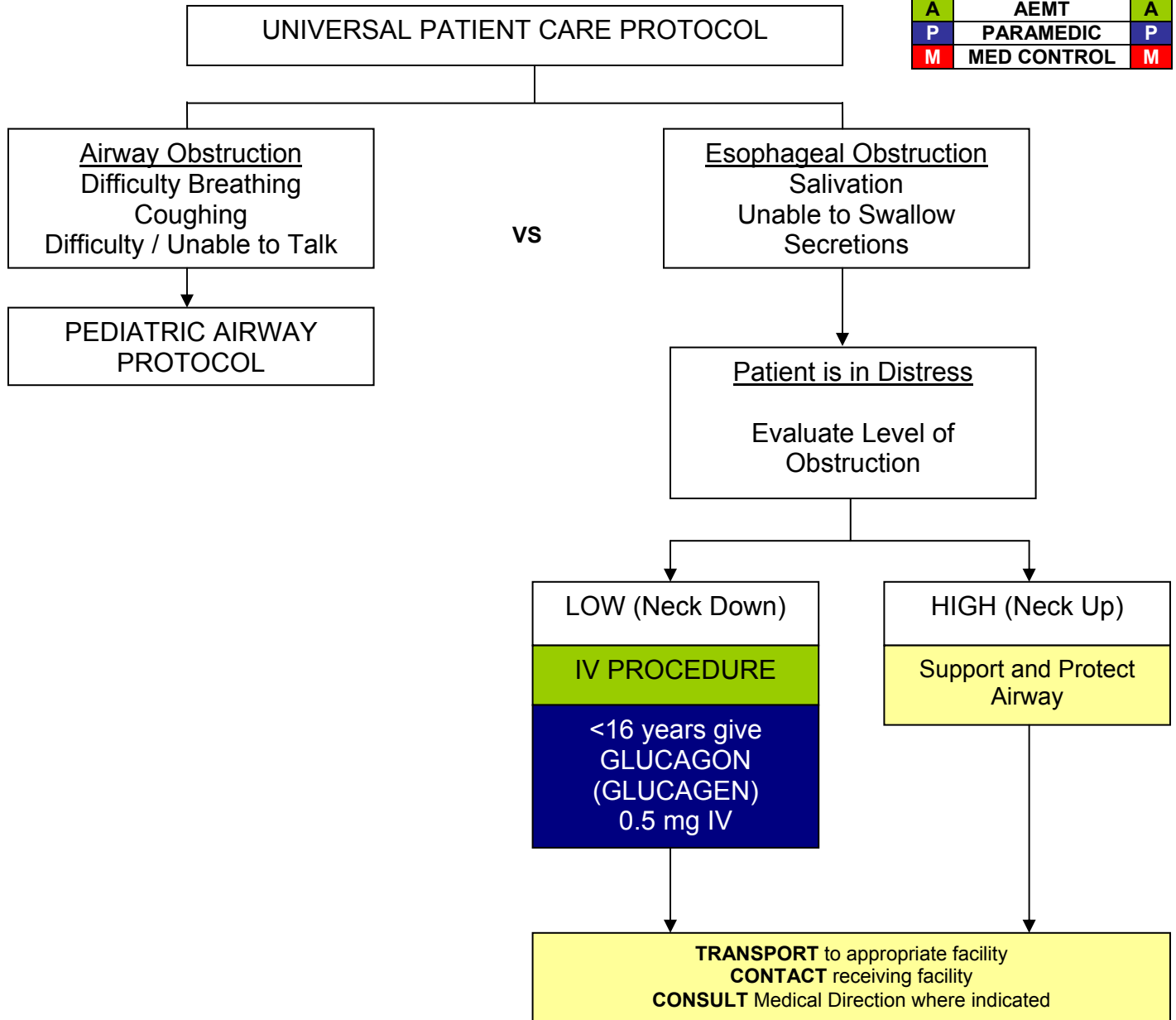
### KEY POINTS

- 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 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).
- 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.
- 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 affective 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 Medical Control prior to rewarming a deep frostbite injury.

# PEDIATRIC

## ESOPHAGEAL FOREIGN BODY OBSTRUCTION

E	EMT	E
A	AEMT	A
P	PARAMEDIC	P
M	MED CONTROL	M



**PEDIATRIC**

**ESOPHAGEAL FOREIGN BODY OBSTRUCTION**

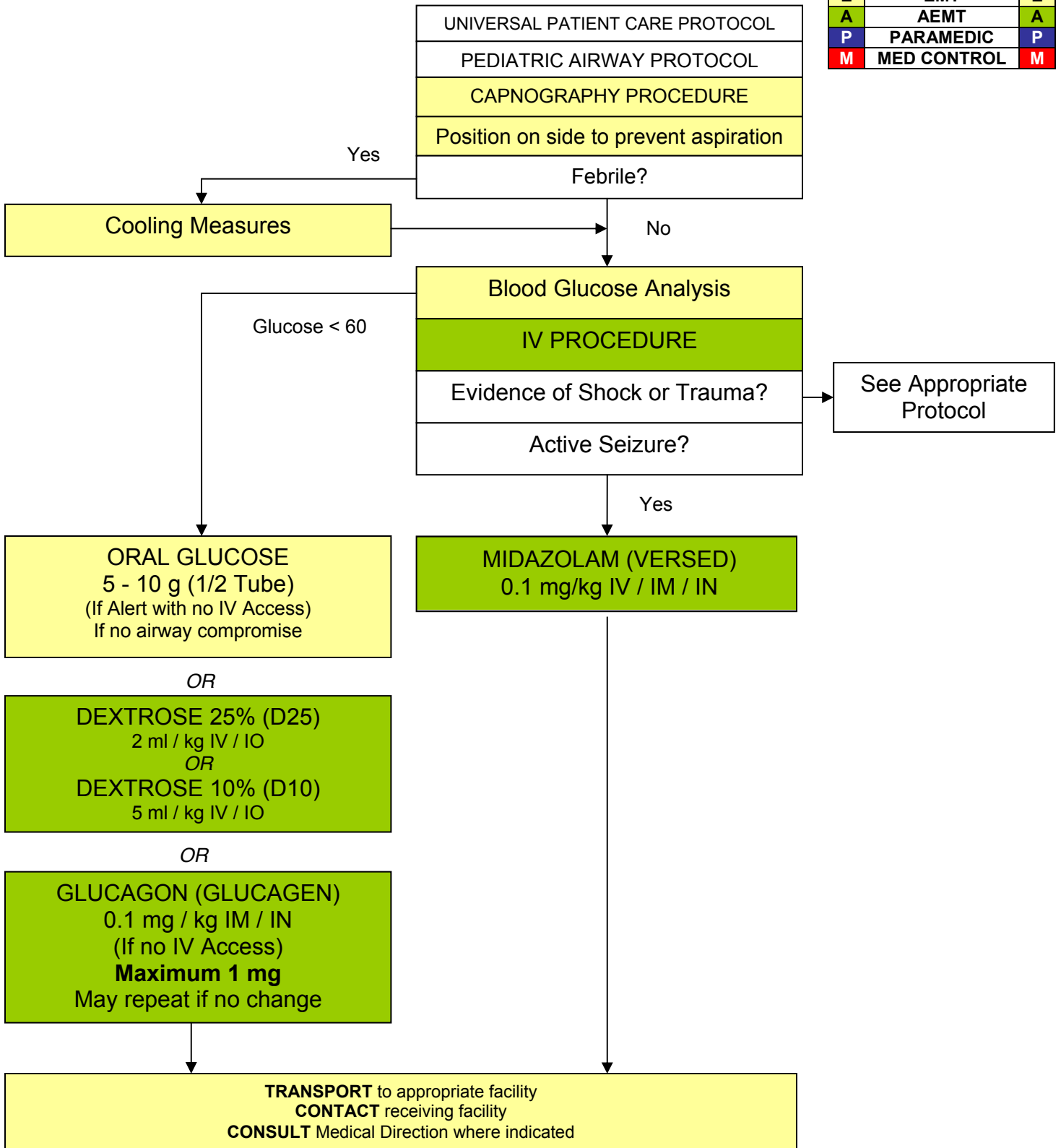
HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL
<ul style="list-style-type: none"> <li>Onset during eating or swallowing pills, etc.</li> </ul>	<ul style="list-style-type: none"> <li>Salivation</li> <li>Unable to swallow secretions</li> <li>Distressed patient</li> <li>Able to breathe but may feel impaired</li> </ul>	<ul style="list-style-type: none"> <li>Airway obstruction – coughing, unable to speak, difficulty breathing</li> </ul>

**KEY POINTS**

- Rule out airway obstruction first.
- Patient may be helpful in identifying location of bolus obstruction as they can feel it, point to it.
- If bolus is located in neck area, Glucagon (Glucagen) will not work, just monitor and transport.
- If bolus located from neck down, proceed with Glucagon (Glucagen) treatment.
- Treat patients < 16 years with 0.5 mg dose of Glucagon (Glucagen).

# PEDIATRIC SEIZURE

E	EMT	E
A	AEMT	A
P	PARAMEDIC	P
M	MED CONTROL	M



# PEDIATRIC SEIZURE

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL
<ul style="list-style-type: none"> <li>• Fever</li> <li>• Prior history of seizures</li> <li>• Seizure medications</li> <li>• Reported seizure activity</li> <li>• History of recent head trauma</li> <li>• Congenital abnormality</li> </ul>	<ul style="list-style-type: none"> <li>• Observed seizure activity</li> <li>• Altered mental status</li> <li>• Hot, dry skin or elevated body temperature</li> </ul>	<ul style="list-style-type: none"> <li>• Fever</li> <li>• Infection</li> <li>• Head trauma</li> <li>• Medication or toxin</li> <li>• Hypoxia or respiratory failure</li> <li>• Hypoglycemia</li> <li>• Metabolic abnormality / acidosis</li> <li>• Tumor</li> </ul>

### Categories of Seizures

<b>Complex = Unconscious</b>	<b>Focal = Partial, Localized</b>
<b>Simple = Conscious</b>	<b>Generalized = All Body</b>

- **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 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 Midazolam (Versed) in 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.**

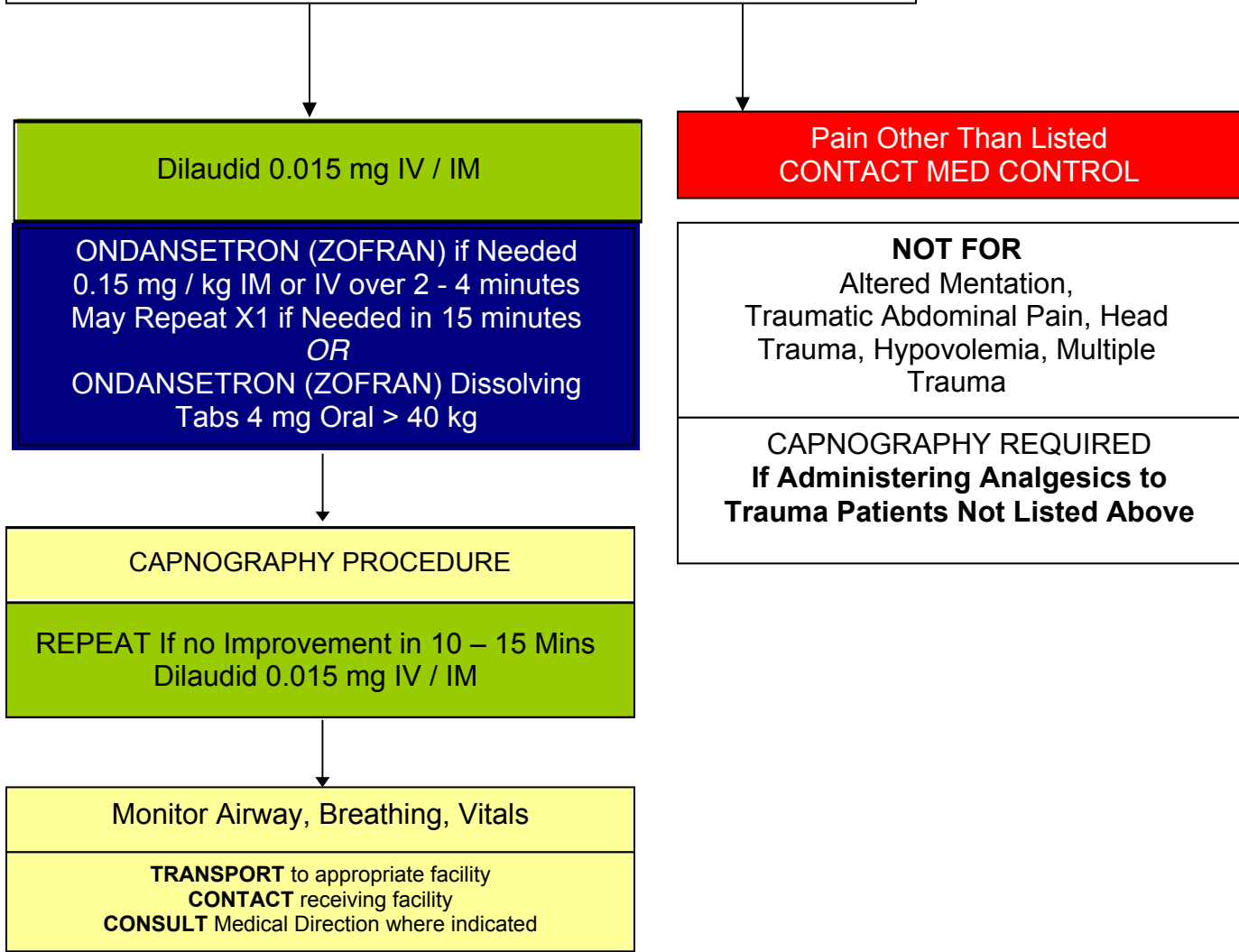
# PEDIATRIC

## SEVERE PAIN MANAGEMENT

E	EMT	E
A	AEMT	A
P	PARAMEDIC	P
M	MED CONTROL	M

**PATIENT HAS:**

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



# PEDIATRIC SEVERE PAIN

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
<ul style="list-style-type: none"> <li>• Age / onset</li> <li>• Location</li> <li>• Duration</li> <li>• Severity (0 - 10)</li> <li>• Past medical history</li> <li>• Medications</li> <li>• Drug allergies</li> </ul>	<ul style="list-style-type: none"> <li>• Severity (pain scale)</li> <li>• Quality (sharp, dull, etc.)</li> <li>• Radiation</li> <li>• Relation to movement, respiration</li> <li>• Increased with palpation of area</li> </ul>	<ul style="list-style-type: none"> <li>• Per the specific protocol</li> <li>• Musculoskeletal</li> <li>• Visceral (abdominal)</li> <li>• Cardiac</li> <li>• Pleuritic (respiratory)</li> <li>• Neurogenic</li> <li>• Renal (colic)</li> </ul>

## 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. It offers a visual description for those who don't have the verbal skills to explain how their symptoms make them feel.



To use this scale, 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

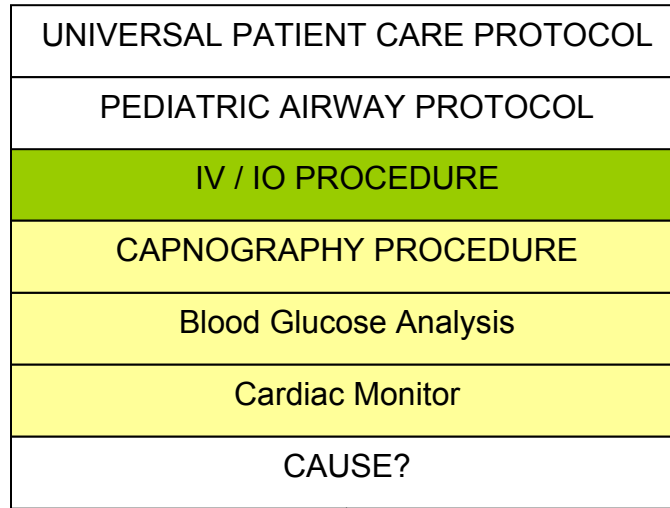
A numerical pain scale allows you to describe the intensity of your discomfort in numbers ranging from 0 to 10 (or greater, depending on the scale). Rating the intensity of sensation is one way of helping your doctor determine treatment. Numerical pain scales may include words or descriptions to better 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 Dilaudid 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 received 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 Dilaudid administration.
- NOT For Altered Mentation, Traumatic Abdominal Pain, Head Trauma, Hypovolemia and Multiple Trauma.

# PEDIATRIC

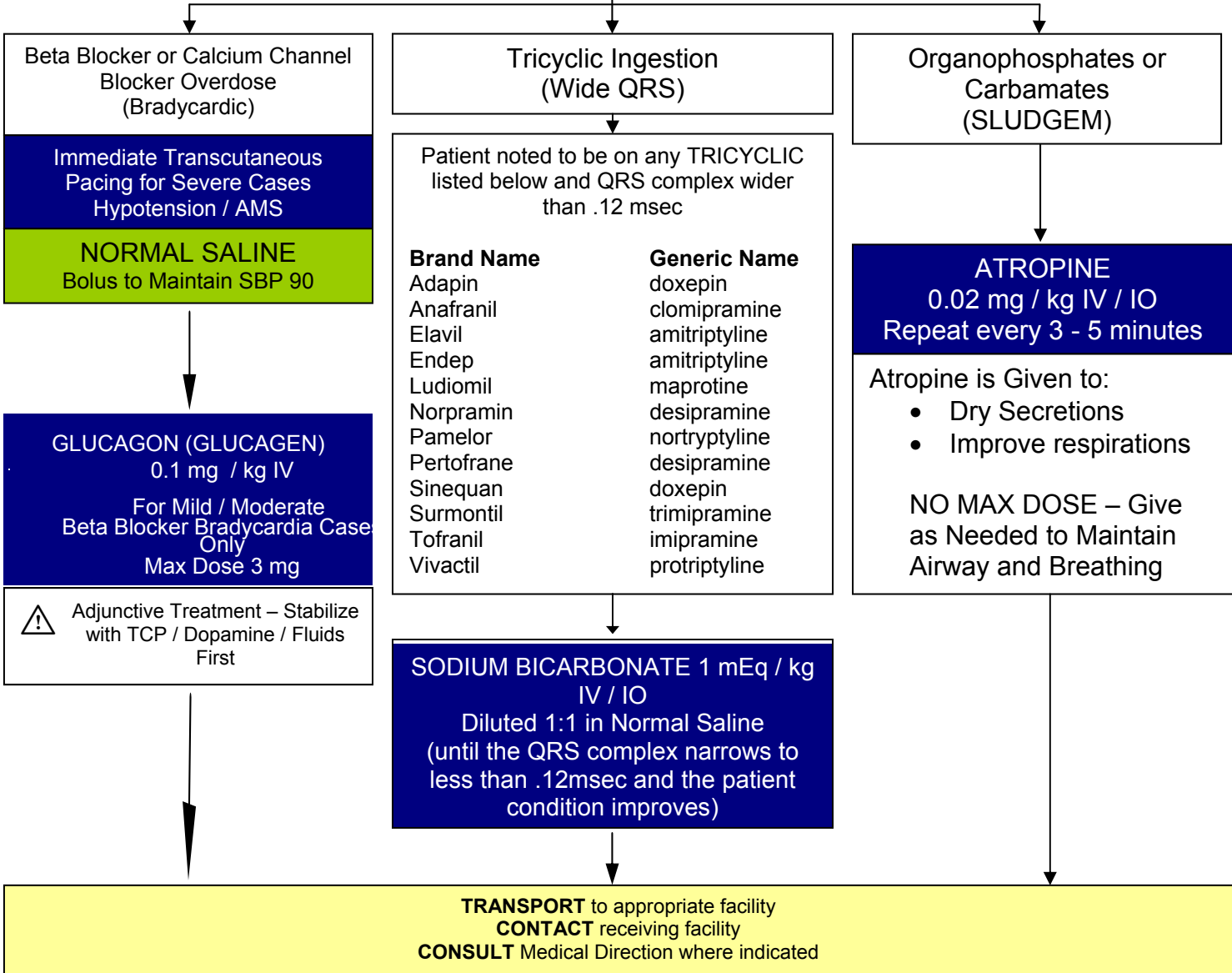
## TOXIC INGESTION / EXPOSURE / OVERDOSE



E	EMT	E
A	AEMT	A
P	PARAMEDIC	P
M	MED CONTROL	M

Hypotension  
Seizures  
Dysrhythmias  
Mental Status Changes  
Respiratory Depression

TREAT PER APPROPRIATE PROTOCOL



# PEDIATRIC

## TOXIC INGESTION / EXPOSURE / OVERDOSE

HISTORY	SIGNS AND SYMPTOMS		DIFFERENTIAL DIAGNOSIS
<ul style="list-style-type: none"> <li>Ingestion or suspected ingestion of a potentially toxic substance</li> <li>Substance ingested, route, quantity</li> <li>Time of ingestion</li> <li>Reason (suicidal, accidental, criminal)</li> <li>Available medications in home</li> <li>Past medical history, medications</li> </ul>	<ul style="list-style-type: none"> <li>Mental status changes</li> <li>Hypo / hypertension</li> <li>Decreased respiratory rate</li> <li>Tachycardia, dysrhythmias</li> <li>Seizures</li> </ul>		<ul style="list-style-type: none"> <li>Tricyclic antidepressants (TCAs)</li> <li>Acetaminophen (Tylenol)</li> <li>Depressants</li> <li>Stimulants</li> <li>Anticholinergic</li> <li>Cardiac medications</li> <li>Solvents, alcohols, Cleaning agents</li> <li>Insecticides (organophosphates)</li> <li>Respiratory depression</li> <li>Other organophosphates</li> <li>Carbamates</li> </ul>
<b>COMMON BETA BLOCKERS</b>			
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
<b>COMMON CALICUM CHANNEL BLOCKERS</b>			
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	

Summit County Poison Control Center - Akron Children's Hospital 330-543-1000

### 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.

# PEDIATRIC TRAUMA PROTOCOLS

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# PEDIATRIC TRAUMA EMERGENCIES

## The Golden Hour

### 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 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 HOUR FOR THE PATIENT BEGINS WHEN THE TRAUMA HAPPENS  
DO NOT WASTE VALUABLE TIME ON SCENE**

# PEDIATRIC

## 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:**

<p><b>Physiologic conditions</b></p> <ul style="list-style-type: none"> <li>• Glasgow Coma Scale &lt; 13;</li> <li>• Loss of consciousness &gt; 5 minutes;</li> <li>• Deterioration in level of consciousness at the scene or during transport;</li> <li>• Failure to localize to pain;</li> <li>• Evidence of poor perfusion, or evidence of respiratory distress or failure.</li> </ul>	<p><b>Anatomic conditions</b></p> <ul style="list-style-type: none"> <li>• Penetrating trauma to the head, neck, or torso;</li> <li>• Significant, penetrating trauma to extremities proximal to the knee or elbow with evidence of neurovascular compromise;</li> <li>• Injuries to the head, neck, or torso where the following physical findings are present;</li> <li>• Visible crush injury;</li> <li>• Abdominal tenderness, distention, or seatbelt sign;             <ul style="list-style-type: none"> <li>○ Pelvic fracture;</li> <li>○ Flail chest;</li> </ul> </li> <li>• Injuries to the extremities where the following physical findings are present:             <ul style="list-style-type: none"> <li>○ Amputations proximal to the wrist or ankle;</li> <li>○ Visible crush injury;</li> <li>○ Fractures of two or more proximal long bones;</li> <li>○ Evidence of neurovascular compromise.</li> </ul> </li> <li>• Signs or symptoms of spinal cord injury;</li> <li>• 2<sup>nd</sup> or 3<sup>rd</sup> Degree burns &gt; 10% total BSA, or other significant burns involving the face, feet, hands, genitalia, or airway.</li> </ul>
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### Field Trauma Triage Criteria: Mechanism of Injury (MOI) & Special Considerations

<p><b>Co-Morbid Diseases and Special Considerations:</b></p> <ul style="list-style-type: none"> <li>• Age &lt; 5 or &gt; 55</li> <li>• Cardiac disease</li> <li>• Respiratory disease</li> <li>• Diabetes</li> <li>• Immunosuppression</li> <li>• Morbid obesity</li> <li>• Pregnancy</li> <li>• Substance abuse / intoxication</li> <li>• Liver disease</li> <li>• Renal disease</li> <li>• Bleeding disorder / anticoagulation</li> </ul>	<p><b>Mechanisms of Injury (MOI)</b></p> <ul style="list-style-type: none"> <li>• High speed MVC</li> <li>• Ejection from vehicle</li> <li>• Vehicle rollover</li> <li>• Death in same passenger compartment</li> <li>• Extrication time &gt; 20 minutes</li> <li>• Falls greater than 20 feet</li> <li>• Vehicle versus bicycle / pedestrian</li> <li>• Pedestrian <b>struck</b>, thrown or run over</li> <li>• Motorcycle crash &gt; 20 mph with separation of rider from bike</li> <li>• <b>Fall from any height, including standing, with signs of traumatic brain injury</b></li> </ul>
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## 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.

### TRAUMA ALERT PROCEDURE

1. EMS Prehospital Response
2. EMS Notifies E.D. of Potential Trauma Victim(s)
3. E.D. Charge Nurse Activates "Trauma Standby"
4. Group Page Activated
5. EMS Notifies E.D. - Trauma Patient(s) Report
6. Patient Enroute to Hospital - ETA Given
7. E.D. Charge Nurse Activates "Trauma Alert"
8. Overhead Page in Hospital E.D. Physician Determines Anesthesia
9. "Trauma Alert, Room Trauma Level I or II Paged ETA Minutes
10. Trauma Attending Surgeon Paged
11. Trauma House Surgeon Arrives
12. Trauma Team Members Respond to E.D.
13. Arrival of Patient(s)
14. Team Care / Treatment

### INFANT

*Birth to age 4*

- 4 Spontaneously
- 3 To speech
- 2 To pain
- 1 No response

- 5 Coos, babbles
- 4 Irritable cries
- 3 Cries to pain
- 2 Moans, grunts
- 1 No response

- 6 Spontaneous
- 5 Localizes pain
- 4 Withdraws from pain
- 3 Flexion (decorticate)
- 2 Extension (decerebrate)
- 1 No response

\_\_\_ = TOTAL

### Glasgow Coma Scale Eye Opening

#### Best Verbal Response

#### Best Motor Response

GCS ≤ 8? Intubate!

### ADULT

*Age 4 to Adult*

- 4 Spontaneously
- 3 To command
- 2 To pain
- 1 No Response

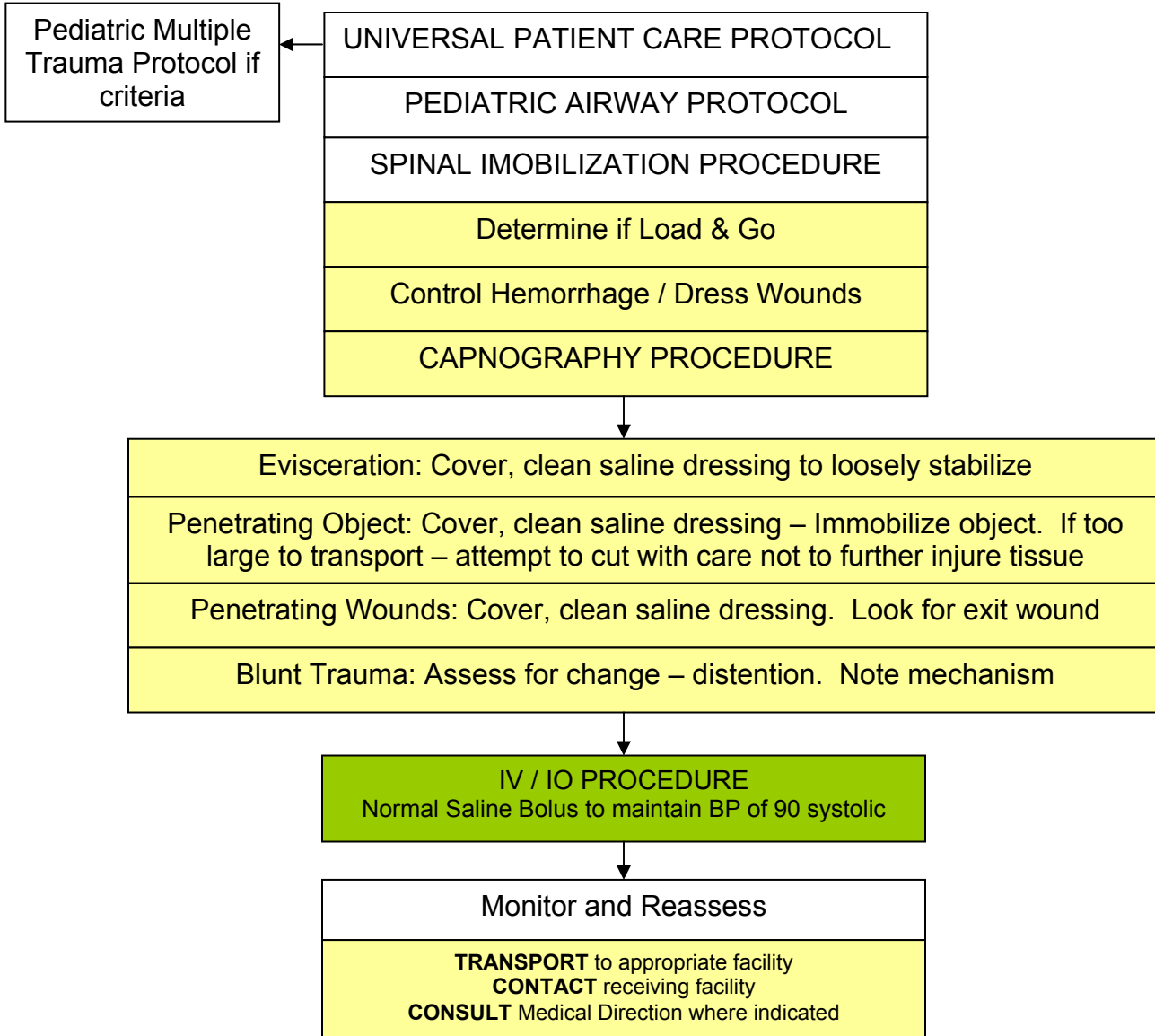
- 5 Oriented
- 4 Confused
- 3 Inappropriate words
- 2 Incomprehensible
- 1 No response

- 6 Obeys commands
- 5 Localizes pain
- 4 Withdraws from pain
- 3 Flexion (decorticate)
- 2 Extension (decerebrate)
- 1 No response

TOTAL = \_\_\_

# PEDIATRIC ABDOMINAL TRAUMA

E	EMT	E
A	AEMT	A
P	PARAMEDIC	P
M	MED CONTROL	M



# PEDIATRIC

## ABDOMINAL TRAUMA

MECHANISM	SIGNS & SYMPTOMS
<ul style="list-style-type: none"> <li>Blunt</li> </ul>	<ul style="list-style-type: none"> <li>Altered mental status</li> <li>Shock</li> <li>Distention</li> <li>Swelling</li> <li>Bulging</li> <li>Nausea and vomiting</li> </ul>
<ul style="list-style-type: none"> <li>Penetrating</li> </ul>	<ul style="list-style-type: none"> <li>Altered mental status</li> <li>Bleeding</li> <li>Tenderness</li> <li>Pain</li> <li>Distention</li> <li>Eviseration</li> <li>Discoloration</li> <li>Entrance / exit wounds</li> <li>Nausea &amp; vomiting</li> </ul>

### 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.

# PEDIATRIC BURNS

E	EMT	E
A	AEMT	A
P	PARAMEDIC	P
M	MED CONTROL	M

UNIVERSAL PATIENT CARE PROTOCOL
CONSIDER SPINAL IMOBILIZATION PROCEDURE
PEDIATRIC AIRWAY PROTOCOL
CAPNOGRAPHY PROCEDURE
If Chest, Neck, Face, Airway Involvement – Prepare for Invasive Airway Procedures – Perform Early Intubation Quick Trach
Remove rings, bracelets, and other constricting items

**Parkland Burn Formula**

**Fluid for first 24 hours (ml) = 4 x Patient's weight in kg x %BSA**

The first half of this amount is delivered within 8 hours from the burn incident, and the remaining fluid is delivered in the next 16 hours

<b>Thermal</b>
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 Normal Saline per Parkland Formula
PEDIATRIC SEVERE PAIN PROTOCOL

<b>Chemical</b>
Tetracaine (Pontocaine, Ophthalmic) 1-2 drops in effected eye every 5-10 minutes Continuous flushing with Normal Saline
Remove clothing and / or expose area
Flush area with NORMAL SALINE for 10 – 15 minutes
PEDIATRIC SEVERE PAIN PROTOCOL

INITIATE TRAUMA ALERT
TRANSPORT to appropriate facility CONTACT receiving facility CONSULT Medical Direction where indicated

# PEDIATRIC BURNS

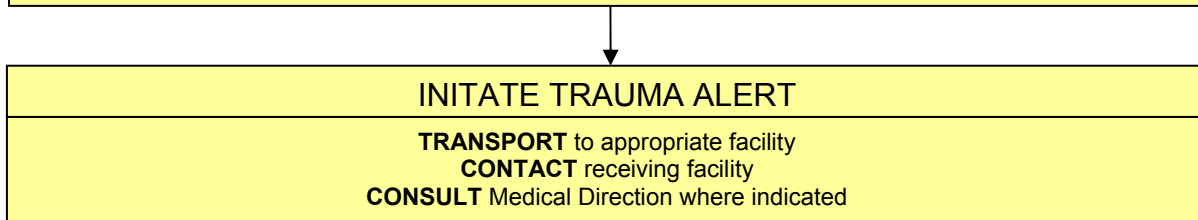
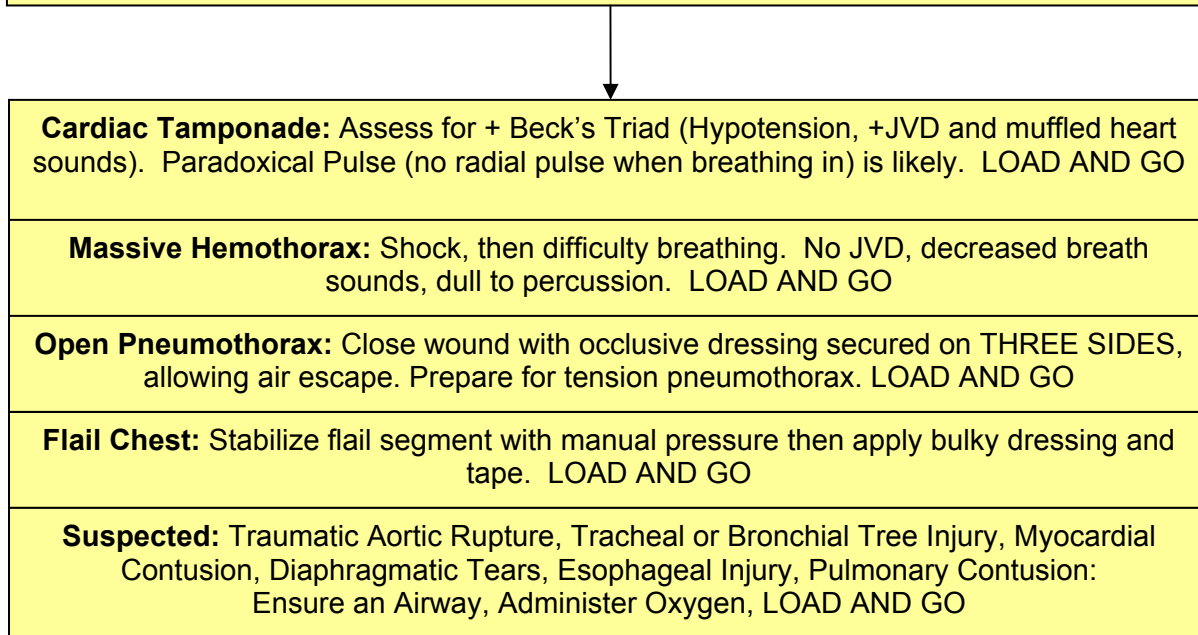
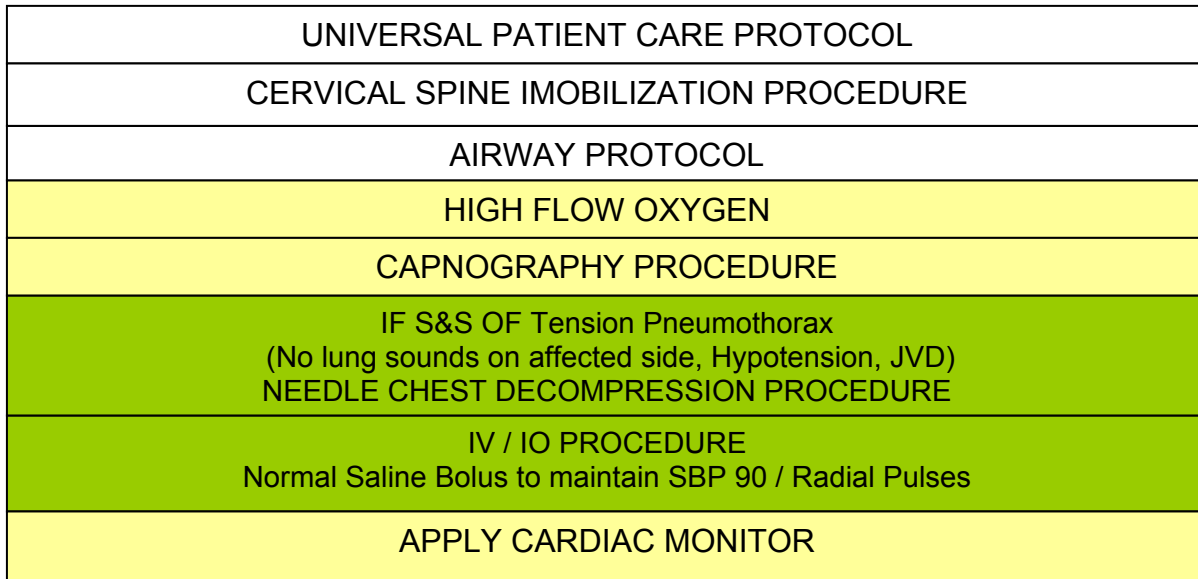
HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
<ul style="list-style-type: none"> <li>• Type of exposure (heat, gas, chemical)</li> <li>• Inhalation injury</li> <li>• Time of injury</li> <li>• Past medical history</li> <li>• Medications</li> <li>• Other trauma</li> <li>• Loss of consciousness</li> <li>• Tetanus / immunization status</li> </ul>	<ul style="list-style-type: none"> <li>• Burns, pain, swelling</li> <li>• Dizziness</li> <li>• Loss of consciousness</li> <li>• Hypotension / shock</li> <li>• Airway compromise / distress</li> <li>• Singed facial or nasal hair</li> <li>• Hoarseness / wheezing</li> </ul>	<ul style="list-style-type: none"> <li>• Superficial (1°) red and painful</li> <li>• Partial thickness (2°) superficial partial thickness, deep partial thickness, blistering</li> <li>• Full thickness (3°) painless and charred or leathery skin</li> <li>• Chemical</li> <li>• Thermal</li> <li>• Electrical</li> <li>• Radiation</li> </ul>

## KEY POINTS

- Exam: Mental Status, HEENT, Neck, Heart, Lungs, Abdomen, Extremities, Back, Neuro
  - **Early intubation is required in significant inhalation injuries.**
  - 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.
  - Administer IV Fluids per the Parkland Burn Formula: **Fluid for first 24 hours (ml) = 4 x Patient's weight in kg x %BSA**
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.
  6. Handle patients gently to avoid further damage of the patient's skin.
  7. 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.
  8. Look for signs of dehydration and shock.
  9. Initiate early intubation for symptomatic patients with inhalation burns.
  10. Patients with major burns should be transported to the Akron Children's Hospital Burn Center.
  11. Patients with unstable airway or who are rapidly deteriorating should be transported to the closest appropriate facility.
  12. Patients with large surface burns lose the ability to regulate their body temperature. Avoid heat loss by covering the patient.

# PEDIATRIC CHEST TRAUMA

E	EMT	E
A	AEMT	A
P	PARAMEDIC	P
M	MED CONTROL	M



# PEDIATRIC CHEST TRAUMA

SIGNS AND SYMPTOMS			
SIMPLE PNEUMOTHORAX	OPEN PNEUMOTHORAX	TENSION PNEUMOTHORAX	HEMOTHORAX
<ul style="list-style-type: none"> <li>• Shortness of breath</li> <li>• Dyspnea</li> <li>• Tachypnea</li> <li>• Cyanosis</li> <li>• Chest pain</li> <li>• Absent diminished Lung sounds on the affected side</li> </ul>	<ul style="list-style-type: none"> <li>• Shortness of breath</li> <li>• Dyspnea</li> <li>• Cyanosis</li> <li>• Sucking chest wound</li> <li>• Shock</li> <li>• Absent / diminished Lung sounds on affected side</li> </ul>	<ul style="list-style-type: none"> <li>• Shortness of breath</li> <li>• Cyanosis</li> <li>• Shock</li> <li>• Absent / diminished Lung sounds</li> <li>• Tracheal deviation</li> <li>• Hypotension</li> <li>• JVD</li> <li>• Tachycardia</li> <li>• Dyspnea (late sign)</li> </ul>	<ul style="list-style-type: none"> <li>• Shortness of breath</li> <li>• Dyspnea</li> <li>• Cyanosis</li> <li>• Dullness to Percussion sounds</li> <li>• Flat neck veins</li> <li>• Hypotension</li> <li>• Shock</li> <li>• Absent / diminished breath sounds</li> <li>• Tachycardia</li> </ul>

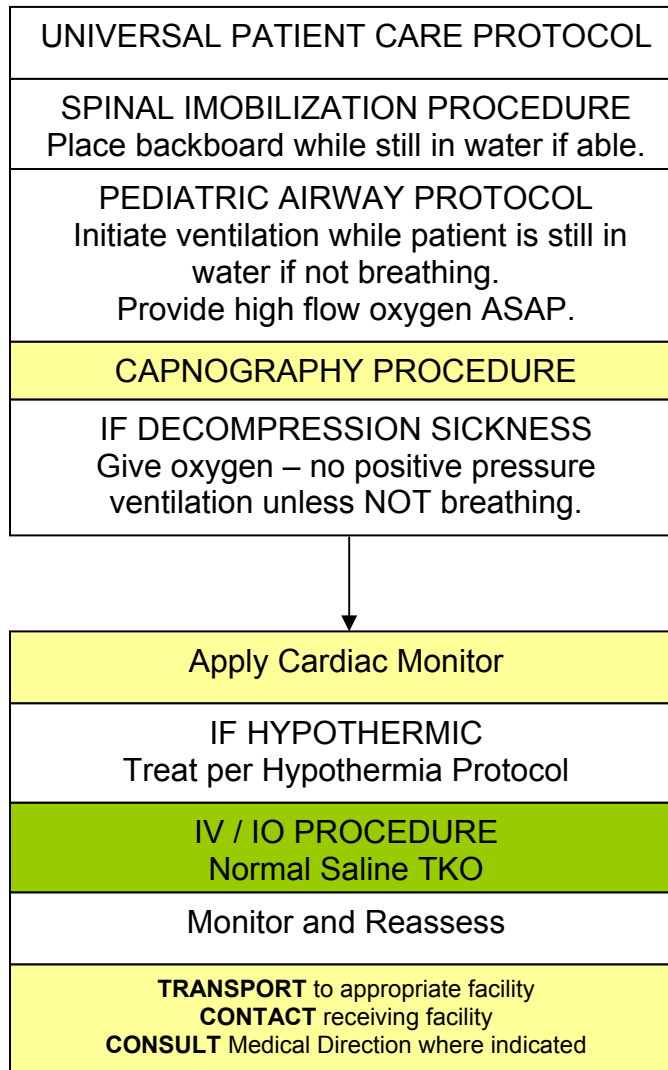
CARDIAC TAMPONADE	TRAUMATIC ASPHYXIA	FLAIL CHEST
<ul style="list-style-type: none"> <li>• Hypotension</li> <li>• Decreasing pulse pressure</li> <li>• Elevated neck veins</li> <li>• Muffled heart tones</li> <li>• Bruising over the sternum</li> <li>• Tachycardia</li> </ul>	<ul style="list-style-type: none"> <li>• Bloodshot, bulging eyes</li> <li>• Blue, bulging tongue</li> <li>• JVD</li> <li>• Cyanotic upper body</li> </ul>	<ul style="list-style-type: none"> <li>• Paradoxical chest wall movement</li> <li>• Asymmetric chest movement Upon inspiration</li> <li>• Dyspnea</li> <li>• Unstable chest segment</li> <li>• Significant chest wall pain</li> </ul>

KEY POINTS				
<p>Thoracic injuries have been called the deadly dozen. The first six are obvious at the primary assessment.</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; vertical-align: top;"> <ol style="list-style-type: none"> <li>1. Airway obstruction</li> <li>2. Flail chest</li> <li>3. Cardiac tamponade</li> </ol> </td> <td style="width: 50%; vertical-align: top;"> <ol style="list-style-type: none"> <li>4. Massive hemothorax</li> <li>5. Open pneumothorax</li> <li>6. Tension pneumothorax</li> </ol> </td> </tr> </table> <p>The second six injuries may be more subtle and not easily found in the field:</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; vertical-align: top;"> <ol style="list-style-type: none"> <li>7. Traumatic aortic rupture</li> <li>8. Esophageal injury</li> <li>9. Myocardial contusion</li> </ol> </td> <td style="width: 50%; vertical-align: top;"> <ol style="list-style-type: none"> <li>10. Diaphragmatic tears</li> <li>11. Tracheal / bronchial tree injury</li> <li>12. Pulmonary contusion</li> </ol> </td> </tr> </table> <ul style="list-style-type: none"> <li>• A <b>sucking chest wound</b> 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.</li> <li>• A <b>flail chest</b> 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.</li> <li>• A <b>penetrating object</b> 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.</li> <li>• A <b>tension pneumothorax</b> is life threatening, look for <i>HYPOTENSION</i>, 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 2<sup>nd</sup> and 3<sup>rd</sup> ribs, midclavicular placing the catheter over the 3<sup>rd</sup> rib. Once the catheter is placed, watch closely for reocclusion. Repeat if needed to prevent reocclusion.</li> </ul>	<ol style="list-style-type: none"> <li>1. Airway obstruction</li> <li>2. Flail chest</li> <li>3. Cardiac tamponade</li> </ol>	<ol style="list-style-type: none"> <li>4. Massive hemothorax</li> <li>5. Open pneumothorax</li> <li>6. Tension pneumothorax</li> </ol>	<ol style="list-style-type: none"> <li>7. Traumatic aortic rupture</li> <li>8. Esophageal injury</li> <li>9. Myocardial contusion</li> </ol>	<ol style="list-style-type: none"> <li>10. Diaphragmatic tears</li> <li>11. Tracheal / bronchial tree injury</li> <li>12. Pulmonary contusion</li> </ol>
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# PEDIATRIC

## DROWNING / NEAR DROWNING

E	EMT	E
A	AEMT	A
P	PARAMEDIC	P
M	MED CONTROL	M



**PEDIATRIC**

**DROWNING / NEAR DROWNING**

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
<ul style="list-style-type: none"> <li>• Submersion in water regardless of depth</li> <li>• Possible trauma i.e.; fall, diving board</li> <li>• Duration of immersion</li> <li>• Temperature of water</li> <li>• Salt vs. fresh water</li> </ul>	<ul style="list-style-type: none"> <li>• Period of unconsciousness</li> <li>• Unresponsive</li> <li>• Mental status changes</li> <li>• Decreased or absent vital signs</li> <li>• Vomiting</li> <li>• Coughing</li> </ul>	<ul style="list-style-type: none"> <li>• Trauma</li> <li>• Pre-existing medical problem</li> <li>• Barotrauma (diving)</li> <li>• Decompression sickness</li> </ul>

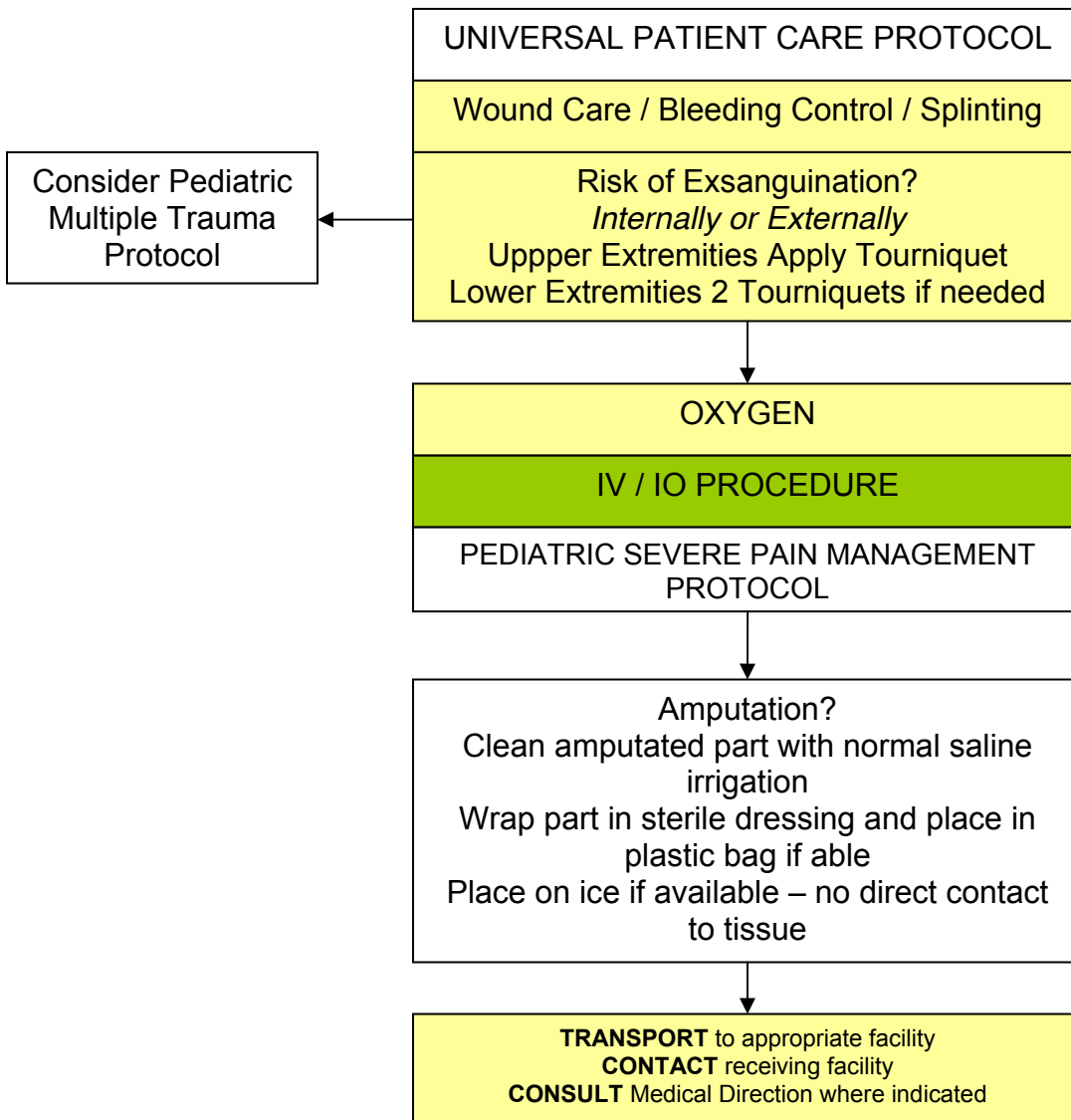
**KEY POINTS**

- 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.

# PEDIATRIC

## EXTREMITY TRAUMA / AMPUTATION

E	EMT	E
A	AEMT	A
P	PARAMEDIC	P
M	MED CONTROL	M



# PEDIATRIC

## EXTREMITY TRAUMA / AMPUTATION

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
<ul style="list-style-type: none"> <li>Type of injury</li> <li>Mechanism: crush / penetrating / amputation</li> <li>Time of injury</li> <li>Open vs. closed wound / fracture</li> <li>Wound contamination</li> <li>Medical history</li> <li>Medications</li> </ul>	<ul style="list-style-type: none"> <li>Pain, swelling</li> <li>Deformity</li> <li>Altered sensation / motor function</li> <li>Diminished pulse / capillary refill</li> <li>Decreased extremity temperature</li> </ul>	<ul style="list-style-type: none"> <li>Abrasion</li> <li>Contusion</li> <li>Laceration</li> <li>Sprain</li> <li>Dislocation</li> <li>Fracture</li> <li>Amputation</li> </ul>

### 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

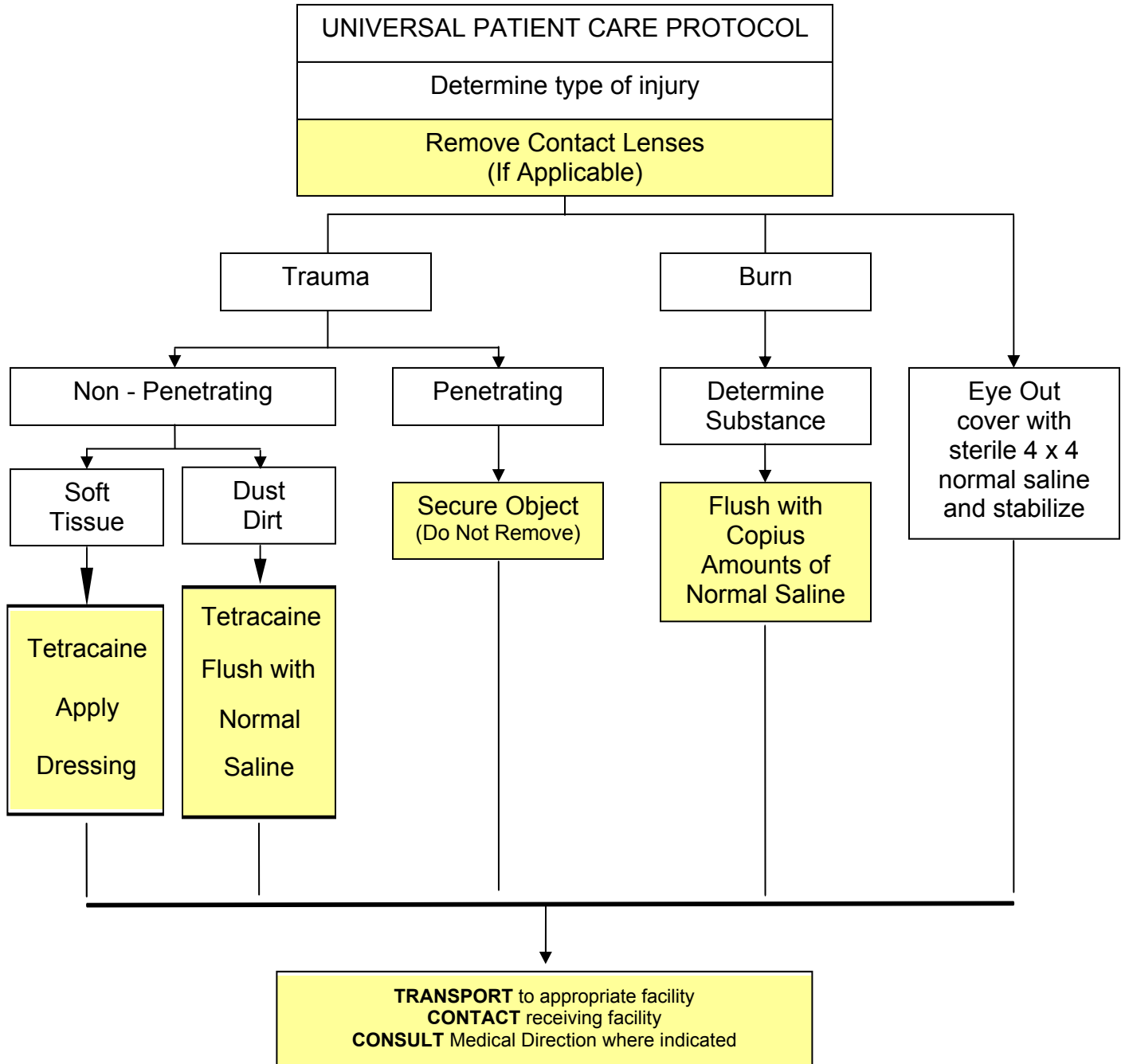
- In cases of major trauma, the backboard can work as a whole body splint.
- DO NOT take the time to splint injured extremities in major trauma patients unless it does not delay the scene time or prevents you from performing more pertinent patient care.
- Splint the extremity if the patient has signs 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.

# PEDIATRIC EYE INJURY

E	EMT	E
A	AEMT	A
P	PARAMEDIC	P
M	MED CONTROL	M



# PEDIATRIC

## EYE INJURY

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
<ul style="list-style-type: none"> <li>Trauma of any type that results in injury to one or both eyes.</li> </ul>	<ul style="list-style-type: none"> <li>Irritation to eye</li> <li>Visual disturbances</li> <li>Obvious penetrating injury</li> <li>Burn (chemical, thermal)</li> <li>Loss of vision</li> <li>Dizziness</li> <li>Loss of consciousness</li> <li>Nausea</li> </ul>	<ul style="list-style-type: none"> <li>Hypertension</li> <li>Contact lens problem</li> </ul>

### 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 HEAD TRAUMA

E	EMT	E
A	AEMT	A
P	PARAMEDIC	P
M	MED CONTROL	M

UNIVERSAL PATIENT CARE PROTOCOL Oxygen for all head trauma
SPINAL IMOBILIZATION PROCEDURE
Control Bleeding, Apply Dressing
Determine and <b>Trend</b> 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 90

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

PEDIATRIC AIRWAY PROTOCOL
Do <b>NOT</b> Allow Patient to Become Hypoxic During ANY Airway Management Maintain Spo2 > 93% At All Times! Apply Capnography If Advanced Airway Used
Herniation = Unilateral or Bilateral Dilatation of Pupils, Posturing
If <b>Herniation</b> Ventilate To Maintain <b>Co2 30 - 35</b> Or 14 - 16 Breaths / Min
If <b>Non - Herniation</b> Ventilate To Maintain <b>Co2 35 - 40</b> Or 10 - 12 Breaths / Min

IV / IO PROCEDURE Normal Saline Bolus to maintain SBP 90
Do NOT allow patient to become hypotensive

Monitor and Reassess
INITIATE TRAUMA ALERT
TRANSPORT to appropriate facility CONTACT receiving facility CONSULT Medical Direction where indicated

# PEDIATRIC

## HEAD TRAUMA

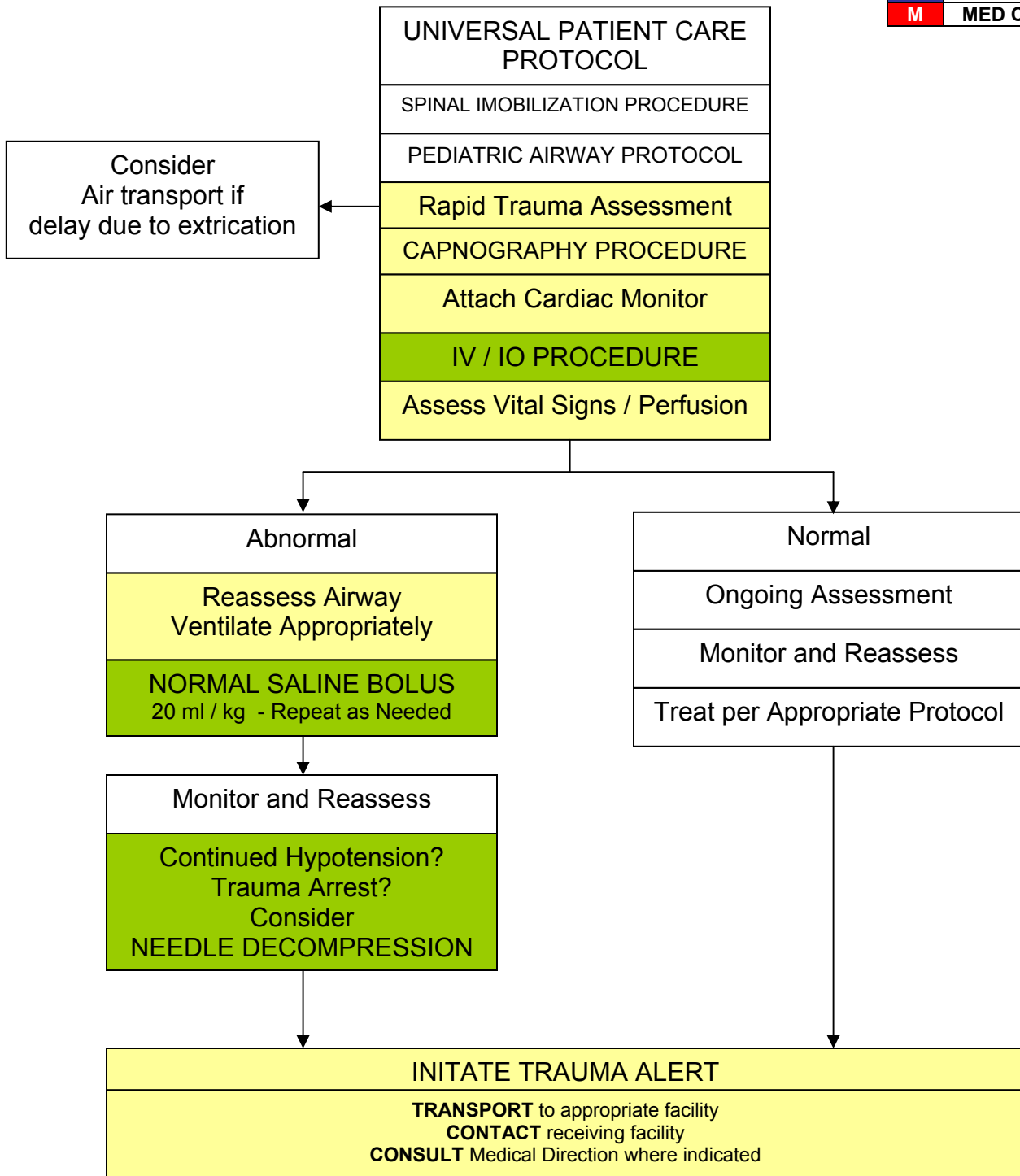
HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
<ul style="list-style-type: none"> <li>• Time of injury</li> <li>• Mechanism (blunt vs. penetrating)</li> <li>• Loss of consciousness</li> <li>• Bleeding</li> <li>• Past medical history</li> <li>• Medications</li> <li>• Evidence for multi-trauma</li> </ul>	<ul style="list-style-type: none"> <li>• Pain, swelling, bleeding</li> <li>• Altered mental status</li> <li>• Unconscious</li> <li>• Respiratory distress / failure</li> <li>• Vomiting</li> <li>• Major traumatic mechanism of injury</li> <li>• Seizure</li> </ul>	<ul style="list-style-type: none"> <li>• Skull fracture</li> <li>• Brain injury (concussion, contusion, hemorrhage or laceration)</li> <li>• Epidural hematoma</li> <li>• Subdural hematoma</li> <li>• Subarachnoid hemorrhage</li> <li>• Spinal injury</li> <li>• Abuse</li> </ul>

### 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 MULTIPLE TRAUMA

E	EMT	E
A	AEMT	A
P	PARAMEDIC	P
M	MED CONTROL	M



# PEDIATRIC

## MULTIPLE TRAUMA

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
<ul style="list-style-type: none"> <li>Time and mechanism of injury</li> <li>Damage to structure or vehicle</li> <li>Location in structure or vehicle</li> <li>Others injured or dead</li> <li>Speed and details of MVC</li> <li>Restraints / protective equipment</li> <li>Car seat</li> <li>Helmet</li> <li>Pads</li> <li>Ejection</li> <li>Past medical history</li> <li>Medications</li> </ul>	<ul style="list-style-type: none"> <li>Pain, swelling</li> <li>Deformity, lesions, bleeding</li> <li>Altered mental status</li> <li>Unconscious</li> <li>Hypotension or shock</li> <li>Arrest</li> </ul>	<p><b>Life Threatening:</b></p> <ul style="list-style-type: none"> <li>Chest Tension pneumothorax</li> <li>Flail chest</li> <li>Pericardial tamponade</li> <li>Open chest wound</li> <li>Hemothorax</li> <li>Intra-abdominal bleeding</li> <li>Pelvis / femur fracture</li> <li>Spine fracture / cord injury</li> <li>Head injury (see Head trauma)</li> <li>Extremity fracture / dislocation</li> <li>HEENT (airway obstruction)</li> <li>Hypothermia</li> </ul>

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

<p><b>Physiologic conditions</b></p> <ul style="list-style-type: none"> <li>Glasgow Coma Scale &lt; 13;</li> <li>Loss of consciousness &gt; 5 minutes;</li> <li>Deterioration in level of consciousness at the scene or during transport;</li> <li>Failure to localize to pain;</li> <li>Evidence of poor perfusion, or evidence of respiratory distress or failure.</li> </ul>	<p><b>Anatomic conditions</b></p> <ul style="list-style-type: none"> <li>Penetrating trauma to the head, neck, or torso;</li> <li>Significant, penetrating trauma to extremities proximal to the knee or elbow with evidence of neurovascular compromise;</li> <li>Injuries to the head, neck, or torso where the following physical findings are present;</li> <li>Visible crush injury;</li> <li>Abdominal tenderness, distention, or seatbelt sign;                             <ul style="list-style-type: none"> <li>Pelvic fracture;</li> <li>Flail chest;</li> </ul> </li> <li>Injuries to the extremities where the following physical findings are present:                             <ul style="list-style-type: none"> <li>Amputations proximal to the wrist or ankle;</li> <li>Visible crush injury;</li> <li>Fractures of two or more proximal long bones;</li> <li>Evidence of neurovascular compromise.</li> </ul> </li> <li>Signs or symptoms of spinal cord injury;</li> <li>2<sup>nd</sup> or 3<sup>rd</sup> Degree burns &gt; 10% total BSA, or other significant burns involving the face, feet, hands, genitalia, or airway.</li> </ul>
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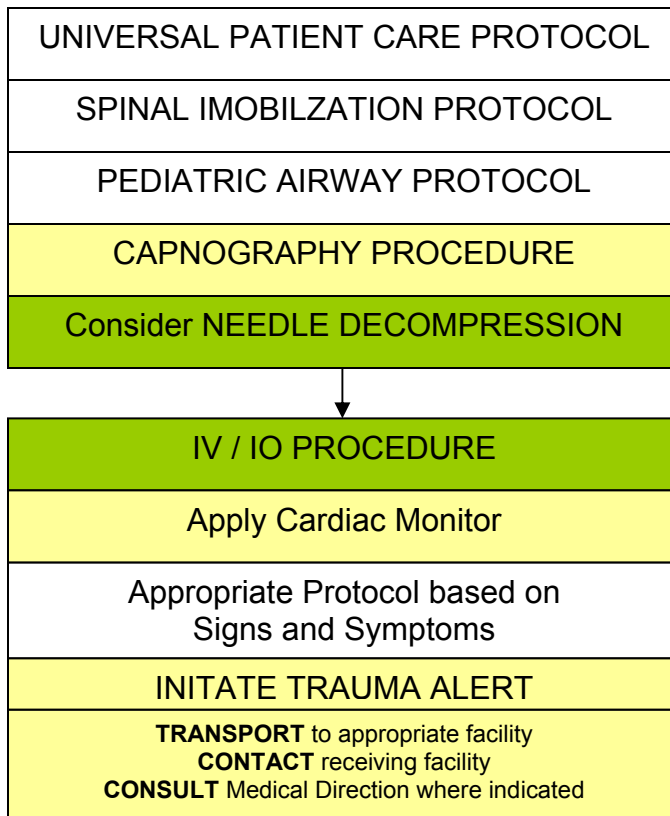
### KEY POINTS

<ul style="list-style-type: none"> <li>Exam: Mental Status, Skin, HEENT, Heart, Lung, Abdomen, Extremities, Back, Neuro</li> <li>Mechanism is the most reliable indicator of serious injury. Examine all restraints / protective equipment for damage.</li> <li>In prolonged extrications or serious trauma consider air transportation for transport times and the ability to give blood.</li> <li>Do not overlook the possibility for child abuse.</li> <li>A trauma victim is considered to be a pediatric patient if they are 16 years old or younger.</li> <li>Major trauma patients are to be transported to the closest pediatric trauma center.</li> <li>Contact the receiving hospital for all major trauma or critical patients.</li> <li>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.</li> <li>Cover open wounds, burns, eviscerations.</li> <li>With the exception of airway control, initiate ALS enroute when transporting major trauma patients.</li> <li>If unable to access patient airway and ventilate, then transport to the closest facility for airway stabilization.</li> <li>The on scene time for major trauma patients should not exceed 10 minutes without documented, acceptable reason for the delay.</li> <li>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.</li> <li>All major trauma patients should receive oxygen administration, an IV(s), and cardiac monitoring.</li> <li>Provide a documented reason if an intervention could not be performed.</li> <li>Pediatric Trauma Centers include MetroHealth Medical Center and Rainbow, Babies, and Children's Hospital, and Akron Childrens.</li> </ul>
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# PEDIATRIC TRAUMA ARREST

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
<ul style="list-style-type: none"> <li>• Time of injury</li> <li>• Mechanism: blunt / penetrating</li> <li>• Loss of consciousness</li> <li>• Bleeding</li> <li>• Medications</li> <li>• Evidence of multi-trauma</li> </ul>	<ul style="list-style-type: none"> <li>• Excessive bleeding</li> <li>• Unresponsive; not breathing</li> <li>• Cardiac arrest</li> <li>• Significant mechanism of injury</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Obvious DOA</b></li> <li>• <b>Death</b></li> </ul>

E	EMT	E
A	AEMT	A
P	PARAMEDIC	P
M	MED CONTROL	M



Consider  
DOA / Termination of  
Efforts

KEY POINTS
<ul style="list-style-type: none"> <li>• Immediately transport traumatic cardiac arrest patients.</li> <li>• With the exception of airway management, traumatic cardiac arrests are “load and go” situations.</li> <li>• 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.</li> <li>• 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 minute after arrival of the ambulance on the scene.</li> </ul>

**PEDIATRIC ASSESSMENT CHARTS**

**PEDIATRIC**

**GLASCOW COMA SCALE**

<b>EYE OPENING</b>	Spontaneous	Spontaneous	4
	To voice	To voice	3
	To pain	To pain	2
	None	None	1
<b>VERBAL RESPONSE</b>	Oriented	Coos, babbles	5
	Confused	Irritable cry, inconsolable	4
	Inappropriate	Cries to pain,	3
	Garbled speech	Moans to pain	2
	None	None	1
<b>MOTOR RESPONSE</b>	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 ASSESSMENT CHARTS**

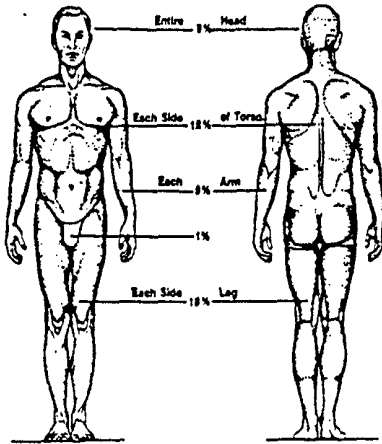
**PEDIATRIC**

**NORMAL VITAL SIGNS**

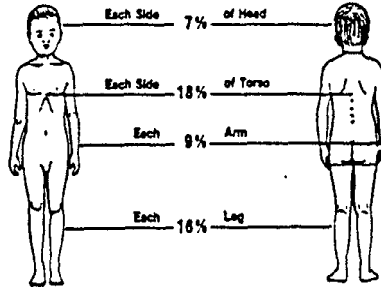
<b>AGE</b>	<b>HEART RATE</b>	<b>RESPIRATIONS</b>	<b>SYSTOLIC BLOOD PRESSURE</b>
Preterm, 1 kg	120-160	30-60	36-58
Preterm 1 kg	120-160	30-60	42-66
Preterm 2 kg	120-160	30-60	50-72
Newborn	126-160	30-60	60-70
Up to 1 yo	100-140	30-60	70-80
1-3 yo	100-140	20-40	76-90
4-6 yo	80-120	20-30	80-100
7-9 yo	80-120	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

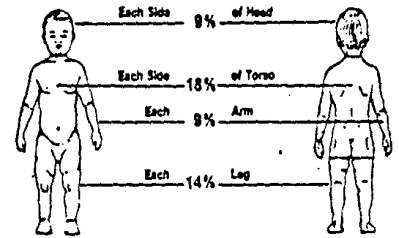
# RULE OF NINES



Percentage of Adult Body Surface



Percentage of Child Body Surface



Percentage of Infant Body Surface

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 less than 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

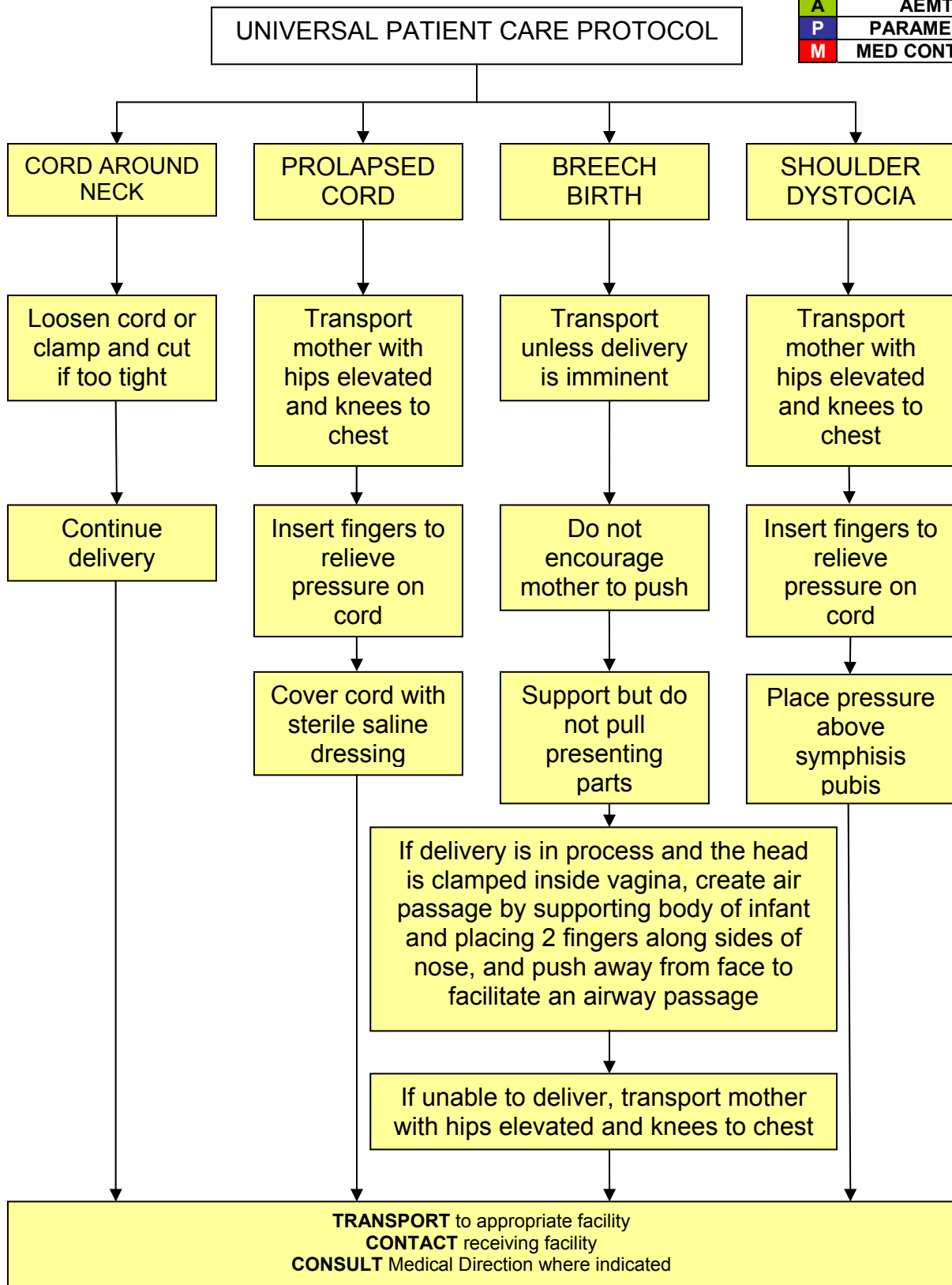


# OBSTETRICS PROTOCOLS

Abnormal Birth Emergencies .....	12-2
Obstetrical Emergencies .....	12-4
Uncomplicated / Imminent Delivery.....	12-6

# ABNORMAL BIRTH EMERGENCIES

E	EMT	E
A	AEMT	A
P	PARAMEDIC	P
M	MED CONTROL	M



# ABNORMAL BIRTH EMERGENCIES

CONTACT MEDICAL DIRECTION IMMEDIATELY WHEN ANY ABNORMAL BIRTH PRESENTATION IS DISCOVERED

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
<ul style="list-style-type: none"> <li>• Past medical history</li> <li>• Hypertension meds</li> <li>• Prenatal care</li> <li>• Prior pregnancies / births</li> <li>• Gravida / para</li> <li>• Ultrasound findings in prenatal care</li> </ul>	<ul style="list-style-type: none"> <li>• Frank breech (buttocks presents first)</li> <li>• Footling breech (one foot or both feet presenting)</li> <li>• Transverse lie (fetus is on his / her side with possible arm or leg presenting)</li> <li>• Face first presentation</li> <li>• Prolapsed cord (umbilical cord presents first)</li> </ul>	<ul style="list-style-type: none"> <li>• Miscarriage</li> <li>• Stillbirth</li> </ul>

## 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:

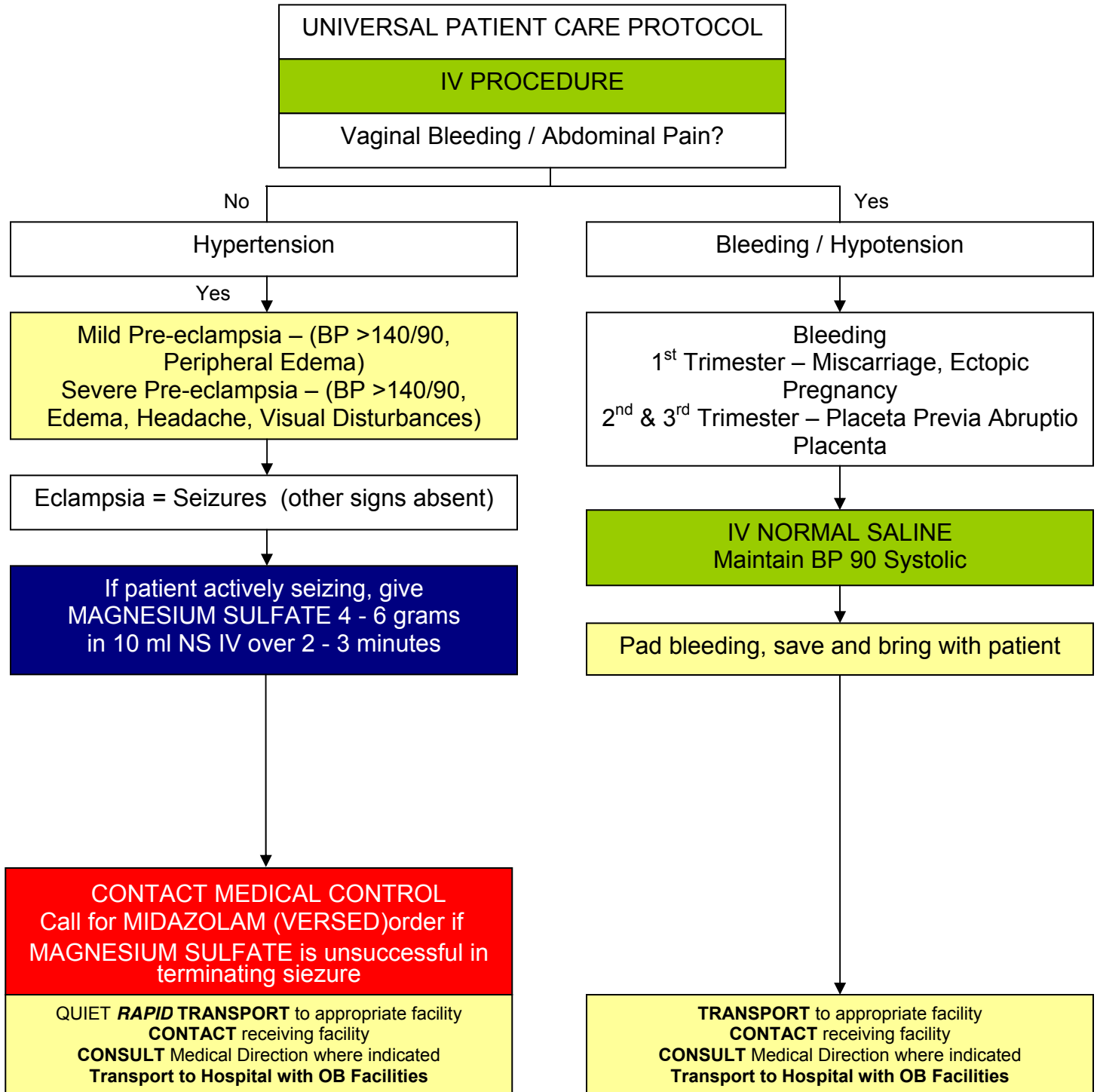
- When the umbilical cord passes through the vagina and is exposed, the EMT should check cord for a pulse.
- The patient should be transported with hips elevated or in the knee chest position and a moist dressing around cord.
- If umbilical cord is seen or felt in the vagina, insert two fingers to elevate 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 symphysis pubis or sacrum of the mother.
- Occurs in approximately 1% of births.

# OBSTETRICAL EMERGENCIES

E	EMT	E
A	AEMT	A
P	PARAMEDIC	P
M	MED CONTROL	M



# OBSTETRICAL EMERGENCIES

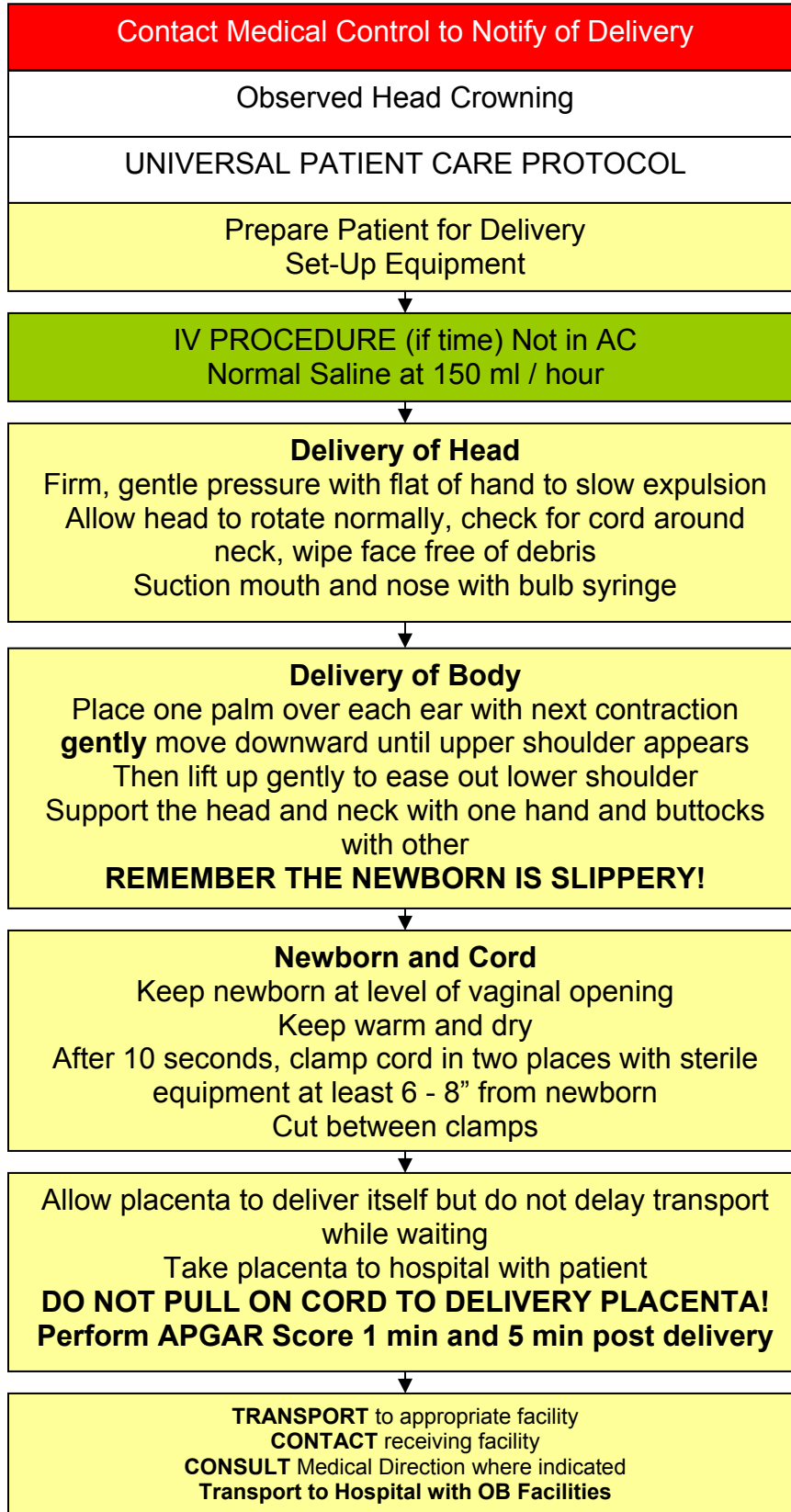
HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
<ul style="list-style-type: none"> <li>• Past medical history</li> <li>• Hypertension meds</li> <li>• Prenatal care</li> <li>• Prior pregnancies / births</li> <li>• Gravida (pregnancies) / para (live births)</li> </ul>	<ul style="list-style-type: none"> <li>• Vaginal bleeding</li> <li>• Abdominal pain</li> <li>• Seizures</li> <li>• Hypertension</li> <li>• Severe headache</li> <li>• Visual changes</li> <li>• Edema of hands and face</li> </ul>	<ul style="list-style-type: none"> <li>• Pre-eclampsia / eclampsia</li> <li>• Placenta previa</li> <li>• Placenta abruptio</li> <li>• Spontaneous abortion</li> </ul>

## 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

E	EMT	E
A	AEMT	A
P	PARAMEDIC	P
M	MED CONTROL	M



# UNCOMPLICATED DELIVERY

**CONTACT MEDICAL DIRECTION IMMEDIATELY WHEN DELIVERY IS IMMINENT**

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
<ul style="list-style-type: none"> <li>• Due date</li> <li>• Time contractions started / how often</li> <li>• Rupture of membranes</li> <li>• Time / amount of any vaginal bleeding</li> <li>• Sensation of fetal activity</li> <li>• Past medical and delivery history</li> <li>• Medications</li> </ul>	<ul style="list-style-type: none"> <li>• Spasmodic pain</li> <li>• Vaginal discharge or bleeding</li> <li>• Crowning or urge to push</li> <li>• Meconium</li> <li>• Left lateral position</li> <li>• Inspect perineum (No digital vaginal exam)</li> </ul>	<ul style="list-style-type: none"> <li>• Abnormal presentation</li> <li>• Buttock</li> <li>• Foot</li> <li>• Hand</li> <li>• Prolapsed cord</li> <li>• Placenta previa</li> <li>• Abruptio placenta</li> </ul>

## APGAR SCORING

SIGN	0	1	2
<b>COLOR</b>	Blue / Pale	Pink Body, Blue Extremities	Completely Pink
<b>HEART RATE</b>	Absent	Below 100	Above 100
<b>IRRITABILITY (Response to Stimulation)</b>	No Response	Grimace	Cries
<b>MUSCLE TONE</b>	Limp	Flexion of Extremities	Active Motion
<b>RESPIRATORY EFFORT</b>	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.



# APPENDIX #1 : MEDICATIONS

Pharmacology Review .....	13-2
Pregnancy Classes .....	13-4
Adenosine (Adenocard).....	13-5
Albuterol (Proventil / Ventolin).....	13-6
Amiodarone (Cordarone).....	13-7
Aspirin.....	13-8
Atropine Sulfate.....	13-9
Captopril (Capoten).....	13-10
Dextrose 10% (D10).....	13-11
Dextrose 25% (D25).....	13-12
Dextrose 50% (D50).....	13-13
Diphenhydramine (Benadryl).....	13-14
DuoDote (Atropine and Pralidoxime) and Valium NERVE AGENT KIT.....	13-15
Epinephrine (Adrenalin).....	13-16
Fentanyl.....	13-17
Glucagon (Glucagen).....	13-18
Haloperidol (Haldol).....	13-19
Heparin.....	13-20
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Hydroxocobalamin (Cyanokit).....	13-22
Ipratropium (Atrovent).....	13-23
Ketamine.....	13-24 - 13-25
Ketorolac (Toradol).....	13-26
Labetalol (Trandate).....	13-27
Lidocaine (Xylocaine).....	13-28
Magnesium Sulfate.....	13-29
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Midazolam (Versed).....	13-31-13-32
Naloxone (Narcan).....	13-33
Nitroglycerine (Nitro-Stat).....	13-34
Ondansetron (Zofran).....	13-35
Oral Glucose (InstanttGlucose).....	13-36
Oxygen (O2).....	13-37
Sodium Bicarbonate.....	13-38
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Ticagrelor (Brilinta).....	13-40
Tranexamic Acid.....	13-41
Pediatric Drug Administration Charts.....	13-42 thru 13-46



# **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
  - Used with specific medications only (Midazolam (Versed), Naloxone (Narcan), or Glucagon (Glucagen))
10. Intraosseous (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 (Intraosseous)
  - 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

**PREGNANCY 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 Category - C

**P**    **PARAMEDIC**    **P**

<b>ACTIONS</b>	<ol style="list-style-type: none"> <li>1. Slows conduction time and can interrupt re-entrant pathways through the AV node</li> <li>2. Slows the sinus rate</li> </ol>
<b>INDICATIONS</b>	<ol style="list-style-type: none"> <li>1. Supra ventricular tachycardia (SVT)</li> </ol>
<b>CONTRAINDICATIONS</b>	<ol style="list-style-type: none"> <li>1. <b>Atrial fibrillation</b></li> <li>2. Atrial flutter</li> <li>3. Ventricular tachycardia</li> <li>4. Heart blocks</li> <li>5. Known WPW</li> </ol>
<b>PRECAUTIONS</b>	Inform the patient of likely side effects prior to medication administration
<b>SIDE EFFECTS</b>	<ol style="list-style-type: none"> <li>1. Facial flushing</li> <li>2. Shortness of breath / dyspnea</li> <li>3. Chest discomfort</li> <li>4. Brief period of sinus arrest</li> <li>5. Headache</li> <li>6. Dizziness</li> <li>7. Hypotension</li> </ol>
<b>SUPPLIED</b>	6 mg / 2ml vials
<b>ADULT DOSAGE</b>	<p><b>Initial Dose:</b> 6 mg rapid IV PUSH (over 1-3 sec.) immediately followed with a 20 ml normal saline flush</p> <p><b>Repeat Dose:</b> (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. May repeat 12 mg dose X1 if no response</p>
<b>PEDIATRIC DOSAGE</b>	<p><b>Initial Dose:</b> 0.1 mg / kg rapid IV PUSH followed with a 10 ml normal saline flush (Max single dose 6 mg)</p> <p><b>Repeat Dose:</b> 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)</p> <p><b>See <u>PEDIATRIC DRUG ADMINISTRATION CHART</u> for weight based administration</b></p>
<b>KEY POINTS</b>	<ul style="list-style-type: none"> <li>• Adenosine has a short half-life, and should be administered rapidly followed by a rapid IV flush</li> <li>• Reassess after each medication administration and refer to the appropriate protocol and treat accordingly</li> <li>• Perform a 12 Lead EKG prior to the administration of adenosine and after the rhythm converts</li> </ul>
<b>PROTOCOL USE</b>	<ul style="list-style-type: none"> <li>• <u>Adult Narrow Complex Tachycardia</u></li> <li>• <u>Pediatric Narrow Complex Tachycardia</u></li> </ul>

**MEDICATIONS**

# ALBUTEROL (Proventil / Ventolin)

Pregnancy Category - C

E	EMT	E
A	AEMT	A
P	PARAMEDIC	P

<b>ACTIONS</b>	<ol style="list-style-type: none"> <li>1. Relax bronchial smooth muscles</li> <li>2. Reduces airway resistance</li> <li>3. Relieves bronchospasm</li> </ol>
<b>INDICATIONS</b>	To reverse bronchospasm (wheezing)
<b>CONTRAINDICATIONS</b>	Known hypersensitivity
<b>PRECAUTIONS</b>	<ol style="list-style-type: none"> <li>1. Use caution when administering to pregnant women</li> <li>2. Patients with cardiac history</li> <li>3. Patients with seizure disorders</li> </ol>
<b>SIDE EFFECTS</b>	<ol style="list-style-type: none"> <li>1. Headache</li> <li>2. Drowsiness</li> <li>3. Dizziness</li> <li>4. Restlessness</li> <li>5. Nausea / Vomiting</li> <li>6. Tachycardia</li> <li>7. Palpitations</li> <li>8. Hyper / hypotension</li> <li>9. Tremors</li> <li>10. PVCs</li> </ol>
<b>SUPPLIED</b>	Single unit dose 2.5 mg in 3 ml of nebulizer solution
<b>ADULT DOSAGE</b>	2.5 mg in 3 ml unit dose via nebulizer and 6 lpm oxygen (8-10 lpm if using a face mask) <b>EMT MUST CONTACT MEDICAL CONTROL</b>
<b>PEDIATRIC DOSAGE</b>	2.5 mg in 3 ml unit dose via nebulizer and 6 lpm oxygen (8-10 lpm if using a face mask)
<b>KEY POINTS</b>	<ul style="list-style-type: none"> <li>• May repeat treatment as required</li> </ul>
<b>PROTOCOL USE</b>	<ul style="list-style-type: none"> <li>• <u>Adult Respiratory Distress</u></li> <li>• <u>Anaphylactic Reaction / Shock</u></li> <li>• <u>Congestive Heart Failure / Pulmonary Edema</u></li> <li>• <u>Pediatric Respiratory Distress</u></li> <li>• <u>Pediatric Shock</u></li> </ul>

**MEDICATIONS**

# AMIODARONE (Cordarone)

Pregnancy Category - D

**P** PARAMEDIC **P**

<b>ACTIONS</b>	Prolongs the refractory period and action potential duration
<b>INDICATIONS</b>	<ol style="list-style-type: none"> <li>1. Ventricular fibrillation</li> <li>2. Pulseless ventricular tachycardia</li> <li>3. Wide complex tachycardia with a pulse (with consultation)</li> </ol>
<b>CONTRAINDICATIONS</b>	<ol style="list-style-type: none"> <li>1. Known hypersensitivity</li> <li>2. If lidocaine was previously used, <b>Do Not</b> use amiodarone</li> <li>3. Second / third degree AV blocks</li> </ol>
<b>SIDE EFFECTS</b>	<ol style="list-style-type: none"> <li>1. Hypotension</li> <li>2. Prolonged QT interval</li> </ol>
<b>SUPPLIED</b>	150 mg / 3 ml vial
<b>ADULT DOSAGE</b>	<p><b>PULSELESS - Ventricular Fibrillation / Ventricular Tachycardia:</b> 300 mg IV (May be repeated one time at 150 mg IV push in 3-5 minutes)</p> <p><b>PULSE PRODUCING - Wide Complex Tachycardia:</b> 150 mg diluted in 20+ ml's of saline IV SLOW over 10 minutes</p>
<b>PEDIATRIC DOSAGE</b>	<p><b>Ventricular Fibrillation and Pulseless Ventricular Tachycardia:</b> 5 mg / kg IV / IO</p> <p>If the rhythm converts to a perfusing rhythm, then administer 2.5 mg / kg IV / IO mixed in 20 + ml saline over 2 - 3 minutes</p> <p><b>See <u>PEDIATRIC DRUG ADMINISTRATION CHART</u> for weight based administration</b></p>
<b>KEY POINTS</b>	<ul style="list-style-type: none"> <li>• Amiodarone is the preferred antiarrhythmic medication to treat life threatening PULSELESS ventricular arrhythmias</li> <li>• Avoid excessive movement and shaking of the medication</li> <li>• Do not administer concurrently with other medications that prolong QT interval</li> </ul>
<b>PROTOCOL USE</b>	<ul style="list-style-type: none"> <li>• <u>Adult Ventricular Fibrillation / Ventricular Tachycardia</u></li> <li>• <u>Adult Wide Complex Tachycardia</u></li> <li>• <u>Pediatric Ventricular Fibrillation / Ventricular Tachycardia</u></li> </ul>

**MEDICATIONS****ASPIRIN**

Pregnancy Category - D

E	EMT	E
A	AEMT	A
P	PARAMEDIC	P

<b>ACTIONS</b>	Blocks platelet aggregation
<b>INDICATIONS</b>	<ol style="list-style-type: none"> <li>1. Chest pain suggestive of a MI</li> <li>2. 12-Lead EKG indicating a possible MI</li> <li>3. Patients with ACS</li> </ol>
<b>CONTRAINDICATIONS</b>	<ol style="list-style-type: none"> <li>1. Known hypersensitivity</li> <li>2. Active ulcer disease</li> </ol>
<b>PRECAUTIONS</b>	<ol style="list-style-type: none"> <li>1. GI bleeds</li> </ol>
<b>SIDE EFFECTS</b>	<ol style="list-style-type: none"> <li>1. Heartburn</li> <li>2. Nausea and vomiting</li> </ol>
<b>SUPPLIED</b>	81 mg chewable tablet
<b>ADULT DOSAGE</b>	324 mg (4 tablets)
<b>PEDIATRIC DOSAGE</b>	Not recommended in the pre-hospital setting
<b>KEY POINTS</b>	If patient has already taken ASA in the last 24 hours, give ASA to equal 324 mg total
<b>PROTOCOL USE</b>	<ul style="list-style-type: none"> <li>• <u>Acute Coronary Symptoms</u></li> </ul>

**MEDICATIONS**

# ATROPINE SULFATE

Pregnancy Category - C

**P**

**PARAMEDIC**

**P**

<b>ACTIONS</b>	<ol style="list-style-type: none"> <li>1. Blocks acetylcholine (parasympathetic nervous system)</li> <li>2. Increases conduction through the SA node by blocking vagal activity</li> </ol>
<b>INDICATIONS</b>	<ol style="list-style-type: none"> <li>1. Symptomatic sinus bradycardia</li> <li>2. Organophosphate poisoning</li> <li>3. Nerve agent exposure</li> </ol>
<b>CONTRAINDICATIONS</b>	<ol style="list-style-type: none"> <li>1. Known hypersensitivity</li> <li>2. Second degree AV Blocks (Mobitz type II)</li> <li>3. Third degree AV Blocks</li> </ol>
<b>PRECAUTIONS</b>	<ol style="list-style-type: none"> <li>1. Avoid use in atrial flutter or atrial fibrillation with a rapid ventricular response</li> <li>2. May increase myocardial oxygen demand – use caution if possible acute MI</li> <li>3. May trigger tachydysrhythmias</li> <li>4. Avoid in hypothermic bradycardia</li> </ol>
<b>SIDE EFFECTS</b>	<ol style="list-style-type: none"> <li>1. Dry mouth</li> <li>2. Blurred vision</li> <li>3. Flushed skin</li> <li>4. Headache</li> <li>5. Tachycardia</li> <li>6. Pupillary dilation</li> </ol>
<b>SUPPLIED</b>	1 mg / 10 ml prefilled syringe
<b>ADULT DOSAGE</b>	<p><b>Bradycardia:</b> 0.5 - 1 mg IV / IO (2 - 2.5 mg ET) every 3 - 5 minutes (max dose 3 mg)</p> <p><b>Organophosphate Poisoning:</b> 1 mg IV repeat every 3 - 5 minutes until resolution of symptoms <i>No max dose. Extremely large doses will likely be required</i></p>
<b>PEDIATRIC DOSAGE</b>	<p><b>Bradycardia:</b> 0.02 mg / kg IV / IO (0.02 mg / kg diluted ET), repeated in 5 minutes one time Minimum dose is 0.1 mg (max dose 0.5 mg CHILD / 1 mg ADOLESCENT)</p> <p><b>Organophosphate Poisoning:</b> 0.2 mg / kg IV repeat every 3 - 5 minutes until resolution of symptoms. No max dose. Extremely large doses will likely be required.</p> <p><b>See <u>PEDIATRIC DRUG ADMINISTRATION CHART</u> for weight based administration</b></p>
<b>PROTOCOL USE</b>	<ul style="list-style-type: none"> <li>• <u>Adult Bradycardia</u></li> <li>• <u>Adult Toxic Ingestion / Exposure / Overdose</u></li> <li>• <u>Nerve Agent Exposure</u></li> <li>• <u>Pediatric Bradycardia</u></li> <li>• <u>Pediatric Toxic Ingestion / Exposure / Overdose</u></li> </ul>

**MEDICATIONS**

# CAPTOPRIL (Capoten)

Pregnancy Category - D

**P**

**PARAMEDIC**

**P**

<b>ACTIONS</b>	<ol style="list-style-type: none"> <li>1. Reduces sodium and water retention</li> <li>2. Vasodilatation</li> <li>3. Reduces afterload</li> </ol>
<b>INDICATIONS</b>	<ol style="list-style-type: none"> <li>1. Acute pulmonary edema</li> <li>2. Congestive heart failure</li> </ol>
<b>CONTRAINDICATIONS</b>	<ol style="list-style-type: none"> <li>1. Known hypersensitivity or allergy to ACE inhibitor class of medications</li> <li>2. Hypotension</li> <li>3. Pregnancy</li> </ol>
<b>PRECAUTIONS</b>	<ol style="list-style-type: none"> <li>1. Symptomatic hypotension may occur following administration (especially in volume depleted patients)</li> <li>2. Angioedema can occur, especially following the first dose</li> <li>3. Use with caution in patients with cardiac stenosis or cardiovascular disease</li> <li>4. Use with caution following major surgery</li> </ol>
<b>SUPPLIED</b>	12.5 mg chewable or SL tablet
<b>SIDE EFFECTS</b>	<ol style="list-style-type: none"> <li>1. Dizziness</li> <li>2. Fainting</li> <li>3. Tachycardia</li> <li>4. Hypotension</li> </ol>
<b>ADULT DOSAGE</b>	<b>Systolic BP greater than 110 mmHg:</b> 12.5 mg crushed SL or chew and swallow
<b>PEDIATRIC DOSAGE</b>	Not Indicated in the pre-hospital setting
<b>KEY POINTS</b>	<ul style="list-style-type: none"> <li>• Monitor the patient's blood pressure, pulse rate, and EKG</li> <li>• Elderly patients may be more sensitive to the medication's hypotensive effects</li> </ul>
<b>PROTOCOL USE</b>	<ul style="list-style-type: none"> <li>• <u>Congestive Heart Failure / Pulmonary Edema</u></li> </ul>

**MEDICATIONS**

# DEXTROSE 10 % (D10)

Pregnancy Category - C

A	AEMT	A
P	PARAMEDIC	P

<b>ACTIONS</b>	Restores blood sugar
<b>INDICATIONS</b>	<ol style="list-style-type: none"> <li>1. Treatment of altered mental status due to hypoglycemia</li> <li>2. <b>Adult</b> BGL less than 60 mg / dl,</li> <li>3. <b>Child</b> BGL less than 60 mg / dl</li> <li>4. <b>Neonate</b> BGL less than 40 mg / dl</li> <li>5. Seizure or status epilepticus with associated hypoglycemia</li> <li>6. Coma with associated hypoglycemia</li> <li>7. Delirium tremens with associated hypoglycemia</li> <li>8. Seizure or status epilepticus with associated hypoglycemia</li> <li>9. Cardiac arrest with associated hypoglycemia</li> </ol>
<b>CONTRAINDICATIONS</b>	<ol style="list-style-type: none"> <li>1. Known hyperglycemia</li> <li>2. Intracranial / intraspinal hemorrhage</li> </ol>
<b>PRECAUTIONS</b>	<ol style="list-style-type: none"> <li>1. Use with caution for stroke or head injured patients</li> <li>2. A blood glucose level should be determined prior to and post dextrose administration</li> </ol>
<b>SIDE EFFECTS</b>	<ol style="list-style-type: none"> <li>1. Hyperglycemia</li> </ol>
<b>SUPPLIED</b>	250 ml bag or Dextrose 10% = 25 Grams total (10 Grams / 100 ml)
<b>ADULT DOSAGE</b>	25 g (250 ml) IV may repeat if required
<b>PEDIATRIC DOSAGE</b>	<p><b>Child:</b> 5 ml / kg IV / IO dextrose 10% (D10), repeated as needed to maintain BGL</p> <p><b>Neonate:</b> 2 ml / kg IV / IO dextrose 10% (D10), repeated as needed to maintain BGL</p> <p><b>See <u>PEDIATRIC DRUG ADMINISTRATION CHART</u> for weight based administration</b></p>
<b>KEY POINTS</b>	Extravasation of Dextrose 10% causes tissue necrosis
<b>PROTOCOL USE</b>	<ul style="list-style-type: none"> <li>• <u>Neonatal Resuscitation</u></li> <li>• <u>Pediatric Altered Level of Consciousness</u></li> <li>• <u>Pediatric Asystole / PEA</u></li> <li>• <u>Pediatric Diabetic Emergencies</u></li> <li>• <u>Pediatric Head Trauma</u></li> <li>• <u>Pediatric Seizure</u></li> <li>• <u>Pediatric Shock</u></li> </ul>

MEDICATIONS

# DEXTROSE 25 % (D25)

Pregnancy Category - C

A	AEMT	A
P	PARAMEDIC	P

<b>ACTIONS</b>	Restores blood sugar
<b>INDICATIONS</b>	<ol style="list-style-type: none"> <li>1. Treatment of altered mental status due to hypoglycemia</li> <li>2. Child BGL less than 60 mg / dl</li> <li>3. Seizure or status epilepticus with associated hypoglycemia</li> <li>4. Coma with associated hypoglycemia</li> <li>5. Delirium tremens with associated hypoglycemia</li> <li>6. Seizure or status epilepticus with associated hypoglycemia</li> <li>7. Cardiac arrest with associated hypoglycemia</li> </ol>
<b>CONTRAINDICATIONS</b>	<ol style="list-style-type: none"> <li>1. Known hyperglycemia</li> <li>3. Intracranial / intraspinal hemorrhage</li> </ol>
<b>PRECAUTIONS</b>	<ol style="list-style-type: none"> <li>3. Use with caution for stroke or head injured patients</li> <li>4. A blood glucose level should be determined prior to and post dextrose administration</li> </ol>
<b>SIDE EFFECTS</b>	<ol style="list-style-type: none"> <li>2. Hyperglycemia</li> </ol>
<b>SUPPLIED</b>	Prefilled syringes and vials containing 10 ml of Dextrose 25% (= 2.5 g of Dextrose)
<b>ADULT DOSAGE</b>	<b>See dextrose 50% for adult dosage</b>
<b>PEDIATRIC DOSAGE</b>	<p><b>Child:</b>                  2 ml / kg IV / IO dextrose 25% (D25), repeated as needed to maintain BGL                  Use a large vein to administer Dextrose 25%</p> <p><b>See <u>PEDIATRIC DRUG ADMINISTRATION CHART</u> for weight based administration</b></p>
<b>KEY POINTS</b>	Extravasation of Dextrose 25% causes tissue necrosis
<b>PROTOCOL USE</b>	<ul style="list-style-type: none"> <li>• <u>Pediatric Altered Level of Consciousness</u></li> <li>• <u>Pediatric Asystole / PEA</u></li> <li>• <u>Pediatric Diabetic Emergencies</u></li> <li>• <u>Pediatric Head Trauma</u></li> <li>• <u>Pediatric Seizure</u></li> <li>• <u>Pediatric Shock</u></li> </ul>

**MEDICATIONS**

# DEXTROSE 50 % (D50)

Pregnancy Category - C

<b>A</b>	<b>AEMT</b>	<b>A</b>
<b>P</b>	<b>PARAMEDIC</b>	<b>P</b>

<b>ACTIONS</b>	Restores blood sugar
<b>INDICATIONS</b>	<ol style="list-style-type: none"> <li>1. Treatment of altered mental status due to hypoglycemia</li> <li>2. Adult BGL less than 60 mg / dl or signs and symptoms of hypoglycemia</li> <li>3. Coma with associated hypoglycemia</li> <li>4. Delirium tremens with associated hypoglycemia</li> <li>5. Seizure or status epilepticus with associated hypoglycemia</li> <li>6. Cardiac arrest with associated hypoglycemia</li> </ol>
<b>CONTRAINDICATIONS</b>	<ol style="list-style-type: none"> <li>1. Known hyperglycemia</li> <li>2. Intracranial / intraspinal hemorrhage</li> </ol>
<b>PRECAUTIONS</b>	<ol style="list-style-type: none"> <li>1. Use with caution with stroke or head injury patients</li> <li>2. A blood glucose level should be determined prior to and post dextrose administration</li> </ol>
<b>SIDE EFFECTS</b>	<ol style="list-style-type: none"> <li>4. Extravasation of Dextrose 50% may cause necrosis</li> <li>5. Hyperglycemia</li> </ol>
<b>SUPPLIED</b>	Prefilled syringes and vials containing 50 ml of Dextrose 50% (= 25 g of dextrose)
<b>ADULT DOSAGE</b>	<p><b>Dextrose 50% (D50):</b>                  25 g (1 amp) IV may repeat if required                  Use a large vein to administer Dextrose 50%</p>
<b>PEDIATRIC DOSAGE</b>	<b>See dextrose 25% for child dosage</b>
<b>KEY POINTS</b>	Extravasation of dextrose 50% causes tissue necrosis
<b>PROTOCOL USE</b>	<ul style="list-style-type: none"> <li>• <u>Adult Altered Level of Consciousness</u></li> <li>• <u>Adult Diabetic Emergencies</u></li> </ul>

**MEDICATIONS**

# DIPHENHYDRAMINE (Benadryl)

Pregnancy Category - B

A	AEMT	A
P	PARAMEDIC	P

<b>ACTIONS</b>	Antihistamine
<b>INDICATIONS</b>	<ol style="list-style-type: none"> <li>1. Allergic reactions</li> <li>2. Adjunctive treatment to epinephrine in anaphylaxis</li> <li>3. Medication induced extrapyramidal symptoms (EPS)</li> </ol>
<b>CONTRAINDICATIONS</b>	<ol style="list-style-type: none"> <li>1. Known hypersensitivity</li> <li>2. Acute asthma</li> </ol>
<b>PRECAUTIONS</b>	<ol style="list-style-type: none"> <li>1. Carefully monitor patient while awaiting for medication to take effect (effect of medication begins 15 minutes after administration)</li> <li>2. May cause CNS depression</li> <li>3. Use caution in patients with history of asthma</li> <li>4. Use caution in patients with history or cardiovascular disease</li> </ol>
<b>SIDE EFFECTS</b>	<ol style="list-style-type: none"> <li>1. Sedation</li> <li>2. Dries secretions</li> <li>3. May exacerbate asthma</li> <li>4. Blurred vision</li> <li>5. Headache</li> <li>6. Hypotension</li> <li>7. Tachycardia</li> <li>8. Thickening of bronchial secretions</li> </ol>
<b>SUPPLIED</b>	50mg / 1ml vial
<b>ADULT DOSAGE</b>	<p><b>Allergic Reaction or Anaphylactic Shock:</b> 25 mg – 50 mg slow IV / IO or IM</p> <p><b>Extrapyramidal Symptoms:</b> 25 mg – 50 mg IV / IM DO NOT mix in the same syringe as Haloperidol (Haldol)</p>
<b>PEDIATRIC DOSAGE</b>	<p><b>Allergic Reaction or Anaphylactic Shock:</b> 1 mg/kg slow IV / IO or IM (max dose 50 mg)</p> <p>See <b><u>PEDIATRIC DRUG ADMINISTRATION CHART</u></b> for weight based administration</p>
<b>KEY POINTS</b>	<ul style="list-style-type: none"> <li>• Use in anaphylaxis only after Epinephrine (Adrenaline) and stabilization of cardiorespiratory symptoms</li> </ul>
<b>PROTOCOL USE</b>	<ul style="list-style-type: none"> <li>• <u>Behavior / Psychiatric Emergencies</u></li> <li>• <u>Adult Anaphylaxis Reaction / Shock</u></li> <li>• <u>Pediatric Shock</u></li> </ul>

**MEDICATIONS**

# Duo-Dote (Atropine and Pralidoxime Chloride) VALIUM Auto Injector

Pregnancy Category - C

E	EMT	E
A	AEMT	A
P	PARAMEDIC	P

<b>ACTIONS</b>	<p><b>DuoDote</b></p> <ul style="list-style-type: none"> <li>Blocks nerve agents effects and relieves airway constriction and secretions in the lungs and gastrointestinal tract.</li> <li>Acts to restore normal functions at the nerve ending by removing the nerve agent and reactivating natural function</li> </ul> <p><b>Valium:</b></p> <ul style="list-style-type: none"> <li>Given to treat seizures caused by exposure to nerve agents (buddy treatment) – SUPPLEMENT TO DUODOTE</li> </ul>
<b>INDICATIONS</b>	Suspected or confirmed nerve agent exposure
<b>CONTRAINDICATIONS</b>	Both medications in the kit should be used with caution (but not withheld) in patients with preexisting cardiac disease, HTN, or CVA history
<b>PRECAUTIONS</b>	
<b>SIDE EFFECTS</b>	<ol style="list-style-type: none"> <li>Chest pain</li> <li>Exacerbation of angina</li> <li>Myocardial infarction</li> <li>Blurred vision</li> <li>Headache</li> <li>Drowsiness</li> <li>Nausea</li> <li>Tachycardia</li> <li>Hypertension</li> <li>Hyperventilation</li> </ol>
<b>SUPPLIED</b>	<p>DUODOTE - Each auto injector contains <b>BOTH:</b> Atropine 2.1 mg and Pralidoxime 600 mg</p> <p>Valium auto injector contains 10 mg</p>
<b>ADULT DOSAGE</b>	<p><b>For Nerve Agent Exposure (SLUDGE symptoms):</b> 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)</p> <p><b>For Seizures Associated with Nerve Agent Exposure:</b> 1 Valium auto injector (buddy administration)</p>
<b>PEDIATRIC DOSAGE</b>	DuoDotes are not authorized for the use of children under the age of 9 years
<b>KEY POINTS</b>	<ul style="list-style-type: none"> <li>DuoDotes are reserved for treatment of public service personnel exposed to nerve agents</li> </ul>
<b>PROTOCOL USE</b>	<ul style="list-style-type: none"> <li><u>Nerve Agent Exposure</u></li> </ul>

**MEDICATIONS**

# EPINEPHRINE (Adrenaline)

Pregnancy Category - C

<b>A</b>	<b>AEMT</b>	<b>A</b>
<b>P</b>	<b>PARAMEDIC</b>	<b>P</b>

<b>ACTIONS</b>	<ol style="list-style-type: none"> <li>1. Alpha and beta adrenergic agonist</li> <li>2. Bronchodilation</li> <li>3. Increase heart rate and automaticity</li> <li>4. Increases cardiac contractility</li> <li>5. Increases myocardial conduction velocity</li> <li>6. Increases blood pressure</li> </ol>
<b>INDICATIONS</b>	<ol style="list-style-type: none"> <li>1. Cardiac arrest</li> <li>2. Anaphylactic reaction</li> <li>3. Anaphylactic shock</li> <li>4. Respiratory distress</li> </ol>
<b>CONTRAINDICATIONS</b>	Known hypersensitivity
<b>PRECAUTIONS</b>	Blood pressure, pulse, and ECG must be routinely monitored for all patients receiving epinephrine
<b>SIDE EFFECTS</b>	<ol style="list-style-type: none"> <li>1. Palpitations</li> <li>2. Anxiety</li> <li>3. Headache</li> <li>4. Trembling</li> <li>5. Nausea / vomiting</li> </ol>
<b>SUPPLIED</b>	Prefilled syringes containing 1 mg / 10 ml (1:10,000 solution) Ampoules containing 1mg / 1ml (1:1000 solution)
<b>ADULT DOSAGE</b>	<p><b>Cardiac Arrest:</b> 1 mg <b>1:10,000</b> IV / IO every 3 - 5 minutes (<b>ET only</b> 2 - 2.5 mg <b>1:10,000</b> every 3 - 5 minutes if no vascular access)</p> <p><b>Anaphylactic Reaction:</b> 0.3 - 0.5 mg <b>1:1000</b> IM / SQ <b>EMT USE EPI PEN</b></p> <p><b>Anaphylactic Shock:</b> 0.1 ml per minute up to 0.5 mg of <b>1:10,000</b> IV until resolution of blood pressure</p>
<b>PEDIATRIC DOSAGE</b>	<p><b>Cardiac Arrest:</b> 0.01 mg / kg <b>1:10,000</b> - IV / IO every 3 - 5 minutes (<b>ET only</b> 0.1 mg / kg <b>1:1000</b> every 3 - 5 minutes) Max dose 1mg per dose</p> <p><b>Anaphylaxis:</b> 0.01 ml / kg <b>1:1000</b> - IM / SQ (max dose 0.5 mg) <b>EMT USE EPI PEN JR</b></p> <p><b>Croup - When Racemic Epinephrine (Racemic Epinephrine) is Unavailable:</b> &lt;10 kg 3 ml 1:1000 nebulized &gt;10 kg 5 ml 1:1000 nebulized</p> <p>See <b>PEDIATRIC DRUG ADMINISTRATION CHART</b> for weight based administration</p>
<b>KEY POINTS</b>	Intermediate EMT's may only administer EPI 1:1000 and only via the SQ route <b>Do Not Confuse Epi 1:1000 SQ / IM and 1:10,000 IV</b>
<b>PROTOCOL USES</b>	<ul style="list-style-type: none"> <li>• <u>Adult Asystole / PEA</u></li> <li>• <u>Adult Respiratory Distress – Asthma and COPD</u></li> <li>• <u>Adult Ventricular Fibrillation / Ventricular Tachycardia</u></li> <li>• <u>Anaphylactic Reaction / Shock</u></li> <li>• <u>Pediatric Asystole / PEA</u></li> <li>• <u>Pediatric Bradycardia</u></li> <li>• <u>Pediatric Respiratory Distress – Croup</u></li> <li>• <u>Pediatric Respiratory Distress – Lower Airway</u></li> <li>• <u>Pediatric Shock</u></li> <li>• <u>Pediatric Ventricular Fibrillation / Ventricular Tachycardia</u></li> </ul>

MEDICATIONS

# fentaNYL (Sublimaze)

<b>PREGNANCY CLASS</b>	C																										
<b>ACTIONS</b>	Inhibits pain pathways altering perception and response to pain																										
<b>INDICATIONS</b>	<ol style="list-style-type: none"> <li>1. Severe pain management</li> <li>2. ACS / STEMI</li> <li>3. Abdominal Pain</li> <li>4. Isolated trauma</li> </ol>																										
<b>CONTRAINDICATIONS</b>	<ol style="list-style-type: none"> <li>1. Hypersensitivity</li> <li>2. Uncontrolled hemorrhage</li> <li>3. Shock</li> </ol>																										
<b>PRECAUTIONS</b>																											
<b>SIDE EFFECTS</b>	<ol style="list-style-type: none"> <li>1. Respiratory depression</li> <li>2. Bradycardia</li> <li>3. Muscle rigidity</li> </ol>																										
<b>SUPPLIED</b>	100 mcg / 2 ml VERIFY ACTUAL CONCENTRATION ON HAND BEFORE ADMINISTRATION																										
<b>ADULT DOSAGE</b>	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																										
<b>PEDIATRIC DOSAGE</b>	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																										
	<table border="1"> <tr> <td>3-5 kg</td> <td>6-7 kg</td> <td>8-9 kg</td> <td>10-11 kg</td> <td>12-14 kg</td> <td>15-18 kg</td> <td>19-23 kg</td> <td>24-29 kg</td> <td>30-36 kg</td> </tr> <tr> <td>6-11 lbs</td> <td>13-15 lbs</td> <td>18-20 lbs</td> <td>22-24 lbs</td> <td>26-31 lbs</td> <td>33-37 lbs</td> <td>42-51 lbs</td> <td>53-64 lbs</td> <td>66-81 lbs</td> </tr> <tr> <td>18-24 in</td> <td>24-26 in</td> <td>26-29 in</td> <td>29-33 in</td> <td>33-38 in</td> <td>38-43 in</td> <td>43-48 in</td> <td>48-52 in</td> <td>52-57 in</td> </tr> </table>	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
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																			
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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																			
<b>KEY POINTS</b>	<ul style="list-style-type: none"> <li>▪ Likelihood of side effects increases with rapid administration</li> <li>▪ Narcotic naive patients may need lower dosing regimen</li> <li>▪ Preferred analgesic for trauma / ACS</li> <li>▪ Must be given slowly IV</li> </ul>																										

**MEDICATIONS**

# GLUCAGON (Glucagen)

Pregnancy Category - B

A	AEMT	A
P	PARAMEDIC	P

<b>ACTIONS</b>	<ol style="list-style-type: none"> <li>1. Causes breakdown of glycogen to glucose increasing blood glucose level</li> <li>2. Smooth muscle relaxant</li> <li>3. Antidote to beta blocker overdose</li> </ol>
<b>INDICATIONS</b>	<ol style="list-style-type: none"> <li>1. Correction of hypoglycemia when an vascular access is not able to be established and oral glucose is contraindicated</li> <li>2. Beta blocker overdose</li> <li>3. Esophageal foreign body obstructions</li> </ol>
<b>CONTRAINDICATIONS</b>	Known hypersensitivity
<b>PRECAUTIONS</b>	<ol style="list-style-type: none"> <li>1. Glucagon is only effective in patients with sufficient stores of glycogen (glycogen stored in liver)</li> <li>2. Glucagon can be administered on scene, but do not wait for it to take affect</li> </ol>
<b>SIDE EFFECTS</b>	<ol style="list-style-type: none"> <li>1. Nausea and vomiting</li> <li>2. Hyperglycemia</li> </ol>
<b>SUPPLIED</b>	Vials of 1mg Glucagon with 1ml of diluting solution
<b>ADULT DOSAGE</b>	<p><b>Hypoglycemia without Vascular Access:</b> 1 mg IM / IN</p> <p><b>Beta Blocker Overdose:</b> 3 mg IV</p> <p><b>Esophageal Foreign Body Obstructions:</b> 1 mg IV</p>
<b>PEDIATRIC DOSAGE</b>	<p><b>Hypoglycemia Without Vascular Access:</b> 0.1mg/kg IM / IN</p> <p><b>Esophageal Foreign Body Obstructions:</b> Less Than 16 years old - 0.5 mg IV</p> <p>See <b><u>PEDIATRIC DRUG ADMINISTRATION CHART</u></b> for weight based administration</p>
<b>KEY POINTS</b>	<ul style="list-style-type: none"> <li>• Response is usually noticed in 5 - 20 minutes. If response is delayed, dose may be repeated</li> <li>• If IV is established after Glucagon (Glucagen) is given and patient is still hypoglycemic, administer Dextrose</li> </ul>
<b>PROTOCOL USE</b>	<ul style="list-style-type: none"> <li>• <u>Adult Diabetic Emergencies</u></li> <li>• <u>Adult Esophageal Foreign Body</u></li> <li>• <u>Pediatric Diabetic Emergencies</u></li> <li>• <u>Pediatric Esophageal Foreign Body</u></li> <li>• <u>Pediatric Seizure</u></li> <li>• <u>Pediatric Shock</u></li> <li>• <u>Pediatric Toxic Ingestion / Exposure / Overdose</u></li> <li>• <u>Toxic Ingestion / Overdose / Exposure</u></li> </ul>

**MEDICATIONS**

# HALOPERIDOL (Haldol)

Pregnancy Category - C

**P**    **PARAMEDIC**    **P**

<b>ACTIONS</b>	Chemical restraint of acute psychosis or agitation patients
<b>INDICATIONS</b>	Aggressive, violent, or severely agitated patients in the setting of psychosis
<b>CONTRAINDICATIONS</b>	<ol style="list-style-type: none"> <li>1. <i>Not for use in combative or violent reactions resulting from treatable medical emergencies</i></li> <li>2. Dementia related psychosis</li> <li>3. Known hypersensitivity</li> <li>4. Parkinson's disease</li> <li>5. CNS depression</li> <li>6. Severe cardiac disease</li> <li>7. Hepatic disease</li> </ol>
<b>PRECAUTIONS</b>	<ol style="list-style-type: none"> <li>1. Elderly patients</li> <li>2. Prolonged QT interval on EKG</li> <li>3. Renal patients</li> <li>4. Respiratory diseases</li> <li>5. Seizure disorders</li> </ol>
<b>SIDE EFFECTS</b>	<ol style="list-style-type: none"> <li>1. Sedation</li> <li>2. Extrapyramidal symptoms (EPS) / dystonic reactions</li> <li>3. Orthostatic Hypotension</li> </ol>
<b>SUPPLIED</b>	5 mg / 1 ml vial
<b>ADULT DOSAGE</b>	5 mg IM ONLY Over age 65; 2.5 mg IM ONLY
<b>PEDIATRIC DOSAGE</b>	Not Indicated in the pre-hospital setting
<b>KEY POINTS</b>	<p>If administration causes extrapyramidal symptoms (EPS) give Diphenhydramine (Benadryl) 25 mg – 50 mg IV / IM</p> <p>EPS symptoms are: Involuntary purposeless movements of body, usually of the face such as grimacing, tongue protrusion, lip smacking, lip puckering, or eye blinking.</p> <p><b>DO NOT</b> mix Haloperidol (Haldol) and Diphenhydramine (Benadryl) in the same syringe.</p>
<b>PROTOCOL USE</b>	<ul style="list-style-type: none"> <li>• Behavioral / Psychiatric Emergencies</li> </ul>

MEDICATIONS

HEPARIN

<b>PREGNANCY CLASS</b>	C
<b>ACTIONS</b>	Anticoagulant
<b>INDICATIONS</b>	1. STEMI
<b>CONTRAINDICATIONS</b>	<ol style="list-style-type: none"> <li>1. Hypersensitivity</li> <li>2. Active bleeding</li> <li>3. Trauma</li> <li>4. Hypertension</li> <li>5. Aortic dissection</li> <li>6. Pregnancy</li> <li>7. Surgery within last 14 days</li> <li>8. Symptoms of CVA</li> </ol>
<b>PRECAUTIONS</b>	
<b>SIDE EFFECTS</b>	1. Bleeding
<b>SUPPLIED</b>	5000 U / 5 ml VERIFY ACTUAL CONCENTRATION ON HAND BEFORE ADMINISTRATION
<b>ADULT DOSAGE</b>	Confirmed STEMI: 60 units / kg IV / IO Max dose 4000 units
	Greater than 76 kg or 147 lbs. = 4000 U dose
<b>PEDIATRIC DOSAGE</b>	Not recommended in the pre-hospital setting

**MEDICATIONS**

# HYDROMORPHONE (Dilaudid)

Pregnancy Category - C

A	AEMT	A
P	PARAMEDIC	P

<b>ACTIONS</b>	Inhibits pain pathways altering perception and response to pain
<b>INDICATIONS</b>	<ol style="list-style-type: none"> <li>1. Moderate to severe pain management</li> <li>2. Burns</li> <li>3. Intractable flank pain</li> <li>4. Intractable back pain</li> <li>5. Musculoskeletal and / or fracture pain</li> <li>6. Sickle cell pain crisis (USE SUPPLEMENTAL O2)</li> <li>7. Unremitting abdominal pain (NOT OF OB ORIGIN)</li> <li>8. Chest Pain</li> </ol>
<b>CONTRAINDICATIONS</b>	<ol style="list-style-type: none"> <li>1. Known hypersensitivity</li> <li>2. Head injury or head trauma</li> <li>3. Hypotension</li> <li>4. Respiratory depression</li> <li>5. Acute or severe asthma or COPD</li> <li>6. Labor pain</li> <li>7. Shock</li> </ol>
<b>PRECAUTIONS</b>	<ol style="list-style-type: none"> <li>1. Liver failure, renal failure, or patients in excess of 65 years should receive half dose, titrated to their pain tolerance</li> <li>2. If the patient responds with respiratory depression administer Naloxone (Narcan) to reverse the effects</li> <li>3. All patients must have supplemental oxygen administration and oxygen saturation monitoring</li> <li>4. Hydromorphone (Dilaudid) will mask pain, so conduct a complete assessment prior to administration</li> <li>5. Use caution if patient is hypersensitive to sulfites</li> <li>6. Use caution if patient is hypersensitive to latex</li> <li>7. May cause CNS depression</li> <li>8. Use caution in patients with hypersensitivity to other narcotics</li> </ol>
<b>SIDE EFFECTS</b>	<ol style="list-style-type: none"> <li>1. Respiratory depression</li> <li>2. Altered LOC</li> <li>3. Bradycardia</li> <li>4. Nausea and vomiting</li> <li>5. Constricted pupils</li> </ol>
<b>SUPPLIED</b>	1 mg / 1 ml prefilled syringes (Carpject)
<b>ADULT DOSAGE</b>	<p><b>Pain Management</b>                      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</p>
<b>KEYPOINTS</b>	<ul style="list-style-type: none"> <li>• Likelihood of side effects increases with rapid administration</li> <li>• Narcotic naive patients may need lower dosing regiment</li> </ul>
<b>PROTOCOL USE</b>	<ul style="list-style-type: none"> <li>• <u>Severe Pain Management</u></li> <li>• <u>Adult Abdominal Pain</u></li> <li>• <u>Acute Coronary Symptoms</u></li> </ul>

**MEDICATIONS**

# HYDROXOCOBALMIN (Cyanokit)


Pregnancy Category - C

P PARAMEDIC P


<b>ACTIONS</b>	Cyanide antidote – binds to cyanide ions for excretion
<b>INDICATIONS</b>	Known or suspected cyanide poisoning
<b>CONTRAINDICATIONS</b>	None in the emergency setting – assure airway, breathing, and circulatory support are in place prior to administration.
<b>PRECAUTIONS</b>	<ol style="list-style-type: none"> <li>1. Use caution if other cyanide antidotes are used simultaneously with Hydroxocobalmin (Cyanokit), use separate IV lines</li> <li>2. Do not use if there is particulate matter in the vial after reconstitution or the solution is not dark red</li> </ol>
<b>SIDE EFFECTS</b>	<ol style="list-style-type: none"> <li>1. Possible allergic reaction</li> <li>2. Eye irritation, redness, swelling</li> <li>3. Abdominal pain, nausea, vomiting, diarrhea</li> <li>4. Chest discomfort</li> <li>5. Dizziness, restlessness</li> <li>6. Dyspnea, tight throat</li> <li>7. Skin flushing, urticaria</li> </ol>
<b>SUPPLIED</b>	(2) 2.5 g vials for reconstitution – shake for 30 seconds per vial
<b>ADULT DOSAGE</b>	70 mg / kg over 15 minutes (7.5 minutes per vial x 2)
<b>PEDIATRIC DOSAGE</b>	Not recommended in the prehospital setting
<b>KEY POINTS</b>	<ul style="list-style-type: none"> <li>• Discard unused medication after 6 hours</li> <li>• Reconstitute only with normal saline (0.9% sodium chloride)</li> <li>• May have drug interactions, administer all other medications via a separate IV line</li> </ul>
<b>PROTOCOL USE</b>	<ul style="list-style-type: none"> <li>• <u>Toxic Ingestion / Inhalation - Cyanide</u></li> </ul>

## *Easy to administer in 4 simple steps*

**1**



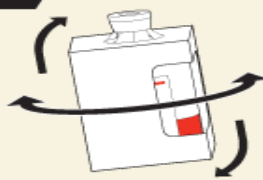
**3-4**



**Starting Dose: 5 g (2 vials)**

- 1. Reconstitute:** Add 100 mL of 0.9% Sodium Chloride Injection\* to vial using transfer spike. **Fill to line. Vial in upright position**
- 2. Mix:** Rock or rotate vial for 30 seconds to mix solution. Do not shake
- 3. Infuse First Vial:** Use vented IV tubing to hang and infuse over 7.5 minutes
- 4. Infuse Second Vial (Repeat Steps 1 and 2 before second infusion):** Use vented IV tubing to hang and infuse over 7.5 minutes

**2**



**MEDICATIONS**

**IPRATROPIUM (Atrovent)**

Pregnancy Category - B

A	AEMT	A
P	PARAMEDIC	P

<b>ACTIONS</b>	<ol style="list-style-type: none"> <li>1. Blocks action of acetylcholine at receptor sites on bronchial smooth muscle, resulting in bronchodilation</li> <li>2. Dries bronchial secretions</li> </ol>
<b>INDICATIONS</b>	Treatment of bronchospasm in patients with COPD as an adjunct to albuterol
<b>CONTRAINDICATIONS</b>	Known hypersensitivity
<b>SIDE EFFECTS</b>	<ol style="list-style-type: none"> <li>1. Dry nose, mouth</li> <li>2. Paradoxical bronchospasm</li> <li>3. Nausea</li> <li>4. Chest pain</li> <li>5. Palpitations</li> <li>6. Headache</li> <li>7. Dizziness</li> </ol>
<b>SUPPLIED</b>	Single unit dose 0.5 mg in 2.5 ml of nebulizer solution
<b>ADULT DOSAGE</b>	One unit dose 0.5 mg in 2.5 ml - Do not repeat in the field
<b>PEDIATRIC DOSAGE</b>	One unit dose 0.5 mg in 2.5 ml - Do not repeat in the field
<b>KEY POINTS</b>	<ul style="list-style-type: none"> <li>• Mix with Albuterol (Proventil) for administration</li> </ul>
<b>PROTOCOL USE</b>	<ul style="list-style-type: none"> <li>• <u>Adult Respiratory Distress – Asthma and COPD</u></li> <li>• <u>Pediatric Respiratory Distress – Lower Airway</u></li> </ul>

# KETAMINE

<b>CLASSIFICATION</b>	Anesthetic Induction
<b>TRADE NAME(S)</b>	Ketalar
<b>DESIRED EFFECTS</b>	Ketamine is a controlled substance medication that is a rapid acting anesthetic producing an anesthetic state characterized by profound analgesia, normal pharyngeal-laryngeal reflexes, normal or slightly enhanced skeletal tone, cardiovascular and respiratory stimulation, and occasionally a transient and minimal respiratory depression.
<b>MECHANISM OF ACTION</b>	Ketamine has several clinically useful properties, including analgesia and less cardiorespiratory depressant effects than other anesthetic agents, it also causes some stimulation of the cardiovascular system. Ketamine has been reported to produce general as well as local anesthesia. It interacts with N-methyl-D-aspartate (NMDA) receptors, opioid receptors, monoaminergic receptors, muscarinic receptors and voltage sensitive Ca ion channels. Unlike other general anaesthetic agents, ketamine does not interact with GABA receptors
<b>INDICATIONS</b>	<ul style="list-style-type: none"> <li>• Patient in Excited Delirium when there is a threat to crew or self.</li> </ul>
<b>CONTRAINDICATIONS</b>	<ul style="list-style-type: none"> <li>• Uncontrolled Hypertension</li> <li>• Known hypersensitivity</li> </ul>
<b>ADVERSE REACTIONS</b>	<ul style="list-style-type: none"> <li>• Hallucinations</li> <li>• Vivid dreams</li> <li>• Hypertension</li> <li>• Increased cardiac output</li> <li>• Tachycardia</li> <li>• Paradoxical direct myocardial depression</li> <li>• Increased ICP</li> <li>• Tonic-clonic movements</li> </ul>
<b>DRUG INTERACTIONS</b>	
<b>PRECAUTIONS</b>	<ul style="list-style-type: none"> <li>• Hypertension, tachycardia, laryngeal spasm, muscle rigidity</li> <li>• Consider use in a setting where a trained provider is capable of endotracheal intubation/advanced airway placement. Resuscitation medication and equipment must be readily available.</li> </ul>
<b>SPECIAL CONSIDERATIONS</b>	Elevation of blood pressure begins shortly after injection, reaches maximum within a few minutes and usually returns to preanesthetic values within 15 minutes after injection.
<b>DOSING REGIMEN – <u>PROFOUND AGITATION- EXCITED DELIRIUM</u></b>	<ul style="list-style-type: none"> <li>• <b>Adult - 4mg/kg IM or 2 mg/kg IV for Excited Delirium</b></li> </ul> <p>-----</p> <ul style="list-style-type: none"> <li>• <b>Pediatric – Currently no pediatric dose</b></li> </ul>

<p><b>DOSING REGIMEN –</b> <b><u>MILD TO MODERATE</u></b> <b><u>AGITATION</u></b></p>	<ul style="list-style-type: none"> <li>• <b>Adult - 2mg/kg IM or 1 mg/kg IV for Excited Delirium</b></li> </ul> <p>-----</p> <ul style="list-style-type: none"> <li>• <b>Pediatric – Currently no pediatric dose</b></li> </ul>
<p><b>SPECIAL INSTRUCTIONS</b> <b>FOR PAIN MANAGEMENT &amp;</b> <b>PROCEDURAL SEDATION</b></p>	<p><b><u>INSTRUCTIONS TO DILUTE KETAMINE TO PROPER STRENGTH</u></b></p> <ul style="list-style-type: none"> <li>• DRAW UP ONE ML OF KETAMINE 100 MG / ML IN 10 ML SYRINGE</li> <li>• ADD NINE ML OF NORMAL SALINE TO SYRINGE</li> <li>• GENTLY ROLL SYRINGE IN HANDS FOR TEN SECONDS</li> <li>• SYRINGE NOW CONTAINS 100 MG OF KETAMINE IN 10 MG / ML CONCENTRATION</li> </ul>
<p><b>DOSING REGIMEN –</b> <b>PAIN MANAGEMENT</b></p>	<ul style="list-style-type: none"> <li>• <b>Adult - 5-10 mg slow IVP or 10-20mg IN or 20-30 mg IM May repeat in 5 minutes to desired effect or to onset of nystagmus. Maximum total dose is 1 mg/kg</b></li> </ul> <p>-----</p> <ul style="list-style-type: none"> <li>• <b>Pediatric- 0.05 – 0.1 mg/kg slow IVP or 0.1-0.2 mg/kg IN or 0.25 – 0.5 mg/kg IM. May repeat in 5 minutes to desired effect or to onset of nystagmus. Maximum total dose is 1 mg/kg</b></li> </ul>
<p><b>DOSING REGIMEN –</b> <b>PROCEDURAL SEDATION</b></p>	<ul style="list-style-type: none"> <li>• <b>Adult - Administer 1mg/kg IVP. May repeat dose once is dissociative effect not achieved</b></li> <li>• <b>Geriatric - Administer 0.5 mg/kg IVP. May repeat dose once is dissociative effect not achieved</b></li> </ul> <p>-----</p> <ul style="list-style-type: none"> <li>• <b>Pediatric- Administer 1mg/kg IVP. May repeat dose once is dissociative effect not achieved</b></li> </ul>
<p><b>PROTOCOL LOCATION</b></p>	<ul style="list-style-type: none"> <li>• <a href="#">Behavioral Emergencies</a></li> <li>• <a href="#">Pain Management</a></li> <li>• <a href="#">Procedural Sedation</a></li> </ul>

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## **Ketorolac** (Toradol)

<b>THERAPEUTIC EFFECTS:</b>	A nonsteroidal anti-inflammatory agent. Unlike narcotics, which act on the central nervous system, Toradol is considered a peripherally acting analgesic. Consequently, it does not have the sedative properties of the narcotics.
<b>INDICATIONS:</b>	Used for mild to moderate pain relief. Is particularly useful to patients with kidney stone pain in combination with <u>Hydromorphone (Dilaudid)</u> .
<b>CONTRAINDICATIONS:</b>	Known hypersensitivity to the medication.  Should not be administered to patients with allergies to <u>aspirin</u> , or NSAIDs.  Should not be administered if the patient has, or is being treated for a GI bleed.  Should not be administered in patients under 18 years, or over 65 years of age.  Should not be administered if emergent surgery is indicated.
<b>SIDE EFFECTS:</b>	Gastrointestinal irritation and hemorrhage can result from NSAID administration.  Edema, hypertension, rash, itching, nausea, heartburn, constipation, diarrhea, drowsiness, and dizziness.
<b>HOW SUPPLIED:</b>	Vials, or pre-filled syringes containing 15, 30, or 60 mg
<b>ADMINISTRATION:</b>	IV or IM injection.
<b>ADULT DOSAGE:</b>	30 mg slow IV, or 60 mg IM

**MEDICATIONS**

# LABETALOL (Trandate)

Pregnancy Category - C

**P**    **PARAMEDIC**    **P**

<b>ACTIONS</b>	Reduces blood pressure by decreasing peripheral vascular resistance
<b>INDICATIONS</b>	Correction of hypertension associated with stroke to make the patient a candidate for TPA
<b>CONTRAINDICATIONS</b>	<ol style="list-style-type: none"> <li>1. Known hypersensitivity to Labetolol (Trandate) or beta blockers</li> <li>2. Bradycardia</li> <li>3. Heart blocks</li> <li>4. Shock</li> <li>5. Sick sinus syndrome</li> <li>6. Heart failure</li> </ol>
<b>PRECAUTIONS</b>	<ol style="list-style-type: none"> <li>1. Asthma / bronchospastic diseases</li> <li>2. Impaired liver functions</li> <li>3. Elderly</li> <li>4. Thyroid disorders</li> <li>5. Hypotension may occur</li> <li>6. Conduction disturbances in cardiac conduction may occur</li> </ol>
<b>SIDE EFFECTS</b>	<ol style="list-style-type: none"> <li>1. Hypotension</li> <li>2. Bradycardia</li> <li>3. Dizziness</li> <li>4. Fatigue</li> <li>5. Arrhythmias</li> </ol>
<b>SUPPLIED</b>	20 mg / 4 ml vial
<b>ADULT DOSAGE</b>	<p><b>Stroke S&amp;S less than 3 ½ hours and Hypertension greater than 220 systolic or 120 diastolic:</b></p> <p>10 mg IV SLOW over 2 minutes first bolus                  20 mg IV SLOW over 2 minutes 10 – 15 after first bolus and BP is still greater than 220 systolic or 120 diastolic</p>
<b>PEDIATRIC DOSAGE</b>	Not Indicated in the pre-hospital setting
<b>KEY POINTS</b>	<ul style="list-style-type: none"> <li>• Reduce BP 185 systolic or 110 diastolic but not greater than 20% overall from baseline</li> <li>• Check blood pressures in both arms, with at least one BP being a manual BP</li> <li>• Monitor cardiac and pulmonary status during administration</li> </ul>
<b>PROTOCOL USE</b>	<ul style="list-style-type: none"> <li>• <u>Stroke</u></li> </ul>

**MEDICATIONS**

# LIDOCAINE (Xylocaine)

Pregnancy Category - B

**P**    **PARAMEDIC**    **P**

<b>ACTIONS</b>	Anesthetizes the intraosseous space during fluid administration to increase pain tolerance
<b>INDICATIONS</b>	Anesthetization of intraosseous space prior to or during IO administration of fluids
<b>CONTRAINDICATIONS</b>	<ol style="list-style-type: none"> <li>1. Known hypersensitivity to Lidocaine (Xylocaine) or caine family</li> <li>2. AV blocks</li> <li>3. Idioventricular escape rhythms</li> <li>4. Accelerated idioventricular rhythm</li> <li>5. Sinus bradycardia or arrest or block</li> <li>6. Hypotension</li> <li>7. Shock</li> </ol>
<b>SIDE EFFECTS</b>	<ol style="list-style-type: none"> <li>1. Dizziness</li> <li>2. Numbness</li> <li>3. Drowsiness</li> <li>4. Confusion</li> <li>5. Seizure</li> <li>6. Respiratory depression</li> </ol>
<b>SUPPLIED</b>	100 mg / 5 ml prefilled syringes for IO bolus use
<b>ADULT DOSAGE</b>	<b>Anesthetization of Intraosseous Space</b> Up to 50 mg IO push
<b>PEDIATRIC DOSAGE</b>	Not recommended in the pre-hospital setting
<b>PROTOCOL USE</b>	<ul style="list-style-type: none"> <li>• <u>IO Procedure</u></li> </ul>

**MEDICATIONS**

# MAGNESIUM SULFATE

Pregnancy Category - A

**P**    **PARAMEDIC**    **P**

<b>ACTIONS</b>	<ol style="list-style-type: none"> <li>1. Central Nervous System Depressant</li> <li>2. Anticonvulsant</li> <li>3. Antiarrhythmic</li> </ol>
<b>INDICATIONS</b>	<ol style="list-style-type: none"> <li>1. Ventricular fibrillation / pulseless ventricular tachycardia in patients who are malnourished or chronic alcoholics</li> <li>2. Treatment of seizures in eclampsia patients</li> <li>3. Torsades de pointes</li> </ol>
<b>CONTRAINDICATIONS</b>	<ol style="list-style-type: none"> <li>1. Known hypersensitivity</li> <li>2. Shock</li> <li>3. Heart blocks</li> </ol>
<b>PRECAUTIONS</b>	<ol style="list-style-type: none"> <li>1. Hypotension</li> <li>2. Renal impairment</li> </ol>
<b>SIDE EFFECTS</b>	<ol style="list-style-type: none"> <li>1. Respiratory depression</li> <li>2. Flushing</li> <li>3. Drowsiness</li> </ol>
<b>SUPPLIED</b>	1 gram / 2 ml vial 50% solution
<b>ADULT DOSAGE</b>	<p><b>Cardiac Arrest / Torsades or Hypomagnesemia:</b> 1 - 2 g IV diluted in 10 ml normal saline</p> <p><b>Torsades with Pulse:</b> 1 - 2 g diluted with 50 – 100 ml normal saline over 5 - 60 min</p> <p><b>Eclampsia / Toxemia:</b> 4 - 6 g diluted in 10 ml normal saline IV slow</p>
<b>PEDIATRIC DOSAGE</b>	<p>25 – 50 mg / kg IV / IO for Torsades only</p> <p><b>See <u>PEDIATRIC DRUG ADMINISTRATION CHART</u> for weight based administration</b></p>
<b>KEY POINTS</b>	<ul style="list-style-type: none"> <li>• Check deep tendon reflexes (DTR's) after administration</li> <li>• Monitor EKG, vital signs and respiratory effort during administration</li> </ul>
<b>PROTOCOL USES</b>	<ul style="list-style-type: none"> <li>• <u>Adult Ventricular Fibrillation / Ventricular Tachycardia</u></li> <li>• <u>Adult Wide Complex Tachycardia</u></li> <li>• <u>Obstetrical Emergencies</u></li> <li>• <u>Pediatric Ventricular Fibrillation / Ventricular Tachycardia</u></li> </ul>

MEDICATIONS

**methylPREDNISolone (SOLU-medrol)**

<b>PREGNANCY CLASS</b>	C																											
<b>ACTIONS</b>	1. Reduces inflammation in lower airways																											
<b>INDICATIONS</b>	1. Anaphylaxis 2. Asthma 3. COPD																											
<b>CONTRAINDICATIONS</b>	None in the emergency setting																											
<b>PRECAUTIONS</b>	1. Use with caution in diabetics, hyperglycemia 2. Use with caution in recent MI																											
<b>SIDE EFFECTS</b>	1. Hyperglycemia 2. Increased susceptibility to infection 3. GI bleeding																											
<b>SUPPLIED</b>	125 mg / 2 ml Act-o-Vial																											
<b>ADULT DOSAGE</b>	Anaphylaxis: 125 mg IV / IO Respiratory Distress / Asthma / COPD / Stridor: 125 mg IV / IO																											
<b>PEDIATRIC DOSAGE</b>	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 <u>PEDIATRIC DRUG ADMINISTRATION CHART</u> for weight-based administration																											
	<table border="1"> <tr> <td>3-5 kg</td> <td>6-7 kg</td> <td>8-9 kg</td> <td>10-11 kg</td> <td>12-14 kg</td> <td>15-18 kg</td> <td>19-23 kg</td> <td>24-29 kg</td> <td>30-36 kg</td> </tr> <tr> <td>6-11 lbs</td> <td>13-15 lbs</td> <td>18-20 lbs</td> <td>22-24 lbs</td> <td>26-31 lbs</td> <td>33-37 lbs</td> <td>42-51 lbs</td> <td>53-64 lbs</td> <td>66-81 lbs</td> </tr> <tr> <td>18-24 in</td> <td>24-26 in</td> <td>26-29 in</td> <td>29-33 in</td> <td>33-38 in</td> <td>38-43 in</td> <td>43-48 in</td> <td>48-52 in</td> <td>52-57 in</td> </tr> </table>	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
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<b>KEY POINTS</b>	<ul style="list-style-type: none"> <li>• methylPREDNISolone (SOLU-medrol) will need to be mixed just prior to administration. Fluid will initially be cloudy, but will change quickly to clear</li> <li>• Be cautious with pediatric dosing, as the amounts may be very small. Use a 1 ml syringe for accuracy</li> </ul>																											

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## Midazolam (Versed)

THERAPEUTIC EFFECTS:	<p><u>Midazolam</u> is a short acting benzodiazepine, CNS depressant, sedative and amnestic medication.</p> <p>Onset of sedative effects after IM administration is 15 minutes with peak sedation occurring 30 - 60 minutes following injection.</p> <p>Onset of sedative/amnestic effects after IV administration are nearly immediate and peak in 5-15 minutes</p>
INDICATIONS:	<p>Emergency indications are:</p> <ul style="list-style-type: none"><li>control of seizure activity</li><li>status epilepticus</li><li>sedation prior to conscious cardioversion</li><li>Tasered patient experiencing excited delirium</li></ul>
CONTRAINDICATIONS:	<p>Conscious and unconscious head injury</p> <p>In patients with known hypersensitivity to the medication</p>
SIDE EFFECTS:	<p>Fluctuation in vital signs were the most frequently seen findings following administration of <u>midazolam</u> and include:</p> <ul style="list-style-type: none"><li>Decreased tidal volume and respiratory rate</li><li>Apnea</li><li>Variations in BP and pulse rate</li></ul>
HOW SUPPLIED:	<p>2 mL disposable syringes containing 5 mg per mL</p>
ADMINISTRATION:	<p><u>Midazolam</u> should only be administered IV/IM/IN. Because serious and life threatening cardiorespiratory adverse events (respiratory depression and hypotension) have been reported, institute cardiac and pulse oximetry monitoring, and provide supplemental O<sub>2</sub>. Be prepared for respiratory and cardiovascular support.</p>
ADULT DOSAGE:	<p>Slow IV (titrated over 1-2 minutes), single IM injection, or IN administration of 2 mg initially and titrate to patient's condition up to 5 mg maximum.</p>
PEDIATRIC DOSAGE:	<p>For persistent seizure activity, slow IV (titrated over 2-3 minutes), IM injection, or intranasal administration of 0.01 mg/kg</p>
NOTES:	<p>A. Common side effects of <u>midazolam</u> administration include drowsiness, dizziness, fatigue, and ataxia.</p>

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- B. Rarely paradoxical excitement, or stimulation can occur, especially in pediatric patients.
  - C. For intravenous administration, midazolam should not be mixed with other agents, or diluted with intravenous solutions. Slow down IV flow while administering and administer through the end of IV tubing closest to the patient.
  - D. The patients at highest risk for developing respiratory depression are those who have ingested other drugs, alcohol, and/or barbiturates.

**MEDICATIONS**

# NALOXONE (Narcan)

Pregnancy Category - C

E	EMT	E
A	AEMT	A
P	PARAMEDIC	P

<b>ACTIONS</b>	Blocks opiates from acting on opiate receptors
<b>INDICATIONS</b>	<ol style="list-style-type: none"> <li>1. Respiratory depression due to opioids</li> <li>2. Altered mental status of unknown origin</li> </ol>
<b>CONTRAINDICATIONS</b>	<ol style="list-style-type: none"> <li>1. Known hypersensitivity</li> </ol>
<b>PRECAUTIONS</b>	<ol style="list-style-type: none"> <li>1. Assist ventilations prior to and while waiting for Naloxone (Narcan) to work</li> <li>2. Should be used and titrated to desired respiratory effect, and not intended to restore full consciousness</li> <li>3. Naloxone (Narcan) may induce acute withdrawal in patients who are opiate dependant. Be prepared for a potentially combative patient</li> <li>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</li> <li>5. Withdrawal may cause: pain, hypertension, agitation, irritability, and diaphoresis</li> </ol>
<b>SIDE EFFECTS</b>	Narcotic withdrawal
<b>SUPPLIED</b>	2 mg / 2 ml prefilled syringe
<b>ADULT DOSAGE</b>	2 mg IV / IM / IN Atomized may be repeated as needed to maintain respiratory effort <b>EMT</b> 2 mg IN Atomized may be repeated as needed to maintain respiratory effort
<b>PEDIATRIC DOSAGE</b>	0.1 mg / kg IV / IM / IN Atomized may be repeated as needed to maintain respiratory effort  <b>See <u>PEDIATRIC DRUG ADMINISTRATION CHART</u> for weight based administration</b>
<b>PROTOCOL USE</b>	<ul style="list-style-type: none"> <li>• <u>Adult Altered Level Of Consciousness</u></li> <li>• <u>Neonatal Resuscitation</u></li> <li>• <u>Pediatric Altered Level Of Consciousness</u></li> <li>• <u>Pediatric Head Trauma</u></li> </ul>

**MEDICATIONS**

# NITROGLYCERIN (Nitro-Stat)

Pregnancy Category - C

E	EMT	E
A	AEMT	A
P	PARAMEDIC	P

<b>ACTIONS</b>	<ol style="list-style-type: none"> <li>1. Vasodilatation</li> <li>2. Coronary artery dilation</li> <li>3. Decreases myocardial oxygen demand</li> <li>4. Decreases vascular resistance</li> </ol>
<b>INDICATIONS</b>	<ol style="list-style-type: none"> <li>1. Suspected ischemic chest pain / AMI</li> <li>2. Hypertensive emergency with signs and symptoms of ACS</li> <li>3. Pulmonary edema</li> </ol>
<b>CONTRAINDICATIONS</b>	<ol style="list-style-type: none"> <li>1. Hypotension</li> <li>2. Known hypersensitivity</li> <li>3. Use of Viagra or similar erectile dysfunction medications within 48 hours</li> </ol>
<b>PRECAUTIONS</b>	<ol style="list-style-type: none"> <li>1. Use caution in patients with inferior wall MI (Elevation in leads II, III, AVF)</li> <li>2. Avoid use in patients with increased intracranial pressure or glaucoma</li> <li>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</li> </ol>
<b>SIDE EFFECTS</b>	<ol style="list-style-type: none"> <li>1. Hypotension</li> <li>2. Throbbing headache</li> <li>3. Lightheadedness / dizziness</li> <li>4. Syncope</li> </ol>
<b>SUPPLIED</b>	0.4 mg SL tablet
<b>ADULT DOSAGE</b>	<p><b>Cardiac Chest Discomfort / AMI:</b> 0.4 mg SL (may be repeated up to 3 doses total) <b>EMT CONTACT MEDICAL CONTROL</b></p> <p><b>Pulmonary Edema / CHF:</b> 0.4 mg SL (may be repeated up to 3 doses total)</p> <p><b>Esophageal Foreign Body:</b> 0.4 mg SL</p>
<b>PEDIATRIC DOSAGE</b>	Not recommended in prehospital setting
<b>KEY POINTS</b>	<ul style="list-style-type: none"> <li>• May repeat up to 3 doses if B/P systolic &gt; 110 with IV or 120 without IV</li> <li>• Assure that patient does not chew or swallow tablets</li> </ul>
<b>PROTOCOL USE</b>	<ul style="list-style-type: none"> <li>• <u>Acute Coronary Symptoms</u></li> <li>• <u>Adult Esophageal Foreign Body Obstruction</u></li> </ul>

**MEDICATIONS**

# ONDANSETRON (Zofran)

Pregnancy Category - B

**P**    **PARAMEDIC**    **P**

<b>ACTIONS</b>	1. Prevents nausea and vomiting by blocking serotonin peripherally and centrally in the small intestines
<b>INDICATIONS</b>	1. Nausea and vomiting 2. Chemotherapy and radiation induced nausea and vomiting
<b>CONTRAINDICATIONS</b>	1. Known hypersensitivity 2. Severe liver disease
<b>PRECAUTIONS</b>	1. Pregnancy 2. May prolong QT interval when used with other QT prolonging agents
<b>SIDE EFFECTS</b>	1. Constipation, diarrhea 2. Increased liver enzymes 3. Headache 4. Fatigue and malaise
<b>SUPPLIED</b>	4 mg / 2 ml single dose vial and 4 mg oral dissolving tablets
<b>ADULT DOSAGE</b>	4 mg IM or IV over 2 - 4 minutes May repeat in 15 minutes if symptoms unresolved. or 8 mg Oral dissolving tablets (x2) 4mg tablets
<b>PEDIATRIC DOSAGE</b>	0.15 mg / kg IV – over 2 - 4 minutes if > 40 kg then 4 mg Oral dissolving tablets (x1) 4mg tablet  <b>See <u>PEDIATRIC DRUG ADMINISTRATION CHART</u> for weight based administration</b>
<b>PROTOCOL USE</b>	<ul style="list-style-type: none"> <li>• <u>Adult Abdominal Pain</u></li> <li>• <u>Adult Anti-Emetic</u></li> <li>• <u>Adult Severe Pain Management</u></li> <li>• <u>Pediatric Anti-Emetic</u></li> <li>• <u>Pediatric Severe Pain Management</u></li> </ul>

**MEDICATIONS**

# ORAL GLUCOSE (Instant Glucose)

Pregnancy Category - B

E	EMT	E
A	AEMT	A
P	PARAMEDIC	P

<b>ACTIONS</b>	Raises blood glucose level
<b>INDICATIONS</b>	Treatment of hypoglycemia
<b>CONTRAINDICATIONS</b>	<ol style="list-style-type: none"> <li>1. Known hypersensitivity to corn products</li> <li>2. Unconscious patients</li> </ol>
<b>PRECAUTIONS</b>	<ol style="list-style-type: none"> <li>1. Patient must be alert and able to sufficiently swallow</li> <li>2. Monitor patient for difficulty swallowing or choking due to the thick consistency of agent</li> </ol>
<b>SUPPLIED</b>	Squeeze tube containing 24 grams of flavored oral dextrose gel
<b>ADULT DOSAGE</b>	One complete tube (15 g - 24 g) by mouth
<b>PEDIATRIC DOSAGE</b>	Half a tube by mouth
<b>KEY POINTS</b>	<b>The patient must be alert and have the ability to swallow!</b>
<b>PROTOCOL USE</b>	<ul style="list-style-type: none"> <li>• <u>Adult Altered Level of Consciousness</u></li> <li>• <u>Adult Diabetic Emergencies</u></li> <li>• <u>Pediatric Altered Level of Consciousness</u></li> <li>• <u>Pediatric Diabetic Emergencies</u></li> </ul>

**MEDICATIONS**

**OXYGEN (O2)**

Pregnancy Category - B

E	EMT	E
A	AEMT	A
P	PARAMEDIC	P

<b>ACTIONS</b>	<ol style="list-style-type: none"> <li>Increases oxygen content of blood</li> <li>Improves tissue oxygenation</li> <li>Decreases energy expended for respirations</li> </ol>
<b>INDICATIONS</b>	<ol style="list-style-type: none"> <li>Cardiac chest discomfort / ACS</li> <li>Suspected stroke</li> <li>Hypoxemia</li> <li>Cardiopulmonary emergencies</li> <li>Trauma</li> <li>Shortness of breath / dyspnea</li> <li>Sedative drug administration</li> <li>Unknown oxyhemoglobin saturation</li> </ol>
<b>CONTRAINDICATIONS</b>	None in the prehospital setting
<b>PRECAUTIONS</b>	Be aware for respiratory depression in COPD patients on prolonged high flow oxygen
<b>SIDE EFFECTS</b>	High concentrations of oxygen may reduce the respiratory drive in some COPD patients; these patients should be carefully monitored
<b>SUPPLIED</b>	As a compressed gas in cylinders of varying sizes
<b>ADULT DOSAGE</b>	12 - 15 lpm via NRB mask or 2 - 6 lpm via nasal cannula, 6 - 10 lpm via small volume nebulizer, unless otherwise indicated
<b>PEDIATRIC DOSAGE</b>	12 - 15 lpm via NRB mask or 2 - 6 lpm via nasal cannula, or 6 - 10 lpm via unit dose nebulizer, unless otherwise indicated
<b>KEY POINTS</b>	<ul style="list-style-type: none"> <li>Never withhold oxygen to those who need it</li> <li>All sedative medication administration must have oxygen administration</li> </ul>

**MEDICATIONS**

# SODIUM BICARBONATE

Pregnancy Category - C

**P** **PARAMEDIC** **P**

<b>ACTIONS</b>	Alkalinizing agent Decreases absorption of certain drug in the kidneys
<b>INDICATIONS</b>	1. Used in cardiac arrest for known dialysis patients 2. Tricyclic overdoses
<b>CONTRAINDICATIONS</b>	Known hypersensitivity
<b>PRECAUTIONS</b>	1. Should be administered after airway is secured 2. Heart failure
<b>SIDE EFFECTS</b>	1. Hyperosmolarity 2. Alkalosis
<b>SUPPLIED</b>	Prefilled syringes 8.4% 50ml
<b>ADULT DOSAGE</b>	<b>Cardiac Arrest/Known Dialysis Patient:</b> 1 - 2 Amps IV  <b>Tricyclic Overdose:</b> 1 Amp IV
<b>PEDIATRIC DOSAGE</b>	<b>Tricyclic Overdose:</b> 1 mEq / kg  <b>See <u>PEDIATRIC DRUG ADMINISTRATION CHART</u> for weight based administration</b>
<b>KEY POINTS</b>	<ul style="list-style-type: none"> <li>• Tricyclic anti-depressants include (but not limited to): Amitriptyline, Nortriptyline, Elavil, Amoxapine, Clomipramine, Desipramine, Doxepin, Imipramine, Nortriptyline, Protriptyline, and Trimipramine</li> <li>• Administer until QRS complex narrows to less than 0.12 m sec and the patient condition improves</li> <li>• Carefully flush IV lines after administration</li> <li>• Extravasation may cause tissue resistance</li> </ul>
<b>PROTOCOL USE</b>	<ul style="list-style-type: none"> <li>• <u>Adult Asystole / PEA</u></li> <li>• <u>Adult Toxic Ingestion / Exposure / Overdose</u></li> <li>• <u>Adult Ventricular Fibrillation / Ventricular Tachycardia</u></li> <li>• <u>Pediatric Asystole / PEA</u></li> </ul>

<b>MEDICATIONS</b>
<b>TETRACAINE (Pontocaine, Ophthalmic)</b>

**I#** Paramedic **I#**

<b>ACTIONS</b>	Local anesthesia for eyes
<b>INDICATIONS</b>	Irritation and/or pain of the eyes <b>(With no penetrating trauma)</b>
<b>CONTRAINDICATIONS</b>	Hypersensitivity or Allergy to tetracaine and other local anesthetics Penetrating or open eye injury
<b>PRECAUTIONS</b>	
<b>SIDE EFFECTS</b>	Burning sensation in eyes Redness, tearing
<b>ADULT DOSAGE</b>	1-2 drops in effected eye every 5-10 minutes prn for pain control
<b>PEDIATRIC DOSAGE</b>	<b>CALL MEDICAL COMMAND</b>
<b>KEY POINTS</b>	<ul style="list-style-type: none"> <li>• Keep dropper sterile</li> <li>• Single patient use only</li> </ul>

MEDICATIONS

**TICAGRELOR (Brilinta)**

<b>PREGNANCY CLASS</b>	C
<b>ACTIONS</b>	P2Y platelet inhibitor
<b>INDICATIONS</b>	1. Confirmed STEMI
<b>CONTRAINDICATIONS</b>	1. Bleeding 2. Intracranial hemorrhage 3. Hepatic impairment
<b>PRECAUTIONS</b>	Use with caution in patients with other prescribed direct acting anti-platelet medications
<b>SIDE EFFECTS</b>	1. Bleeding 2. Dyspnea
<b>SUPPLIED</b>	90 mg tablets
<b>ADULT DOSAGE</b>	Confirmed STEMI: 180 mg PO (2 – 90 mg Tablets)
<b>PEDIATRIC DOSAGE</b>	Not recommended in the pre-hospital setting

MEDICATIONS

**TRANEXAMIC ACID (TXA)**

<b>PREGNANCY CLASS</b>	B
<b>ACTIONS</b>	Preserves the framework of existing clot structure, preventing clot breakdown.
<b>INDICATIONS</b>	<ul style="list-style-type: none"> <li>▪ Adult &gt; 16 years old</li> <li>▪ Evidence of current or previous uncontrolled hemorrhage</li> <li>▪ Hemorrhagic shock from recent Trauma (&lt; 1 hour)</li> <li>▪ Sustained tachycardia (&gt;120 bpm) and/or hypotension (systolic &lt; 90mmHg)</li> <li>▪ TXA must be given within 60 minutes from time of injury</li> </ul>
<b>CONTRAINDICATIONS</b>	<ul style="list-style-type: none"> <li>▪ Hypersensitivity to medication</li> <li>▪ Suspected CVA, MI, or PE</li> </ul>
<b>PRECAUTIONS</b>	<ul style="list-style-type: none"> <li>▪ TXA should not be administered in non-traumatic and non-hemorrhagic shock</li> <li>▪ TXA should only be administered within 60 minutes of the injury and when time of injury to tertiary care exceeds one hour</li> </ul>
<b>SIDE EFFECTS</b>	<ul style="list-style-type: none"> <li>▪ Anaphylaxis</li> <li>▪ Thrombosis</li> <li>▪ Hypotension (with rapid infusion, such as rate of greater than 100 mg/min)</li> <li>▪ Nausea, vomiting, diarrhea</li> <li>▪ Visual disturbances (blurred vision, changes in color vision)</li> </ul>
<b>SUPPLIED</b>	1 Gram / 10 ml Vial or Ampule
<b>ADULT DOSAGE</b>	<p>Adult Trauma with Uncontrolled Bleeding and Hemodynamic Instability</p> <p>Mix 1gm in 100 ml of D5 and administer over 10minutes</p> <p>10 gtt/ml drip set (2qtts/sec)</p> <p>15 gtt/ml drip set (3gtts/sec)</p>
<b>PEDIATRIC DOSAGE</b>	Not recommended in the pre-hospital setting



# PEDIATRIC

## Drug Administration Chart

Weight	3 kg	4 kg	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
<b>Volume Expansion Saline Bolus</b>	60 ml	80 ml	100 ml	130 ml	170 ml	210 ml	260 ml	325 ml	420 ml	530 ml	660 ml

Gray	3 kg	4 kg	5 kg
Adenosine (Adenocard) (1 <sup>s</sup> Dose) 6 mg / 2 ml	0.3 mg	0.4 mg	0.5 mg
Adenosine (Adenocard) (2 <sup>n</sup> Dose) 6 mg / 2 ml	0.6 mg	0.8 mg	1 mg
Amiodarone (Cordarone) 150 mg / 3 ml	15 mg	20 mg	25 mg
Atropine 1 mg / 10ml	0.1 mg	0.1 mg	0.1 mg
Dextrose 10% (D10) 25 g / 250 ml	15 ml	20 ml	25 ml
Dextrose 25% (D25%) 2.5 g / 10 ml	1.5 g	2 g	2.5 g
Diphenhydramine (Benadryl) 50 mg / 1 ml	3 mg	4 mg	5 mg
Epinephrine (Adrenaline) 1:1,000 (1 mg / ml)	0.3 mg	0.4 mg	0.5 mg
Epinephrine (Adrenaline) 1:10,000 0.1mg / ml	0.03 mg	0.04 mg	0.05 mg
Glucagon (Glucagen) 1mg / ml	0.3 mg	0.4 mg	0.5 mg
Hydromorphone (Dilaudid) 1mg / ml	0.04 mg	0.06 mg	0.07 mg
Magnesium Sulfate 500mg / ml	150 mg	200 mg	250 mg
Midazolam (Versed) 1mg / ml	0.3 mg	0.4 mg	0.5 mg
Naloxone (Narcan) 2 mg / 2 ml	0.3 mg	0.4 mg	0.5 mg
Ondansetron (Zofran) 4mg/2ml	0.45 mg	0.6 mg	0.75 mg

# PEDIATRIC

## Drug Administration Chart

Pink	6 – 7 kg (6.5 kg average)
Adenosine (Adenocard) (1st Dose) 6 mg / 2 ml	0.65 mg
Adenosine (Adenocard) (2 <sup>nd</sup> Dose) 6 mg / 2 ml	1.3 mg
Amiodarone (Cordarone) 150 mg / 3 ml	32 mg
Atropine 1 mg / 10ml	0.13 mg
Dextrose 10% (D10)% 25 g / 250 ml	32.5 ml
Dextrose 25% (D25%) 2.5 g / 10 ml	3.25 g
Diphenhydramine (Benadryl) 50 mg / ml	6.5 mg
Epinephrine (Adrenaline) 1:1,000 ET (1 mg / ml)	0.65 mg
Epinephrine (Adrenaline) 1:10,000 0.1 mg / ml	0.65 mg
Glucagon (Glucagen) 1 mg / ml	0.65 mg
Hydromorphone (Dilaudid) 1 mg / ml	0.10 mg
Magnesium Sulfate 500 mg / ml	0.325 mg
Midazolam (Versed) 1 mg / ml	0.65 mg
Naloxone (Narcan) 2 mg / 2 ml	0.65 mg
Ondansetron (Zofran) 4 mg / 2 ml	0.98 mg
Sodium Bicarbonate 8.4% (1 mEq / ml)	6.5 mEq
Red	8 – 9 kg (8.5 kg average)
Adenosine (Adenocard) (1st Dose) 6 mg / 2 ml	0.85 mg
Adenosine (Adenocard) (2nd Dose) 6 mg / 2 ml	1.7 mg
Amiodarone (Cordarone) 150 mg / 3 ml	42 mg
Atropine 1 mg / 10ml	0.17 mg
Dextrose 10% (D10)% 25 g / 250 ml	42.5 ml
Dextrose 25% (D25)% 2.5 g / 10 ml	2.25 g
Diphenhydramine (Benadryl) 50 mg / ml	8.5 mg
Epinephrine (Adrenaline) 1:1,000 ET (1 mg / ml)	0.85 mg
Epinephrine (Adrenaline) 1:10,000 (0.1 mg / ml)	0.85 mg
Glucagon (Glucagen) 1 mg / ml	0.85 mg
Hydromorphone Dilaudid 1 mg / ml	0.13 mg
Magnesium Sulfate 500 mg / ml	425 mg
Midazolam (Versed) 1 mg / ml	0.85 mg
Naloxone (Narcan) 2 mg / 2 ml	0.85 mg
Ondansetron (Zofran) 4 mg / 2 ml	1.3 mg
Sodium Bicarbonate 8.4% (1 mEq / ml)	8.5 mEq

# PEDIATRIC

## Drug Administration Chart

Purple	10 – 11 kg (10.5 kg average)
Adenosine (Adenocard) (1 <sup>st</sup> Dose) 6 mg / 2 ml	1 mg
Adenosine (Adenocard) (2nd Dose) 6 mg / 2 ml	2 mg
Amiodarone (Cordarone) 150 mg / 3 ml	52 mg
Atropine 1 mg / 10 ml	0.21 mg
Dextrose 10% (D10)% 25 g / 250 ml	52.5 ml
Dextrose 25% ( D25)% 2.5 g / 10 ml	5.25 g
Diphenhydramine (Benadryl) 50 mg / ml	10.5 mg
Epinephrine (Adrenaline) 1:1,000 ET (1 mg / ml)	1 mg
Epinephrine (Adrenaline) 1:10,000 (0.1 mg / ml)	0.1 mg
Glucagon (Glucagen) 1 mg / ml	1 mg
Hydromorphone Dilaudid 1 mg / ml	0.16 mg
Magnesium Sulfate 500 mg / ml	525 mg
Midazolam (Versed) 1 mg / ml	1.05 mg
Naloxone (Narcan) 2 mg / 2 ml	1.05 mg
Ondansetron (Zofran) 4 mg / 2 ml	1.58 mg
Sodium Bicarbonate 8.4% (1 mEq / ml)	10 mEq
Yellow	12 – 14 kg (13 kg average)
Adenosine (Adenocard) (1st Dose) 6 mg / 2 ml	1.3 mg
Adenosine (Adenocard) (2nd Dose) 6 mg / 2 ml	2.6 mg
Amiodarone (Cordarone)150 mg / 3 ml	65 mg
Atropine 1 mg / 10 ml	0.26 mg
Dextrose 10% (D10)% 25 g / 250 ml	65 ml
Dextrose 25% ( D25)% 2.5 g / 10 ml	6.5 g
Diphenhydramine (Benadryl) 50 mg / 1 ml	13 mg
Epinephrine (Adrenaline) 1:1,000 ET (1 mg / ml)	1.3 mg
Epinephrine (Adrenaline) 1:10,000 (0.1 mg / ml)	0.13 mg
Glucagon (Glucagen)1 mg / ml	1 mg
Hydromorphone Dilaudid 1 mg / ml	0.19 mg
Magnesium Sulfate 500 mg / ml	650 mg
Midazolam (Versed) 1 mg / ml	1.3 mg
Naloxone (Narcan) 2 mg / 2 ml	1.3 mg
Ondansetron (Zofran) 4 mg / 2 ml	1.95 mg
Sodium Bicarbonate 8.4% (1 mEq / ml)	13 mEq

# PEDIATRIC

## Drug Administration Chart

White	15 – 18 kg (16.5 kg average)
Adenosine (Adenocard) (1st Dose) 6 mg / 2 ml	1.65 mg
Adenosine (Adenocard) (2nd Dose) 6 mg / 2 ml	3.3 mg
Amiodarone (Cordarone) 150 mg / 3 ml	82.5 mg
Atropine 1 mg / 10ml	0.33 mg
Dextrose 10% (D10)% 25 g / 250 ml	82.5 ml
Dextrose 25% (D25%) 2.5 g / 10 ml	8.5 g
Diphenhydramine (Benadryl) 50 mg / ml	16.5 mg
Epinephrine (Adrenaline) 1:1,000 ET (1 mg / ml)	1.65 mg
Epinephrine (Adrenaline) 1:10,000 (0.1 mg / ml)	0.165 mg
Glucagon (Glucagen) 1 mg / ml	1 mg
Hydromorphone (Dilaudid) 1 mg / ml	0.25 mg
Magnesium Sulfate 500 mg / ml	825 mg
Midazolam (Versed) 1 mg / ml	1.65 mg
Naloxone (Narcan) 2 mg / 2 ml	1.65 mg
Ondansetron (Zofran) 4 mg / 2 ml	2.48 mg
Sodium Bicarbonate 8.4% (1 mEq / ml)	16.5 mEq
Blue	19 – 23 kg (21 kg average)
Adenosine (Adenocard) (1st Dose) 6 mg / 2 ml	2.1 mg
Adenosine (Adenocard) (2nd Dose) 6 mg / 2 ml	4.2 mg
Amiodarone (Corarone) 150 mg / 3 ml	105 mg
Atropine 1 mg / 10ml	0.42 mg
Dextrose 10% (D10)% 25 g / 250 ml	105 ml
Dextrose 25% (D25)% 2.5 g / 10 ml	10.5 g
Diphenhydramine (Benadryl) 50 mg / ml	21 mg
Epinephrine (Adrenaline) 1:1 000 ET (1 mg / ml)	2.1 mg
Epinephrine (Adrenaline) 1:10 000 (0.1 mg / ml)	0.21 mg
Glucagon (Glucagen) 1 mg / ml	1 mg
Hydromorphone Dilaudid 1 mg / ml	0.30 mg
Magnesium Sulfate 500 mg / ml	1050 mg
Midazolam (Versed) 1 mg / ml	2.1 mg
Naloxone (Narcan) 2 mg / 2 ml	2 mg
Ondansetron (Zofran) 4 mg / 2 ml	3.15 mg
Sodium Bicarbonate 8.4% (1 mEq / ml)	21 mE

# PEDIATRIC

## Drug Administration Chart

Orange	24 – 29 kg (26.5 mg average)
Adenosine (Adenocard) (1st Dose) 6 mg / 2 ml	2.65 mg
Adenosine (Adenocard) (2nd Dose) 6 mg / 2 ml	5.3 mg
Amiodarone (Cordarone) 150 mg / 3 ml	132.5 mg
Atropine 1 mg / 10ml	0.53 mg
Dextrose 10% (D10)% 25 g / 250 ml	132 ml
Dextrose D25% (D25) 2.5 g / 10 ml	13.5 g
Diphenhydramine (Benadryl) 50 mg / ml	26.5 mg
Epinephrine (Adrenaline) 1:1,000 ET (1 mg / ml)	2.7 mg
Epinephrine (Adrenaline) 1:10,000 (0.1 mg / ml)	0.27 mg
Glucagon (Glucagen) 1 mg / ml	1 mg
Hydromorphone Dilaudid 1 mg / ml	0.40 mg
Magnesium Sulfate 500 mg / ml	1325 mg
Midazolam (Versed) 1 mg / ml	2.65 mg
Naloxone (Narcan) 2 mg / 2 ml	2 mg
Ondansetron (Zofran) 4 mg / 2 ml	4 mg
Sodium Bicarbonate 8.4% (1 mEq / ml)	26.5 mEq
Green	30 – 36 kg (33 kg average)
Adenosine (Adenocard) (1st Dose) 6 mg / 2 ml	3.3 mg
Adenosine (Adenocard) (2nd Dose) 6 mg / 2 ml	6.6 mg
ml Amiodarone (Cordarone) 150 mg / 3 ml	165 mg
Atropine 1 mg / 10 ml	0.66 mg
Dextrose 10% (D10)% 25 g / 250 ml	165 ml
Dextrose 25% (D25)% 2.5 g / 10 ml	16.5 g
Diphenhydramine (Benadryl) 50 mg / ml	33 mg
Epinephrine (Adrenaline) 1:1,000 ET (1 mg / ml)	3.3 mg
Epinephrine (Adrenaline) 1:10,000 (0.1 mg / ml)	0.33 mg
Glucagon (Glucagen) 1 mg / ml	1 mg
Hydromorphone Dilaudid 1mg / ml	0.50 mg
Magnesium Sulfate 500 mg / ml	1650 mg
Midazolam (Versed) 1 mg / ml	3.3 mg
Naloxone (Narcan) 2 mg / 2 ml	2 mg
Ondansetron (Zofran) 4 mg / 2 ml	4 mg
Sodium Bicarbonate 8.4% (1 mEq / ml)	33 mEq

# WRH EMS Pain Management Protocol

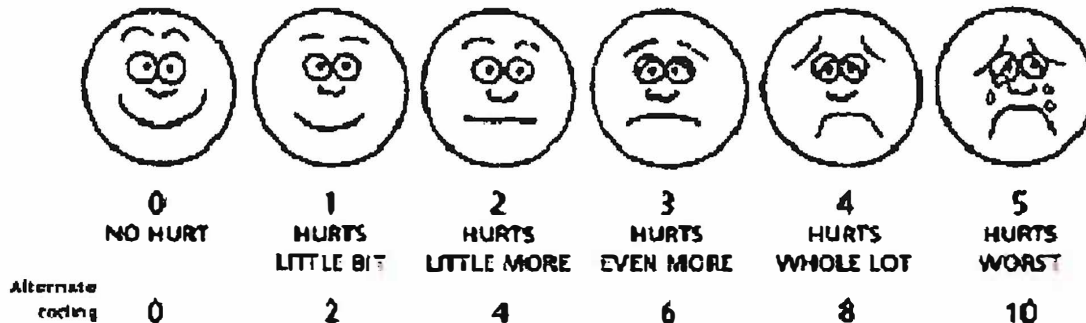
## General Considerations

- A. Pain management in the pre-hospital setting should be limited to patients with moderate to severe pain. The EMT must always consider the type of pain, the patient's overall condition, allergies, co-existing medical conditions, and drug contraindications when deciding if pain management is appropriate and which pain medication should be administered.
- B. Evaluate and document the following:
- Vital signs
  - Level of consciousness
  - Patient's description of pain
  - Location of pain
  - Severity (see diagrams below)
  - Does pain radiate?
  - Is it reproducible?
  - Associated symptoms? (Nausea, vomiting, diaphoresis, lightheadedness, etc.)
  - If pain medications administered, assess and documents the effects of the medication.

### Pain Scale

0	1	2	3	4	5	6	7	8	9	10
<b>No Pain No Distress</b>		<b>Annoying</b>		<b>Uncomfortable</b>		<b>Dreadful</b>		<b>Horrible</b>		<b>Agonizing Unbearable Distress</b>

### Pediatric Patients- The Wong-Baker PACES Pain Rating Scale



C. The EMT must be prepared for potential complications of pain medications.

1. If patient becomes hypotensive administer IV normal saline fluid bolus:

- 250 – 500 ml for adult patient
- 20 ml/kg for pediatric patient (to a maximum of 500ml)
- Repeat boluses as needed to maintain BP

2. If LOC decreases and/or respiratory depression occur, manage airway appropriately.

3. Consider Narcan administration if respiratory depression does not quickly resolve or if patient is over sedated.

Guidelines as to which medication is most appropriate for specific situations are outlined below. Refer to Medication Appendix for complete drug information.

### **Morphine Sulfate, Hydromorphone or Fentanyl**

May consider Morphine Sulfate OR Hydromorphone OR Fentanyl for the following:

- Flank pain
- Trauma patients who are awake, alert, and oriented X 3 and have a good BP. Do NOT administer for patient with depressed level of consciousness and / or reported loss of consciousness
- Burns
- Chest pain / angina after oxygen, aspirin, and nitroglycerin have been administered
- Abdominal pain

**Morphine Adult dose:** 5 mg slow IVP, may repeat every 5 minutes to a maximum dose of 10 mg. Consider 2-5 mg dose for patients > 60 years of age. Check and document vital signs between doses. Hold subsequent doses if SBP < 100 mmHg, respiratory depression occurs and/or level of conscious diminishes. Call Medical Control if additional doses are needed.

**Morphine Pediatric dose:** 0.1 mg/kg (maximum 5 mg) slow IVP may repeat every 5 minutes as needed for severe pain to a total maximum dose of 5 mg. Check and document vital signs between doses. Hold subsequent doses if BP drops, respiratory depression occurs and/or level of conscious diminishes.

**Hydromorphone Adult Dose:** 0.5-1mg IV or IM, over 65 years, liver failure, renal failure, or debilitated patients: Titrated to pain tolerance, up to 0.5 mg IV or IM. May repeat as needed.

**Hydromorphone Pediatric Dose:** Refer to Pediatric Drug Administration Chart in the protocol.

**Fentanyl Adult dose:** 50-100 mcg IM or slow IVP over 1-2 minutes, or IN , times one only

**Fentanyl Pediatric dose:** 0.5 – 1 mcg/kg slow IVP, IM or IN times one only.



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# ADULT PATIENT ASSESSMENT

## INDICATIONS

- Any patient that showing signs of puberty or greater than 16 years.

E	EMT	E
A	AEMT	A
P	PARAMEDIC	P

## PROCEDURE

- Scene size-up, including universal precautions, scene safety, environmental hazards assessment, need for additional resources, by-stander safety, and patient / caregiver interaction.
- Assess need for additional resources.
- Initial assessment includes a general impression as well as the status of a patient's airway, breathing, and circulation.
- Assess mental status (e.g., AVPU) and disability (e.g., GCS).
- Control major hemorrhage and assess overall priority of patient.
- Perform a focused history and physical based on patient's chief complaint.
- Assess need for critical interventions.
- Complete critical interventions and perform a complete secondary exam to include a baseline set of vital signs as directed by protocol.
- 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 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.

# PEDIATRIC PATIENT ASSESSMENT

## INDICATIONS

- Patient less than 16 years old or no signs of puberty.

E	EMT	E
A	AEMT	A
P	PARAMEDIC	P

## 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 Broselow tape.
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

INDICATIONS	SIGNS AND SYMPTOMS	CONTRAINDICATIONS
<ul style="list-style-type: none"> <li>Patients experiencing bronchospasm</li> </ul>	<ul style="list-style-type: none"> <li>Shortness of breath</li> <li>Wheezing</li> <li>History of COPD / asthma</li> <li>Unable to complete full sentences</li> <li>Accessory muscle use</li> <li>Nasal flaring</li> <li>Fatigue</li> </ul>	<ul style="list-style-type: none"> <li>Allergy to medication</li> <li>Arrhythmias</li> </ul>

### PROCEDURE – EMT MUST CONTACT MEDICAL CONTROL

E	EMT	E
A	AEMT	A
P	PARAMEDIC	P

- Gather the necessary equipment.
- Assemble the nebulizer kit.
- Instill the premixed medication into the reservoir well of the nebulizer.
- Connect the nebulizer device to oxygen at 6 - 8 liters per minute or adequate flow to produce a steady, visible mist.
- 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.
- The treatment should last until the solution is depleted. Tapping the reservoir well near the end of the treatment will assist in utilizing all of the solution.
- 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.
- 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
<ul style="list-style-type: none"> <li>Patients experiencing bronchospasm</li> </ul>	<ul style="list-style-type: none"> <li>Shortness of breath</li> <li>Wheezing</li> <li>Patient has own prescribed inhaler</li> </ul>	<ul style="list-style-type: none"> <li>Medication is not prescribed to patient</li> <li>Medication has expired</li> <li>Patient has received maximum dose</li> </ul>

### PROCEDURE

- Make sure that personal inhaler is at room temperature or warmer.
- Follow the instructions for either gentle or vigorous shaking.
- Instruct patient to seal lips around opening of inhaler, using spacer if present.
- Instruct patient to inhale deeply while depressing the inhaler.
- Instruct patient to hold breathe as long as possible.
- Follow the Respiratory Distress protocol.

## AIRWAY / BREATHING

# CONTINUOUS POSITIVE AIRWAY PRESSURE (CPAP) DEVICE

INDICATIONS	SIGNS AND SYMPTOMS	CONTRAINDICATIONS
<ul style="list-style-type: none"> <li>Breathing patient whose condition is not improving with oxygen therapy</li> <li>Respiratory distress or failure, due to pulmonary edema, CHF, or COPD</li> <li>Patients 15 years of age or older</li> </ul>	<ul style="list-style-type: none"> <li>Dyspnea and tachypnea &gt; 25</li> <li>Chest pain</li> <li>Hypertension</li> <li>Tachycardia</li> <li>Anxiety</li> <li>Altered LOC</li> <li>Rales and wheezes</li> <li>Frothy sputum (severe cases)</li> <li>Accessory muscle use</li> <li>Retractions</li> <li>SPO2 &lt; 94%</li> </ul>	<ul style="list-style-type: none"> <li>Respiratory arrest / compromise</li> <li>Agonal respirations</li> <li>Unconscious</li> <li>Shock (cardiac insufficiency)</li> <li>Pneumothorax - (with no chest tube)</li> <li>Penetrating chest trauma</li> <li>Persistent nausea and vomiting</li> <li>Facial anomalies, facial trauma</li> <li>Known blebs</li> <li>Hypercarbia</li> <li>B/P &lt; 90 systolic</li> </ul>

E	EMT	E
A	AEMT	A
P	PARAMEDIC	P

### PROCEDURE

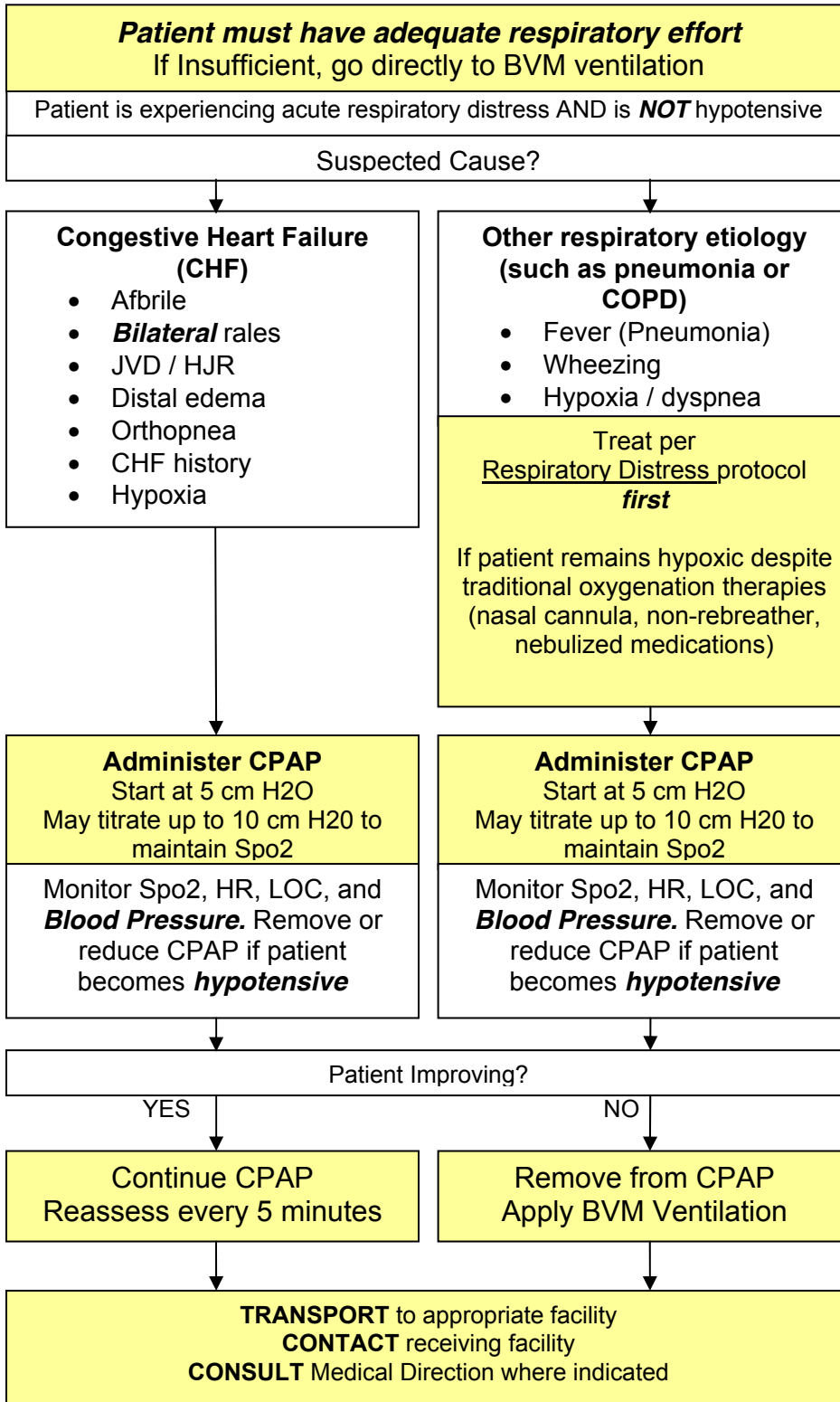
- Assure there is a patent airway and patient breathing is life sustaining.
- Administer 100% oxygen via appropriate delivery system.
- Perform appropriate patient assessment, including obtaining vital signs, SPO2 reading and cardiac rhythm.
- Verbally instruct the CPAP procedure to the patient.
- Apply CPAP device, starting at 5 cm H2O.
- Slowly titrate the pressure up to patient response. 10 cm H2O maximum.
- Continuously reassess the patient, obtaining vital signs every 5 minutes.
- Monitor continuous SPO2.
- Follow the appropriate set of standing orders for your specific device for continued treatment.
- 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 and COPD.
- The use of CPAP for the treatment of patients who might otherwise receive endotracheal intubation holds several benefits:
  - 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.
  - CPAP eliminates the necessity of weaning the patient off an ET tube and ventilator.
  - CPAP used prehospitally reduces the need to intubate patients in the hospital.
  - 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.
  - 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.**

**CONTINUOUS POSITIVE AIRWAY PRESSURE (CPAP) DEVICE**



E	EMT	E
A	AEMT	A
P	PARAMEDIC	P

**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 SQ Epinephrine (Adrenaline) or Terbutaline (Brethine).

Be prepared to intubate and ventilate these patients.

- KEY POINTS**
- **CPAP Indications:** Hypoxemia and SOB secondary to CHF or other causes **not responding to O2 therapy**
  - **CPAP Contraindications:** BP <90 systolic, respiratory arrest, agonal respirations, unconscious, shock associated with cardiac insufficiency, pneumothorax, penetrating chest trauma, persistent nausea and vomiting, facial anomalies, facial trauma, know blebs, unable to follow commands, apnea, hypercarbia, and airway compromise.
  - **Patient must be adequately and spontaneous breathing**

# END TIDAL CO<sub>2</sub> / CAPOGRAPHY PROCEDURE

INDICATIONS	SIGNS AND SYMPTOMS	CONTRAINDICATIONS
<ul style="list-style-type: none"> <li>The End-Tidal CO<sub>2</sub> shall be measured on all intubated patients, or with placements of King Airway / LMA</li> </ul>	<ul style="list-style-type: none"> <li>Cardiac Arrest / Shock</li> <li>Intubated Patients</li> <li>Respiratory Failure</li> <li>COPD</li> <li>Hyper / Hypoventilation / Seizures</li> <li>Sedated Patients</li> </ul>	This device is not to be used for: <ul style="list-style-type: none"> <li>Detection of mainstem bronchial intubation</li> </ul>

Capnography vs. Capnometry

Capnography comprises the continuous analysis and recording of carbon dioxide concentrations (Co<sub>2</sub>) in respiratory gases. Although the terms capnography and capnometry are sometimes considered synonymous, capnometry suggests measurement (ie, analysis alone) without a continuous written record or waveform.

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A	AEMT	A
P	PARAMEDIC	P

## PROCEDURE – Capnography (Intubated Patient)

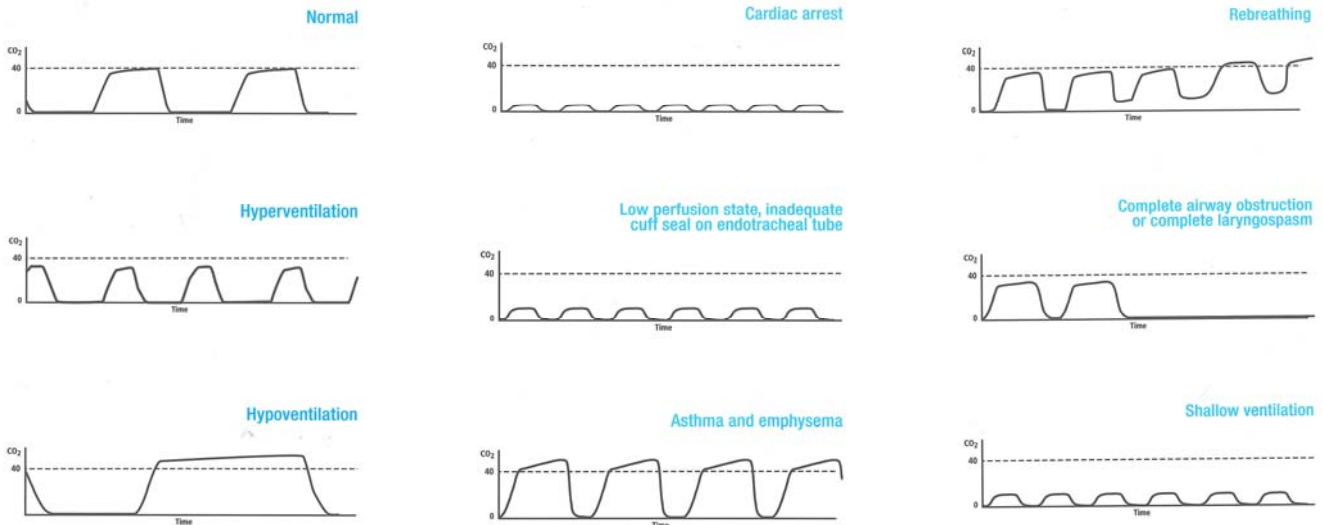
Capnography is required for all patients requiring ventilation through an ET tube, King Airway / LMA.

- Turn on recording instrumentation (usually part of a cardiac monitor in the pre-hospital setting)
- Place Co<sub>2</sub> Sampling device in between ventilation device (BVM / Ventilator) and the ET / King / LMA
- Attach sampling device to recording instrumentation and ventilate to a Co<sub>2</sub> of 35 - 45



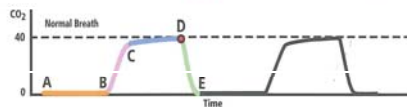
## PROCEDURE – Capnography (Non-Intubated, Spontaneously breathing patient)

- Turn on recording instrumentation (usually part of a cardiac monitor in the pre-hospital setting)
- Place the sampling cannula on the patient
- Attach sampling device to recording instrumentation record results and treat per results



### NORMAL WAVEFORM

Diagram of a normal waveform

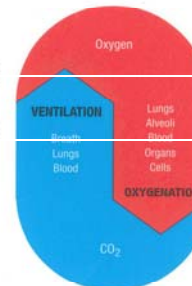


- A-B: Dead space ventilation, beginning of exhalation
- B-C: Rapid rise in CO<sub>2</sub>
- C-D: Alveolar plateau
- D: End of expiration, end tidal CO<sub>2</sub> (etCO<sub>2</sub>)
- D-E: Inhalation

### RESPIRATORY CYCLE

The primary components of the respiratory cycle are oxygenation and ventilation.

- > **Oxygenation**  
Oxygen is inhaled into the lungs and carried into the blood
- > **Ventilation**  
CO<sub>2</sub> is exhaled from the lungs



### Relationship between CO<sub>2</sub> and respiration rate

↑RR = ↓CO<sub>2</sub> Hyperventilation    ↓RR = ↑CO<sub>2</sub> Hypoventilation

**KEY POINTS**

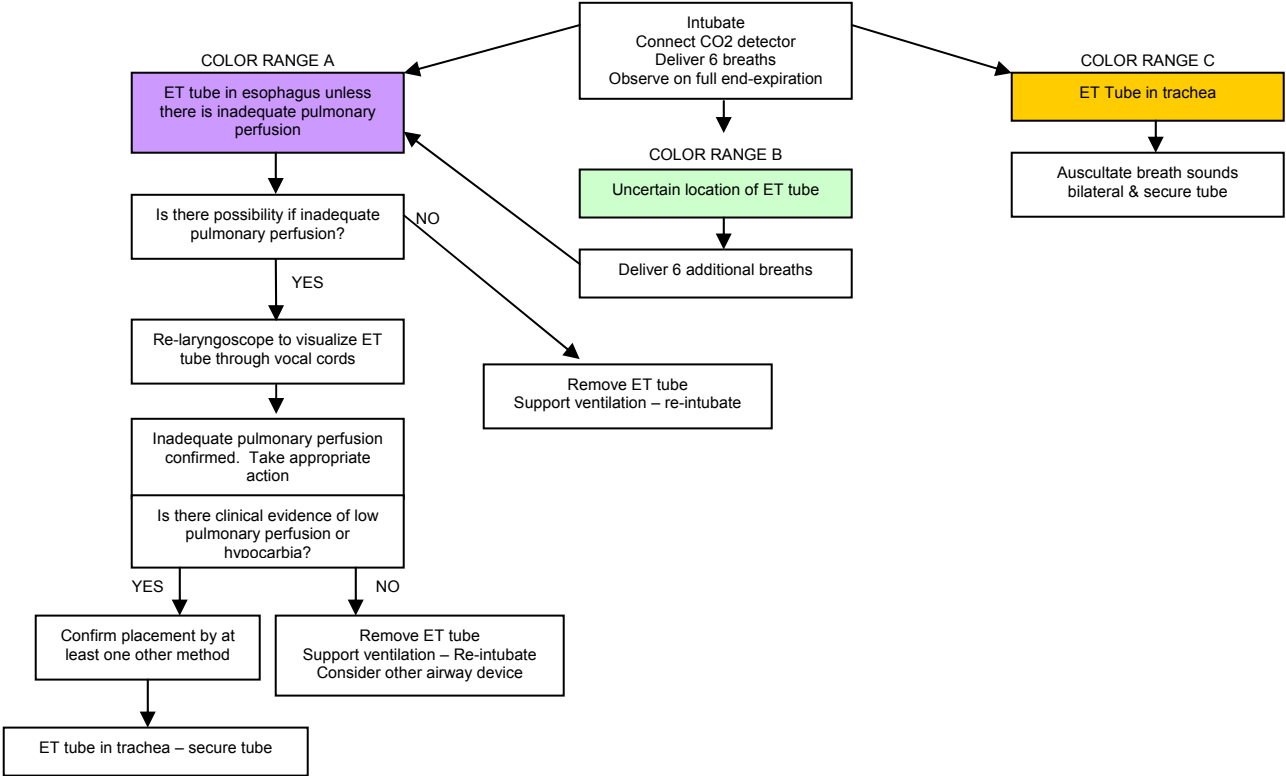
**END TIDAL CO2 / CAPOMETRY PROCEDURE**

INDICATIONS	SIGNS AND SYMPTOMS	CONTRAINDICATIONS
<ul style="list-style-type: none"> <li>Backup to Capnography</li> </ul>	<ul style="list-style-type: none"> <li>Intubated Patients</li> </ul>	This device is not to be used for: <ul style="list-style-type: none"> <li>Detection of hypercarbia</li> <li>Detect mainstem bronchial intubation</li> </ul>

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**PROCEDURE – Capnometry**

- Remove the Co2 detector from package or activate detector.
- Attach the Co2 detector to a King or endotracheal tube.
- Ventilate patient and note color change on the Co2 detector.
- Compare color of indicator on full end-expiration to color chart on product dome. SEE ALGORITHM BELOW.
- The Co2 detector shall remain in place with the airway and monitored throughout the prehospital care and transport. Any loss of Co2 detection or color change is to be documented and monitored as procedures are done to verify or correct the airway problem.
- Tube placement should be verified frequently and with each patient move or change in the Co2 detector.
- If initial intubation attempts fail, the Co2 detector can be used for re-intubation on the same patient provided the indicator color still matches the "CHECK" color standard on product dome.
- Document the procedure and the results on the patient care report (PCR).



## AIRWAY / BREATHING

# INTUBATION - ENDOTRACHEAL

INDICATIONS	SIGNS AND SYMPTOMS	PRECATUTIONS
<ul style="list-style-type: none"> <li>A patient without a gag reflex, is apneic, or is demonstrating inadequate respiratory effort</li> <li>Any patient medicated for rapid sequence intubation</li> </ul>	<ul style="list-style-type: none"> <li>Unstable airway</li> <li>Respiratory arrest</li> <li>Cardiac arrest</li> <li>GCS less than 8 without a treatable cause (for example, hypoglycemia)</li> </ul>	<ul style="list-style-type: none"> <li>Patient intolerance is only a relative contraindication to this procedure</li> </ul>

A	AEMT	A
P	PARAMEDIC	P

## 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. Spo2 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, Spo2, Co2, 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 practitioner 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 SpO2, EtCo2, 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.

## 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

**INDICATIONS**

E	EMT	E
A	AEMT	A
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- Emergent airway management of pulseless and apneic patients, either as a primary or secondary (salvage) airway for adults or pediatrics.

**CONTRAINDICATIONS**

- Responsive patients with an intact gag reflex.
- Patients with known esophageal disease. (vaircies)
- 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
  - SIZE 2.5 = 30-40 ml
  - SIZE 3 = 40-55 ml
  - SIZE 4 = 50-70 ml
  - SIZE 5 = 60-80 ml
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.

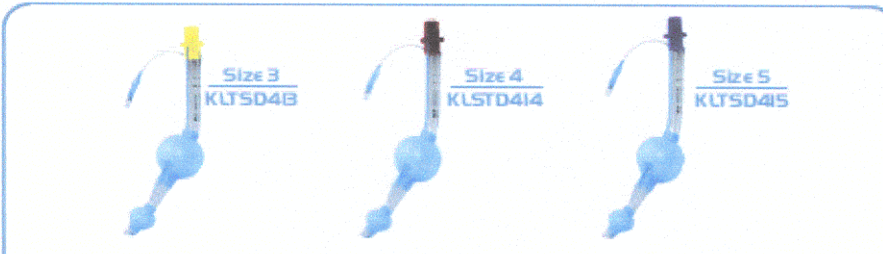
**REMOVAL OF DEVICE (if indicated):**

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 LTS-D 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 LTS-D. Alternatively, a laryngoscope or tongue depressor can be used to lift the tongue anteriorly to allow easy advancement of the KING LTS-D 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 LTS-D 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 LTS-D 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 LTS-D 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 LTS-D 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 LTS-D 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 LTS-D 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 LTS-D Kit Includes:
  - King LTS-D Airway
  - 60-80 cc Syringe
  - Lubricant
  - Instructions for use

## DO NOT GIVE MEDICATIONS DOWN THE KING AIRWAY



Size	Description	Connector Color	OD	ID*	Gastric Tube Size	Inflation Volume
3	4-5 feet (122-155 cm) in height	Yellow	18 mm	10 mm	≤18 Fr	45-60 ml
4	5-6 feet (155-180 cm) in height	Red	18 mm	10 mm	≤18 Fr	60-80 ml
5	greater than 6 feet (180 cm) in height	Purple	18 mm	10 mm	≤18 Fr	70-90 ml

# NEEDLE CRICOTHYROTOMY

INDICATIONS	SIGNS AND SYMPTOMS	COMPLICATIONS
<ul style="list-style-type: none"> <li>• Management of an obstructed airway when standard airway procedures cannot be accomplished or have failed.</li> <li>• Unable to intubate by another route.</li> <li>• Cervical spine injuries</li> <li>• Maxillo facial trauma</li> <li>• Laryngeal trauma / edema</li> </ul>	<p>Airway obstruction from:</p> <ul style="list-style-type: none"> <li>• Edema from infection, caustic ingestion, allergic reaction, and / or inhalation injuries</li> <li>• Foreign body</li> <li>• Mass lesion</li> </ul>	<ul style="list-style-type: none"> <li>• Post procedure bleeding</li> <li>• Cellulitis of neck</li> <li>• Subcutaneous emphysema</li> <li>• Voice change</li> <li>• Feeling of lump in throat</li> <li>• Persistent stoma</li> <li>• Obstructive problems</li> <li>• Misplacement of the airway</li> </ul>

**P**    **PARAMEDIC**    **P**

**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 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. (2.5 – 3.0 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.

# CRICOTHYROTOMY - QUICKTRACH

INDICATIONS	SIGNS AND SYMPTOMS	COMPLICATIONS
<ul style="list-style-type: none"> <li>• Management of an obstructed airway when standard airway procedures cannot be accomplished or have failed</li> <li>• Unable to intubate by another route</li> <li>• Cervical spine injuries</li> <li>• Maxillo facial trauma</li> <li>• Laryngeal trauma / edema</li> </ul>	Airway obstruction from: <ul style="list-style-type: none"> <li>• Edema from infection, caustic ingestion, allergic reaction, and / or inhalation injuries</li> <li>• Foreign body</li> <li>• Mass lesion</li> </ul>	<ul style="list-style-type: none"> <li>• Post procedure bleeding</li> <li>• Cellulitis of neck</li> <li>• Subcutaneous emphysema</li> <li>• Voice change</li> <li>• Feeling of lump in throat</li> <li>• Persistent stoma</li> <li>• Obstructive problems</li> <li>• Misplacement of the airway</li> </ul>

P **PARAMEDIC** P

**THE QUICKTRACH PROCEDURE IS FOR PARAMEDICS TRAINED IN THE PROCEDURE ONLY**

**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 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.

# NEEDLE CHEST DECOMPRESSION

INDICATIONS	SIGNS AND SYMPTOMS	PRECAUTIONS
<ul style="list-style-type: none"> <li>Tension pneumothorax with significant dyspnea</li> </ul>	<ul style="list-style-type: none"> <li>Tachypnea / tachycardia</li> <li>Hyperresonance</li> <li>Absent breath sounds on the affected side</li> <li>Possibly diminished breath sounds on the unaffected side.</li> <li>Hypotension</li> <li>Distended neck veins</li> <li>Chest pain</li> <li>Extreme anxiety</li> <li>Altered LOC/coma</li> </ul>	<ul style="list-style-type: none"> <li>Insufficient training</li> </ul>

## PROCEDURE

<b>A</b>	<b>AEMT</b>	<b>A</b>
<b>P</b>	<b>PARAMEDIC</b>	<b>P</b>

- 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.
- Locate the insertion site at the second intercostal space at the midclavicular line on the affected side of the chest.
- Prep the insertion site. Use sterile gloves and utilize aseptic procedure to the fullest extent possible under the circumstances.
- Remove rear cap of IV catheter.
- Insert the 2 – 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.
- 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.

- 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.
- Dispose of the needle properly and **never reinsert into the catheter.**
- Once the presence of a tension pneumothorax has been confirmed:
  - Remove the needle, leaving the catheter in place.
  - Tape the catheter in place.
- Secure the catheter and rapidly transport the patient providing appropriate airway assistance.
- 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:**
  - Obvious chest trauma**
  - Difficulty bagging, and absent breath sounds on one / both sides**
  - Hypotensive or pulseless**
- Needle decompression is a temporary life saving procedure only. Patients requirement decompression will require chest tube placement for long term maintainence.
- 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 OXIMETRY

INDICATIONS	SIGNS AND SYMPTOMS	PRECAUTIONS
<ul style="list-style-type: none"> <li>• Patients with suspected hypoxemia.</li> <li>• All cases of respiratory distress</li> <li>• For the treatment of primary respiratory or cardiac disease</li> <li>• All cases of altered or depressed level of consciousness</li> <li>• Drug overdoses</li> <li>• Any patient requiring intubation or BVM support</li> <li>• Major trauma</li> <li>• Smoke Inhalation (may not be accurate due to CO)</li> <li>• Any patient on home oxygen, home ventilator, or BiPAP</li> </ul>	<ul style="list-style-type: none"> <li>• Dyspnea</li> <li>• Tachypnea</li> <li>• Tachycardia</li> <li>• Bradycardia (late sign in adults)</li> <li>• Altered mental status</li> <li>• Pallor, cyanosis</li> <li>• Diaphoresis</li> <li>• Prolonged capillary refill</li> <li>• Accessory muscle use</li> <li>• Abnormal breath sounds</li> </ul>	<ul style="list-style-type: none"> <li>• Poor perfusion; must be applied with good perfusion</li> <li>• Patients with history of anemia</li> <li>• Patients with suspected high carboxyhemoglobin / methemoglobin (CO poisoning, smoke inhalation, heavy cigarette smokers)</li> </ul>

E	EMT	E
A	AEMT	A
P	PARAMEDIC	P

### 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)
  - 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
100% TO 95%	Ideal Range	No supplemental oxygen is needed
95% TO 90%	Mild to Moderate Hypoxemia	Check airway, start oxygen therapy via nasal cannula @ 4 - 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.
85% OR LESS	Respiratory Failure	Prepare to intubate or assist ventilations with 100% oxygen and bag valve mask

KEY POINTS
<ul style="list-style-type: none"> <li>• 100% oxygen should be administered to all patients despite a good SpO2 if they are hypoxic.</li> <li>• Make sure that all dirt and nail polish or any obstructive covering is removed to prevent the unit from giving a false reading.</li> <li>• Attempt to obtain a room air reading and a reading with supplemental oxygen.</li> <li>• DO NOT read while B/P being taken. May give false readings.</li> <li>• 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.</li> <li>• Although the pulse oximeter displays the heart rate, the unit should not be used in place of a physical assessment of the heart rate.</li> <li>• Oxygen saturation readings may be inaccurate in any situation where the flow of blood through the finger is impaired, such as: <ul style="list-style-type: none"> <li>• Hypotension or shock with poor peripheral perfusion</li> <li>• Peripheral vascular disease</li> <li>• Extremity injury with restriction of peripheral perfusion</li> <li>• Cold extremities</li> </ul> </li> <li>• Oxygen saturation readings may be incorrectly high in situations such as carbon monoxide poisoning.</li> <li>• 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.</li> <li>• The room air pulse oximetry reading is NOT required if the patient has been placed on supplemental oxygen prior to EMS arrival.</li> <li>• Pulse oximetry is NOT an indicator of myocardial or cerebral perfusion. Give oxygen regardless of SpO2 to AMI or stroke patients.</li> </ul>

## AIRWAY / BREATHING

# SUCTIONING

INDICATIONS	SIGNS AND SYMPTOMS	PRECAUTIONS
<ul style="list-style-type: none"><li>Any patient who is having trouble maintaining an airway and fluid is noted in the oropharynx, endotracheal tube, or tracheotomy</li><li>Tracheal suctioning should also be performed when rhonchi is heard in the intubated patient or tracheotomy patients</li></ul>	<ul style="list-style-type: none"><li>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</li></ul>	<ul style="list-style-type: none"><li>The patient must be well oxygenated before attempting this procedure</li></ul>

## PROCEDURES

E	EMT	E
A	AEMT	A
P	PARAMEDIC	P

### 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**

- In order 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 have a tendency 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 sterile saline followed by 2 BVM ventilations and then perform suctioning.

# TRANSPORT VENTILATION DEVICES

INDICATIONS	SIGNS AND SYMPTOMS	CONTRAINDICATIONS
<ul style="list-style-type: none"> <li>Transport of an intubated or trach patient</li> </ul>	<ul style="list-style-type: none"> <li>Pt. currently breathing with ventilation device</li> </ul>	<ul style="list-style-type: none"> <li>Insufficient training</li> </ul>

**P    PARAMEDIC    P**

## 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 VENTILATING CORRECTLY, REMOVE IT AND VENTILATE MANUALLY**

**PARAMEDICS 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.

E	EMT	E
A	AEMT	A
P	PARAMEDIC	P

## INDICATIONS

- 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

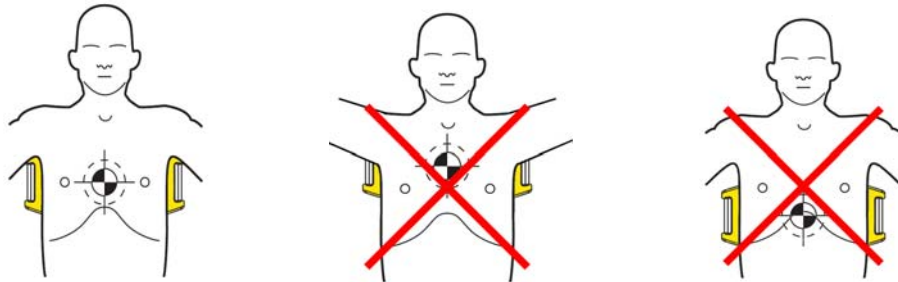
- Patients < 12 years of age.
- Patients suffering traumatic cardiac arrest or patients with obvious signs of traumatic injury.
- Patients who do not fit within the device.
  - Patients who are too large and with whom you cannot press the pressure pad down 2 inches.
  - Patients who are too small and with whom you cannot pull the pressure pad down to touch the sternum

## PLACEMENT

- All therapies related to the management of cardiac arrest should be continued as currently defined in protocol
- Initiate typical resuscitative measures
  - Early defibrillation should be considered and provided as indicated based on clinical presentation.
  - Manual chest compressions should be initiated **immediately** while the LUCAS device is being placed on the patient.
  - Limit interruptions in chest compressions to 10 seconds or less.**
  - Do not delay manual CPR for the LUCAS. Continue manual CPR until the device can be placed.**
- While resuscitative measures are initiated, the LUCAS device should be removed from its carrying device and placed on the patient in the following manner;

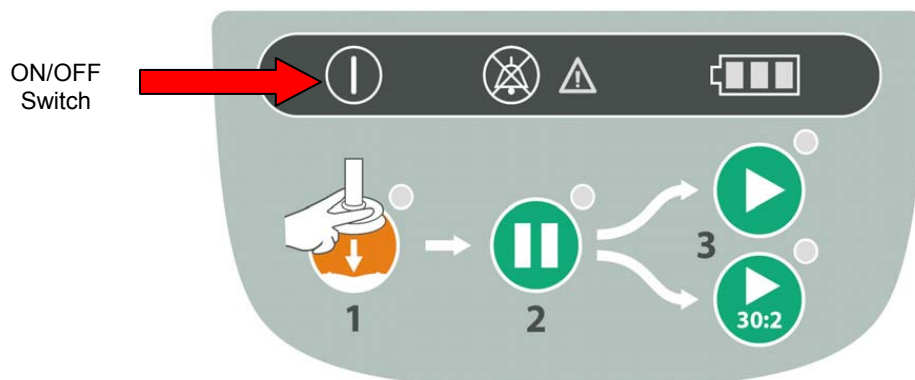
### Backplate Placement

- 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

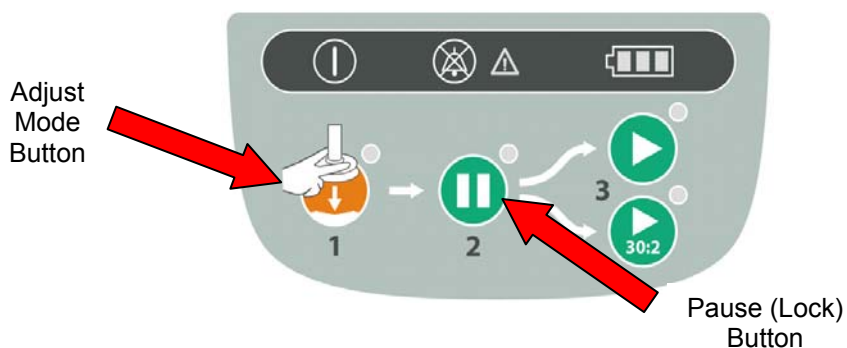
- Turn the LUCAS Device on (the device will perform a 3 second self-test).



- 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

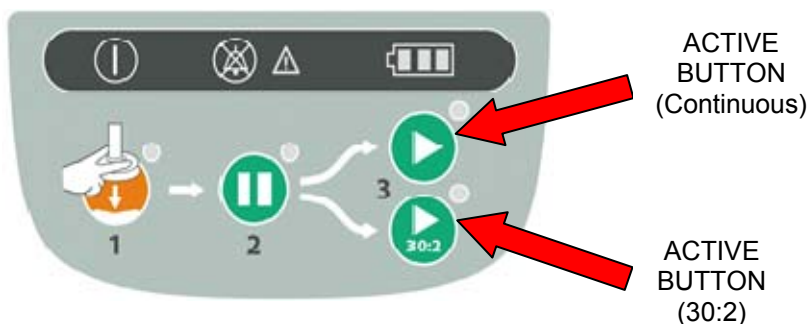
- Use two fingers (V pattern) to make sure that the lower edge of the Suction Cup is immediately above the end of the sternum. If necessary, move the device by pulling the support legs to adjust the position
- Press the Adjust Mode Button on the control pad labeled #1 (This will allow you to easily adjust 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 RESUSCITATION

### 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.**



Power Supply Cord Slot  
(For charging and AC  
operation)

### 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 (IV)

INDICATIONS	SIGNS AND SYMPTOMS	CONTRAINDICATIONS
<ul style="list-style-type: none"> <li>Any patient where intravenous access is indicated (significant trauma or mechanism, emergent or potentially emergent medical condition)</li> </ul>	<ul style="list-style-type: none"> <li>Dehydration</li> <li>Hypovolemia</li> <li>Need for drug therapy</li> </ul>	<ul style="list-style-type: none"> <li>Hypersensitivity to IV catheter</li> </ul>

### PROCEDURES

A	AEMT	A
P	PARAMEDIC	P

- Universal precautions. Gloves.
- Prepare equipment.
- Inspect the IV solution for expiration date, cloudiness, discoloration, leaks, or the presence of particles.
- 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.
- Place a tourniquet around the patient's extremity to restrict venous flow only.
- Select a vein and an appropriate gauge catheter for the vein and the patient's condition.
- Prep the skin with an antiseptic solution.
- Insert the needle with the bevel up into the skin in a steady, deliberate motion until the blood flashback is visualized in the catheter.
- Advance the catheter into the vein. **Never** reinsert the needle through the catheter.
- Dispose of the needle into the proper container without recapping.
- Remove the tourniquet and connect the IV tubing or saline lock.
- Open the IV to assure free flow of the fluid and then adjust the flow rate as per protocol or as clinically indicated.
- Secure IV using appropriate measures to insure stability of the line.
- Check for signs of infiltration.
- Adjust flow rate.
- Document the procedure, time and result on the patient care report (PCR).

### 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 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).

#### IV Tubing

- For all adult fluid lines, use regular 10 gtt administration tubing.
- For child and infant patients, use tubing sets with 3-way stopcock and extension tubing.

**EXTERNAL JUGULAR INTRAVASCULAR (IV)**

A	AEMT	A
P	PARAMEDIC	P

INDICATIONS	SIGNS AND SYMPTOMS	CONTRAINDICATIONS
<ul style="list-style-type: none"> <li>External jugular vein cannulation is indicated in a critically ill patient &gt; 8 years of age who requires intravenous access for fluid or medication administration and in whom an extremity vein is not obtainable</li> <li>External jugular cannulation can be attempted initially in life threatening events where no obvious other peripheral site is noted</li> </ul>	<ul style="list-style-type: none"> <li>Dehydration</li> <li>Hypovolemia</li> <li>Need for drug therapy</li> </ul>	<ul style="list-style-type: none"> <li>Only (1) attempt per pt.</li> <li>Start IV Away from head, towards feet</li> </ul>

**PROCEDURE**

- Place the patient in a supine head down position. This helps distend the vein and prevents air embolism.
- Turn the patient's head toward the opposite side if no risk of cervical injury exists.
- Position yourself at patient's head.
- Locate external jugular vein.
- Select IV catheter.
- Prep the site as per peripheral IV site.
- Align the catheter with the vein and aim toward the same side shoulder.
- "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.
- Attach the IV and secure the catheter avoiding circumferential dressing or taping.
- Secure IV using appropriate measures to insure stability of the line.
- Check for signs of infiltration.
- Adjust flow rate.
- 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.

**SPECIALIZED INTRAVASCULAR (IV) PROCEDURES**

FOR PARAMEDICS WHO ARE TRAINED IN THE TECHNIQUE(S)

**LONG - TERM IV CATHETERS**

INDICATIONS	SIGNS AND SYMPTOMS	CONTRAINDICATIONS
<ul style="list-style-type: none"> <li>Patients with indwelling catheters used for IV therapy</li> <li>Central lines are Port-a-Caths, Infuse-a-Ports, Broviac &amp; Hickman Catheters</li> <li>A PICC line is a peripheral line</li> </ul>	<ul style="list-style-type: none"> <li>Patient is unresponsive or full arrest</li> <li>Emergent medication administration</li> <li>Emergent fluid administration</li> </ul>	<ul style="list-style-type: none"> <li>Use of a Port-a-Cath requires a special needle</li> <li>Catheter appears infected at site</li> <li>Catheter seems clotted and will not flow</li> <li>Prehospital IV not critical</li> </ul>

P	PARAMEDIC	P
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**PROCEDURE**

1. Prepare IV solution for connection to catheter with connecting device.
2. Identify a pigtail with cap on end, or locate center of Port-a-Cath injection site.
3. Cleanse end cap or site with alcohol.
4. Using 5 ml of normal saline, access the port with sterile technique and gently attempt to flush the saline.
5. If there is no resistance, no evidence of infiltration (e.g., no subcutaneous collection of fluid), and no pain experienced by the patient, and then proceed to step 4. If there is resistance, evidence of infiltration, pain experienced by the patient, or any concern that the catheter may be clotted or dislodged, do not use the catheter.
6. Insert connecting device and begin infusion.
7. Begin administration of medications or IV fluids slowly and observe for any signs of infiltration. If difficulties are encountered, stop the infusion and reassess.
8. Give IVP drugs via side port of IV tubing.
9. Secure using appropriate measures to insure stability of the line.
10. Record procedure, any complications, and fluids / medications administered in the patient care report (PCR).

**KEY POINTS**

- In the setting of cardiac arrest, any preexisting dialysis shunt or external central venous catheter may be used.
- Patients must be hemodynamically unstable or in extremis to require use of dialysis catheters or external central venous catheters. Blue ends on the catheter is venous access, red is arterial access. Use only the venous (Blue) catheters.

# INTRAOSSUEOUS INFUSION

## ADULT INTRAOSSUEOUS INFUSION:

INDICATIONS	SIGNS AND SYMPTOMS	CONTRAINDICATIONS
<ul style="list-style-type: none"> <li>• Wt. &gt;40 kg</li> <li>• Unable to access peripheral IV</li> </ul>	<ul style="list-style-type: none"> <li>• Altered level of consciousness</li> <li>• Arrhythmias</li> <li>• Burns</li> <li>• Cardiac / respiratory arrest</li> <li>• Dehydration</li> <li>• Head Injury</li> <li>• Hypotension</li> <li>• Seizures</li> <li>• Traumatic Injuries / shock</li> <li>• Other medical conditions when immediate vascular access is required</li> </ul>	<ul style="list-style-type: none"> <li>• Fracture of the tibia or humerus</li> <li>• Previous orthopedic procedures</li> <li>• Pre-existing medical condition</li> <li>• Infection at the insertion</li> <li>• Inability to locate landmarks</li> <li>• Excessive tissue over the insertion site</li> </ul>

### PROCEDURE: EZ IO Adult Device: (For providers trained in technique)

A	AEMT	A
P	PARAMEDIC	P

1. Select site:
2. Tibia (1<sup>st</sup> choice) medial to the tibial tuberosity on flat plane of tibia.(standard or long bariatric needle)
3. Humerus (2<sup>nd</sup> choice) upper lateral humeral head, outer aspect. (use the 45 mm bariatric needle)
4. Provide routine medical care.
5. Locate the anatomical site and prep with betadine and / or alcohol.
6. Load the needle onto the driver.
7. Firmly stabilize the leg near (not under) the insertion site.
8. Firmly press the needle against the site at a 90<sup>0</sup> angle and operate the driver. Use firm, gentle pressure.
9. 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.
10. 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.
11. Do not attempt to aspirate bone marrow. (may clog needle and tubing)
12. Use a syringe to infuse 0.9% normal saline.
13. 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)
14. Secure the needle and dress the site.

**Consider use of 45 mm length IO needle for bariatric patients or patients with excessive tissue over the insertion site. Use the 45 mm bariatric needle for all humeral head insertions.**

A	AEMT	A
P	PARAMEDIC	P

### 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. The
3. 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).

## PEDIATRIC INTRAOSSEOUS INFUSION:

INDICATIONS	SIGNS AND SYMPTOMS	CONTRAINDICATIONS
<ul style="list-style-type: none"> <li>Life threatening illness or injury in a child 6 years of age (72 months) after effective ventilation is established</li> </ul>	<ul style="list-style-type: none"> <li>Unresponsive</li> <li>Cardiopulmonary arrest</li> <li>Decompensated shock</li> <li>This procedure is indicated primarily in children less than 8 years old</li> </ul>	<ul style="list-style-type: none"> <li>A pediatric patient who is conscious or responsive to pain</li> <li>A pediatric patient who is 7 years old or older</li> <li>Gross infection, osteomyelitis, or cellulitis at the intended site (use the other leg if possible)</li> <li>Fracture at or above the intended site (use the other leg if possible)</li> <li>Unsuccessful IO attempt (use the other leg if possible)</li> </ul>

### PROCEDURE: May use manual IO Device or EZ IO Pediatric Device

A	AEMT	A
P	PARAMEDIC	P

- Expose the lower leg.
- Identify the tibial tubercle (bony prominence below the knee cap) on the proximal tibia. The insertion location will be 1-2 cm (2 finger widths) below this and medially.
- Prep the site as per peripheral IV site.
- Attempt to have feet in flexed position. Stabilize leg as needed.
- 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.
- Remove the trocar and attach the IV.
- Once the needle has reached the bone marrow, saline should be injected via syringe to clear needle
- Observe for signs of subcutaneous infiltration.
- The needle should feel firm in position and stand upright without support.
- Stabilize and secure the needle.
- 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.
- Document the procedure, time, and result on the patient care report (PCR).

### 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.
- Introsseous infusions of fluids may cause subcutaneous infiltration, osteomyelitis, or subcutaneous infections if not placed properly.

# 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.

E	EMT	E
A	AEMT	A
P	PARAMEDIC	P

## 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<sub>2</sub> device between the ResQPOD and ventilation source.
- B. Administer endotracheal medications directly into endotracheal tube.
- C. Do not interrupt CPR unless absolutely necessary.
- D. If a pulse returns, discontinue CPR and the ResQPOD. If the patient rearrests, resume CPR with the ResQPOD.
- E. Do not delay compressions if the ResQPOD is not readily available.

# 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<sub>2</sub>) 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).

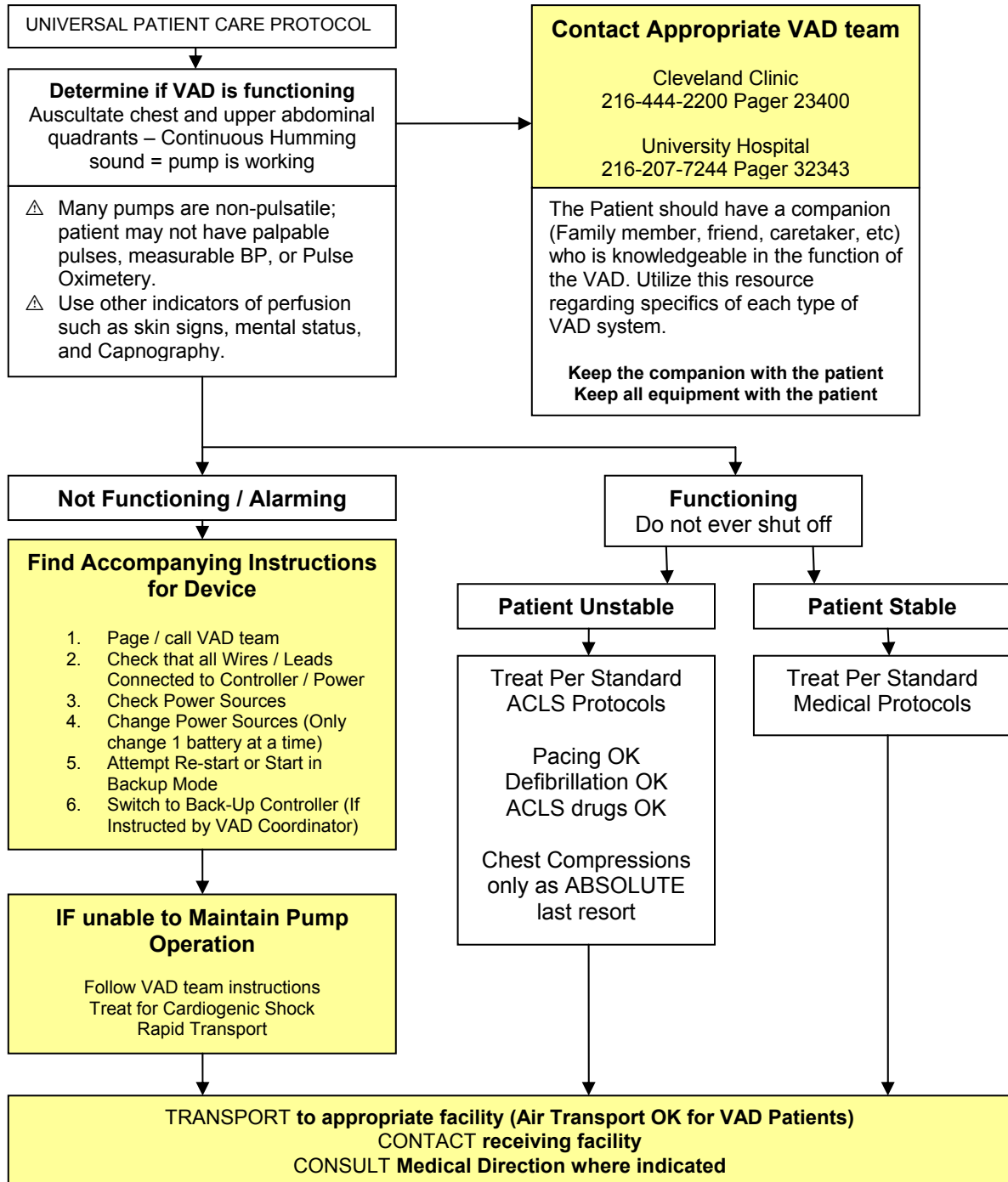
E	EMT	E
A	AEMT	A
P	PARAMEDIC	P



# 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.

E	EMT	E
A	AEMT	A
P	PARAMEDIC	P



# AUTOMATED EXTERNAL DEFIBRILATOR (AED)

INDICATIONS	SIGNS AND SYMPTOMS	CONTRAINDICATIONS
<ul style="list-style-type: none"> <li>Non-traumatic cardiac arrest in patients &gt; 8 years of age</li> </ul>	<p>The patient must meet ALL of the following criteria:</p> <ul style="list-style-type: none"> <li>Unresponsive</li> <li>Apneic</li> <li>Pulseless</li> <li>Weighs greater than 55 lbs</li> <li>Pediatric patients &gt;8 years</li> </ul>	<ul style="list-style-type: none"> <li>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</li> <li>If a medication patch is found, remove patch and wipe clean before applying defibrillation pads</li> <li>Do not place defibrillation pads directly over patient's implanted defibrillator</li> <li>Patients &lt; 8 years of age require specific pediatric defibrillation equipment</li> </ul>

## PROCEDURE

Establish that the patient is pulseless and apneic.

- Perform CPR for (2) minutes.
- Attach the defibrillation pads to the patient's chest and connect the cables to the AED.
- 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.
- The apex pad is to be attached to the patient's lower left rib cage, laterally and beneath the left nipple.
- Turn the unit ON and follow the voice prompts.
- Rhythm analysis:
  - Do not have any patient contact while the AED analyzes.
  - Rhythm analysis should take approximately 9 - 13 seconds.
- If the AED unit's voice prompts advise that "no shock advised":
  - Check for a pulse, if no pulse, continue CPR.
- Visually check that no one is in contact with the patient and announce CLEAR.
- Press the SHOCK button when advised to by the unit's voice prompts:
- Continue CPR for 2 minutes.
- If the patient's pulse has returned:
  - Insure that the patient has a patent airway and treat accordingly.
- If the patient remains pulseless, continue use of CPR and AED.

E	EMT	E
A	AEMT	A
P	PARAMEDIC	P

## 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
<ul style="list-style-type: none"> <li>• Cardiac arrest with ventricular fibrillation or pulseless ventricular tachycardia</li> </ul>	<p>The patient must meet ALL of the following criteria</p> <ul style="list-style-type: none"> <li>• Unresponsive</li> <li>• Apneic</li> <li>• Pulseless</li> </ul>	<ul style="list-style-type: none"> <li>• 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</li> <li>• If medication patch found, remove patch and wipe clean before applying defibrillation pads</li> <li>• Do not place defibrillation pads directly over patient's implanted defibrillator</li> <li>• Pediatric patients &lt; 8 years of age require specific pediatric monitoring equipment</li> </ul>

<b>A</b>	<b>AEMT</b>	<b>A</b>
<b>P</b>	<b>PARAMEDIC</b>	<b>P</b>

## 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 biphasic 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.

# 12 - LEAD CARDIAC MONITORING

INDICATIONS	SIGNS AND SYMPTOMS	CONTRAINDICATIONS
<ul style="list-style-type: none"> <li>• Suspected cardiac patient</li> <li>• Suspected tricyclic overdose</li> <li>• Electrical injuries</li> </ul>	<ul style="list-style-type: none"> <li>• Any complaint of pain or discomfort between the nose and the navel</li> <li>• Chest pain / tightness</li> <li>• Chest discomfort</li> <li>• Chest discomfort relieved prior to arrival</li> <li>• Pulmonary edema</li> <li>• Palpitations</li> <li>• Irregular heartbeat</li> <li>• Syncope</li> <li>• Dizziness</li> <li>• Unexplained diaphoresis</li> <li>• Dyspnea</li> <li>• Weakness / numbness</li> <li>• HR &lt; 50 or &gt; 120</li> <li>• Hypotension / hypertension</li> </ul>	<ul style="list-style-type: none"> <li>• Insufficient training</li> </ul>

**Placement of the “V” Leads**

- V1:** 4<sup>th</sup> ICS – right of the sternum
- V2:** 4<sup>th</sup> ICS – left of the sternum
- V3:** Between V2 and V4
- V4:** 5<sup>th</sup> ICS midclavicular
- V5:** Between V4 and V6
- V6:** Even with V4 midaxillary

E	EMT	E
A	AEMT	A
P	PARAMEDIC	P

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 via telemetry.

## 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 the 12-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.

*Perform 12 Lead EKG on patients with any discomfort between their nose and navel, abdominal pain, diabetics, patients over 50, altered mental status, respiratory distress, and S&S of stroke.*

**EMT’S AND ADVANCED EMT’S ARE PERMITTED TO PLACE LEADS ON THE PATIENT TO OBTAIN AND / OR TRANSMIT A 12-LEAD EKG**

# SYNCHRONIZED CARDIOVERSION (MANUAL)

INDICATIONS	SIGNS AND SYMPTOMS	CONTRAINDICATIONS
<ul style="list-style-type: none"> <li>• Unstable patient with a tachydysrhythmia</li> <li>• Patient is not pulseless</li> </ul>	<ul style="list-style-type: none"> <li>• Symptomatic narrow complex tachycardia</li> <li>• Symptomatic wide complex tachycardia</li> <li>• Grossly symptomatic atrial fibrillation</li> <li>• Grossly symptomatic atrial flutter</li> </ul>	<ul style="list-style-type: none"> <li>• A pulseless patient</li> </ul>

P PARAMEDIC P

## PROCEDURE

1. Apply limb leads
2. Consider sedation with Versed 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-threatening situations only.

# TRANSCUTANEOUS PACING

INDICATIONS	SIGNS AND SYMPTOMS	CONTRAINDICATIONS
<ul style="list-style-type: none"> <li>• Patients with symptomatic bradycardia after no response to atropine or primary treatment if unable to start an IV</li> <li>• Pediatric patients requiring external transcutaneous pacing require the use of pads appropriate for pediatric patients per the manufacturer's guidelines</li> </ul>	<ul style="list-style-type: none"> <li>• Adult bradycardia with severe hemodynamic compromise.</li> <li>• Symptomatic bradycardia that is refractory to pharmacological intervention.</li> <li>• Symptomatic 2<sup>nd</sup> or 3<sup>rd</sup> degree heart block</li> </ul>	<ul style="list-style-type: none"> <li>• Hypothermia</li> <li>• Pediatric bradycardia</li> </ul>

## PROCEDURE

P PARAMEDIC P

- FÈ Apply limb leads
- GÈ Consider sedation with Versed prior to administering transcutaneous pacing.
- HÈ Attach defibrillation / pacing pads to the patient and monitor.
- I È Place the defibrillation / pacing pads anterior-posterior or anterior-lateral.
- Í È Do not place the pacing patches over the sternum, spine or nipple.
- Î È Push the PACER button.
- Ï È Push the RATE button.
- Ì È Push the CURRENT button and increase the joules until you reach electrical and mechanical capture (assess the carotid or femoral pulses to confirm mechanical capture).
- JÈ Hold the PAUSE button to stop the pacing so you can assess the patient's underlying rhythm.
- FÈP Push the EVENT button to quick log CPR, medication administration, ETT placement etc.

## APPLICATION

1. In the conscious patient with bradycardia, the rate is to be set at 80 bpm, and in the current at 20 milliamps, which is to be increased by 20 milliamps every 10 seconds until capture is obtained.
2. In asystole, or unconscious bradycardia, the device is to be set at 100 bpm and 200 milliamps. The settings are not to be reduced.
3. Once electrical capture is obtained, check for mechanical capture (pulse). If pulse is obtained, check BP.
4. The external pacemaker is not to be used in patients 14 years of age, or under, or in patients less than 30 pounds.
5. Nitroglycerine patches are to be removed before defibrillating or pacing.

## KEY POINTS

- The pacing will begin immediately once the pacer is turned on.
- Monitor the patient for ventricular fibrillation.

**MEDICAL**

**BLOOD GLUCOSE ANALYSIS**

<b>INDICATIONS</b>	<b>SIGNS AND SYMPTOMS</b>	<b>CONTRAINDICATIONS</b>
<ul style="list-style-type: none"><li>• Patients with suspected hypoglycemia (diabetic emergencies, change in mental status, bizarre behavior, etc.)</li><li>• Medical alert tags</li><li>• Drug / toxic ingestion</li></ul>	<ul style="list-style-type: none"><li>• Decreased mental status</li><li>• Change in baseline mental status</li><li>• Bizarre behavior</li><li>• Hypoglycemia (cool, diaphoretic skin)</li><li>• Hyperglycemia (warm, dry skin; fruity breath; Kussmal resps; signs of dehydration)</li></ul>	<ul style="list-style-type: none"><li>• Insufficient training</li></ul>

<b>E</b>	<b>EMT</b>	<b>E</b>
<b>A</b>	<b>AEMT</b>	<b>A</b>
<b>P</b>	<b>PARAMEDIC</b>	<b>P</b>

**PROCEDURE**

1. Gather and prepare equipment.
2. Blood samples for performing glucose analysis may be obtained simultaneously with intravenous access.
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 (< 60), normal glucose (60 - 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.

**MEDICAL**

**MEDICATION INJECTIONS**

<b>INDICATIONS</b>	<b>SIGNS AND SYMPTOMS</b>	<b>CONTRAINDICATIONS</b>
<ul style="list-style-type: none"><li>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</li></ul>	<ul style="list-style-type: none"><li>Determined per protocol</li></ul>	<ul style="list-style-type: none"><li>Allergy to medication per protocol</li><li>Aspiration of blood</li></ul>

<b>E</b>	<b>EMT</b>	<b>E</b>
<b>A</b>	<b>AEMT</b>	<b>A</b>
<b>P</b>	<b>PARAMEDIC</b>	<b>P</b>

**INTRAMUSCULAR**

**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**

**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).

# MUCOSAL ATOMIZATION DEVICE (MAD)

## INDICATIONS

A	AEMT	A
P	PARAMEDIC	P

- Used for atomizing topical solutions across the nasopharyngeal and oropharyngeal mucous membranes.
- For use when administering the following medications:
  - **Midazolam** (Versed) for seizures of sedation.
  - **Naloxone** (Narcan) for opiate overdoses.
  - **Glucagon** (Glucagen) for hypoglycemia.

## PROCEDURE

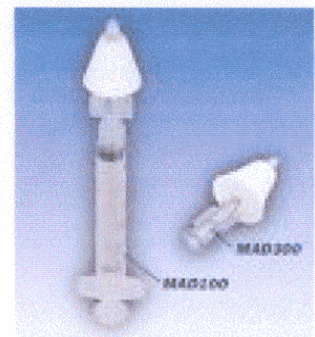
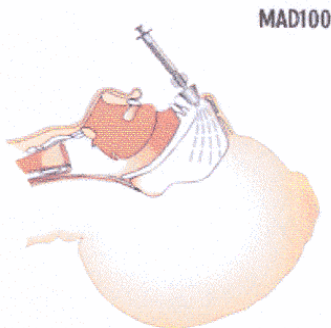
1. Disconnect MAD from the included syringe and/or retrieve a needlessly syringe.
2. Attach needle to syringe.
3. Fill syringe with the desired volume of solution and eliminate remaining air.
4. Remove needle and dispose of appropriately.
5. Connect the MAD to the syringe.
6. Place the MAD tip in the 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**

# PAIN ASSESSMENT

INDICATIONS	SIGNS AND SYMPTOMS	CONTRAINDICATIONS
<ul style="list-style-type: none"> <li>Injury or illness requiring pain management.</li> </ul>	<ul style="list-style-type: none"> <li>Abdominal pain</li> <li>Chest pain secondary to infarction or angina</li> <li>Acute urinary retention</li> <li>Fractures</li> <li>Severe burns</li> <li>Kidney stones</li> <li>Musculoskeletal trauma</li> </ul>	<ul style="list-style-type: none"> <li>Altered level of consciousness</li> <li>Head injuries</li> <li>Chest injuries (blunt or penetrating)</li> <li>Intoxication</li> <li>Maxillofacial injuries</li> <li>Psychiatric problems</li> <li>Pediatric patients under 12 years of age</li> <li>Pregnancy</li> <li>Respiratory distress / failure</li> </ul>

E	EMT	E
A	AEMT	A
P	PARAMEDIC	P

**PROCEDURE**

- Initial and ongoing assessment of pain intensity and character is accomplished through the patient's self report.
- Pain should be assessed and documented during initial assessment, before starting pain control treatment, and with each set of vitals.
- Pain should be assessed using the appropriate approved scale.
- Two pain scales are available: the 0 - 10 and the Wong - Baker "faces" scale.
- 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.
- 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.

**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. It offers a visual description for those who don't have the verbal skills to explain how their symptoms make them feel.



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

**A Numerical Pain Scale**

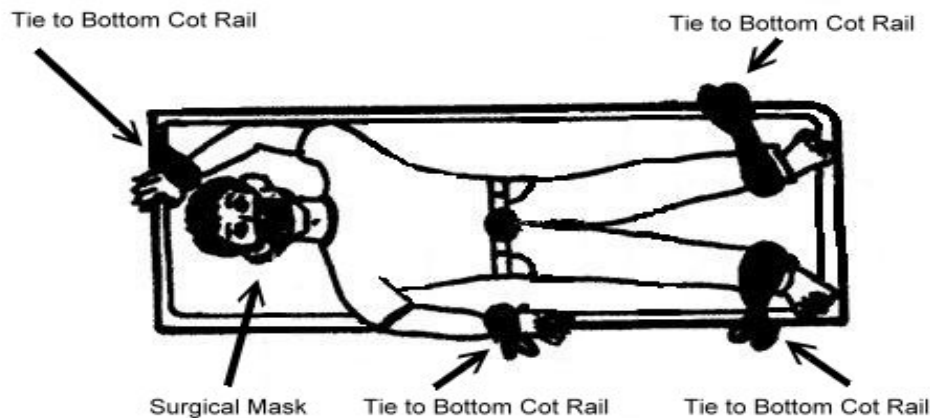
A numerical pain scale allows you to describe the intensity of your discomfort in numbers ranging from 0 to 10 (or greater, depending on the scale). Rating the intensity of sensation is one way of helping your doctor determine treatment. Numerical pain scales may include words or descriptions to better 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
<ul style="list-style-type: none"> <li>• Patient out of control and may cause harm to self or others.</li> <li>• Necessary force required for patient control without causing harm</li> <li>• Immobilization of an extremity for transport to secure medically necessary devices such as intravenous catheters</li> </ul>	<ul style="list-style-type: none"> <li>• Head Trauma</li> <li>• Alcohol / drug related problems</li> <li>• Metabolic disorders (i.e., hypoglycemia, hypoxia, etc.)</li> <li>• Psychiatric/stress related disorders</li> </ul>	<ul style="list-style-type: none"> <li>• None if warranted</li> </ul>

E	EMT	E
A	AEMT	A
P	PARAMEDIC	P



## 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 health 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 many patient 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.

## TRAUMA

# CERVICAL SPINE IMMOBILIZATION

INDICATIONS	SIGNS AND SYMPTOMS	CONTRAINDICATIONS
<ul style="list-style-type: none"> <li>Need for spinal immobilization as determined by protocol</li> </ul>	<ul style="list-style-type: none"> <li>Suspected traumatic injury</li> <li>Unresponsive / altered LOC of unknown mechanism</li> <li>Mechanism of Injury</li> </ul>	<ul style="list-style-type: none"> <li>Insufficient training</li> </ul>

### PROCEDURE

- Gather a backboard, straps, C-collar appropriate for patient's size, tape, and head blocks or similar device(s) to secure the head.
- Explain the procedure to the patient.
- Place the patient in an appropriately sized C-collar while maintaining manual in-line stabilization of the spine. This stabilization, to be provided by a second rescuer, should not involve traction or tension but rather simply maintaining the head in a neutral, midline position while the first rescuer applied the collar.
- Once the collar is secure, the second rescuer should still maintain their position to ensure stabilization.
- Place the patient on a long spine board with the log-roll technique if the patient is supine or prone. For the patient in a vehicle or otherwise unable to be placed prone or supine, place them on a backboard by the safest method available that allows maintenance of inline spinal stability.
- Stabilize the patient with straps and head rolls / tape or other similar device. Once the head is secured to the backboard, the second rescuer may release manual in-line stabilization.
- NOTE: Some patients, due to size or age, will not be able to be immobilized through inline stabilization with standard backboards and C-collars. Never force a patient into a non-neutral position to immobilize them. Such situations may require a second rescuer to maintain manual stabilization throughout the transport to the hospital.
- Document the time of the procedure in the patient care report (PCR).

E	EMT	E
A	AEMT	A
P	PARAMEDIC	P

### KEY POINTS

- Use of a backboard for stabilization injuries other than the neck or to move the patient, does not automatically require cervical immobilization.
- Use of cervical immobilization in adult trauma patients, should always be followed with long board immobilization, including straps.
- Never leave patients alone if they are fully immobilized. Be prepared to turn the long board while maintaining c-spine stabilization if the patient begins to vomit to maintain their airway.
- A c-collar by itself does NOT adequately immobilize the patient.
- PROPERLY DOCUMENT THE DECISION TO NOT PROVIDE CERVICAL SPINE IMMOBILIZATION!!

#### Trauma:

In trauma cases the neck should be immobilized under any of the following circumstances:

- The patient complains of neck pain, pain on palpation, or pain with range of motion.
- The patient complains of numbness, tingling, or motor weakness in any extremity.
- Mechanism of injury with other distracting injuries.
- The patient has a head injury, altered mental status, or language barrier, which limits the patient's ability to describe pain, numbness or weakness.
- The patient has a head injury or altered mental status that limits their ability to describe pain, numbness or weakness.
- Mechanism of injury with patient intoxication.
  - If the history suggests a mechanism of injury, which could result in cervical injury in a patient who is intoxicated, cervical immobilization must be provided whether or not the patient is alert and oriented.
  - This does not mean that every grossly intoxicated patient who is unable to provide reliable responses should have cervical immobilization.
    - If the mechanism of injury is such that a neck injury is not a reasonable possibility, cervical immobilization is not indicated. (For example, if a call involves a grossly intoxicated person who has an isolated ankle injury after a simple fall.)
- Any time the paramedic or EMT judges that cervical immobilization is necessary.

#### Pediatric Considerations:

Small children (less than 8 years of age) have relatively large heads. Use of standard cervical immobilization and backboards will result in cervical flexion. Use a immobilization method that avoids flexion of the neck. Current approved methods include, but are not limited to;

- Devices which have a recess for the child's occiput (Pedipak with padding applied).
- Placing the patient into the sniffing position by placing padding under the shoulders and lower back.
- Cervical collars should be used along with any of these modifications, unless there is not an appropriate size c-collar. If a circumstance prevents the use of a c-collar, other approved methods of immobilization include;
  - Manual immobilization
  - Blanket or towel roll immobilization
  - Tape immobilization

## TRAUMA

# HELMET REMOVAL

REMOVAL OF HELMET	LEAVE HELMET IN PLACE
<ul style="list-style-type: none"> <li>• Inability to access, assess and maintain airway and breathing</li> <li>• Improperly fitted helmet allowing for excessive head movement within helmet</li> <li>• Proper C-spine alignment and immobilization cannot be achieved</li> <li>• Cardiac arrest</li> <li>• EMTs are trained in technique</li> </ul>	<ul style="list-style-type: none"> <li>• Helmet fits well with little or no movement of head in helmet</li> <li>• No impending airway or breathing problems</li> <li>• Removal may cause further injury</li> <li>• Proper C-spine alignment and immobilization can be achieved with helmet in place</li> <li>• There is no interference with the ability to assess and reassess airway and breathing</li> </ul>

E	EMT	E
A	AEMT	A
P	PARAMEDIC	P

## 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 facepiece 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.

# TOURNIQUETS

E	EMT	E
A	AEMT	A
P	PARAMEDIC	P

**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.

**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.

OBSTETRICS

**NORMAL CHILDBIRTH**

INDICATIONS	SIGNS AND SYMPTOMS	CONTRAINDICATIONS
<ul style="list-style-type: none"> <li>Imminent delivery with crowning</li> </ul>	<ul style="list-style-type: none"> <li>Urge to push</li> <li>Visible crowning</li> </ul>	<ul style="list-style-type: none"> <li>See <u>Gynecological Emergencies Protocol</u></li> </ul>

E	EMT	E
A	AEMT	A
P	PARAMEDIC	P

**PROCEDURE**

1. Delivery should be controlled so as to allow a slow controlled delivery of the infant. This will prevent injury to the mother and infant.
2. 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.

## SPECIAL PROCEDURES

# TASERED PATIENT

**ALL PATIENTS SUBJECTED TO TASER USE MUST BE TRANSPORTED TO THE HOSPITAL FOR MEDICAL EVALUATION.**

E	EMT	E
A	AEMT	A
P	PARAMEDIC	P

### 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 tetanus 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.

**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 particular equipment that is not necessarily referenced in this EMS protocol. For these items to be used within the scope of Cleveland Clinic 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 particular 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 Cleveland Clinic EMS System, including Patient Care Reports, within the scope of HIPAA.
6. The Department must report adverse patient outcomes that may be attributed to the patient care device as soon as identified.
7. The Department must agree to discontinue use of the device on the instruction of the Medical Director.

# APPENDIX #3: SPECIAL OPERATIONS

Patient Decontamination Procedures .....	15-2
Nerve Agent Antidote Kits (Duo-Dote).....	15-3

**SPECIAL OPERATIONS**

**PATIENT DECONTAMINATION**

<b>INDICATIONS</b>	<b>SIGNS AND SYMPTOMS</b>	<b>PRECAUTIONS</b>
<ul style="list-style-type: none"> <li>Any patient who may have been exposed to significant hazardous materials, including chemical, biological, or radiological weapons.</li> </ul>	<ul style="list-style-type: none"> <li>Ambulatory / Non-Ambulatory</li> <li>Exposure to toxic substances (dry, liquids, fumes)</li> <li>Irritants</li> <li>Emergent / Non- Emergent</li> </ul>	<ul style="list-style-type: none"> <li>Dry chemicals must be wiped off prior to wet decontamination</li> <li>Clothing must be removed</li> <li>Maintain patient privacy as needed.</li> <li>Gross Decon (Primary)</li> <li>Fine Decon (Secondary)</li> </ul>

<b>E</b>	<b>EMT</b>	<b>E</b>
<b>I</b>	<b>AEMT</b>	<b>I</b>
<b>P</b>	<b>PARAMEDIC</b>	<b>P</b>

**PROCEDURE**

- In coordination with Hazardous Materials and other Emergency Management personnel, establish hot, warm and cold zones of operation.
- Ensure that personnel assigned to operate within each zone have proper personal protective equipment.
- 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).
- Initial triage of patients should occur after step #3. Immediate life threats should be addressed prior to technical decontamination.
- 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.
- 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.
- Monitor all patients for environmental illness.
- 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.

**SPECIAL OPERATIONS**

**NERVE AGENT EXPOSURE KIT**

E	EMT	E
A	AEMT	A
P	PARAMEDIC	P
M	MED CONTROL	M

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

**SLUDGEM**  
SALVIATION  
LACRIMATION  
URINATION  
DEFCATION  
GASTROINTESTINAL DISTRESS  
EMISIS  
MUSCLE TWITCHING

**MAJOR SYMPTOMS**  
(Buddy Treatment)  
Altered LOC  
Seizures  
SOB  
Respiratory Arrest

DuoDote x 1 – 2 sets  
IM Rapidly

DuoDote x 3 sets  
IM Rapidly

Monitor for appearance  
of major symptoms

Continued Care

If Seizures:  
DIAZEPAM (VALIUM)  
Auto-Injector IM

If Continued Seizures:  
MIDAZOLAM  
(VERSED) 2-5 mg  
IV / IM / IN

---

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
<ul style="list-style-type: none"><li>• Nerve agent exposure (e.g., VX, Sarin, Soman, etc.)</li><li>• For use of Fire, EMS, and Police personnel <b>only</b></li></ul>	<ul style="list-style-type: none"><li>• Visual disturbances</li><li>• Headache</li><li>• Nausea / vomiting</li><li>• Salivation</li><li>• Lacrimation</li><li>• Respiratory distress</li><li>• Diaphoresis</li><li>• Seizure activity</li><li>• Respiratory arrest</li></ul>	<ul style="list-style-type: none"><li>• Vesicant exposure (e.g., Mustard Gas, etc.)</li><li>• Respiratory irritant exposure (e.g., hydrogen sulfide, ammonia, chlorine, etc.)</li></ul>

## 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.

# APPENDIX #4: MEDICAL EQUIPMENT

EMS Drug Exchange System .....16-2

# EMS DRUG EXCHANGE SYSTEM

## **Definitions:**

PCR – Patient Care Report (also known as a “runsheets”) approved by the Ohio State Board of Pharmacy  
Addendum: A current Addendum to Limited License from the Ohio State Board of Pharmacy.

EMS Ambulance Restocking Agreement: See Exhibit A. EMS Ambulance Restocking Agreements must be reviewed and approved by the Cleveland Clinic Law Department.

License: A current Terminal Distributor of Dangerous Drugs License from the Ohio State Board of Pharmacy.

Medical Director and Medical Control Agreement: See Exhibit B. Medical Director and Medical Control Agreements must be reviewed and approved by the Cleveland Clinic Law Department.

Medical Control Pharmacy: The pharmacy that serves as the responsible DEA registrant for the EMS Provider pursuant to a current Medical Director and Medical Control Agreement. The EMS Provider must provide the Medical Control Pharmacy with copies of its License and Addendum, as well as EMS drug protocols approved by the Ohio State Board of Pharmacy and authorized and signed by the EMS Provider’s medical director.

Based on the OIG definitions in the Ambulance Restocking Safe Harbor under the Anti-Kickback Statute:  
Emergency Ambulance Service: A transport by ambulance that results from a call through 9-1-1 or other emergency access number or a call from another acute care facility unable to provide the higher level care required by the patient and available at the CChs Facility that is the receiving facility.

Emergency Ambulance Provider (“EMS Provider”): A provider or supplier of ambulance transport services that provides emergency ambulance services, including Air Medical Service. The EMS Provider must be a nonprofit or governmental organization and the ambulance must be used to respond to emergencies an average of three times per week measured over any reasonable time period.

## **Policy References**

1. 42 CFR Part 1001 RIN 0991–AB05 Medicare and State Health Care Programs: Fraud and Abuse; Ambulance Replenishing Safe Harbor Under the Anti-Kickback Statute
2. Ohio Revised Code §§ 4729.54 and 4729.55
3. Ohio Revised Code § 3701.75

# APPENDIX #5: ODPS EMS SCOPE OF PRACTICE

Scope of Practice Introduction ..... 1  
Procedure Matrix ..... 2 – 5  
Pre-Existing Medical Devices ..... 6  
Interfacility Transport ..... 7 - 8



## Scope of Practice

Approved by

### State Board of Emergency Medical, Fire and Transportation Services Division of EMS, Ohio Department of Public Safety

This document offers an “at-a-glance” view of the Scope of Practice for Emergency Medical Responders (EMR), Emergency Medical Technicians (EMT), Advanced Emergency Medical Technicians (AEMT), and Paramedics as approved by the State Board of Emergency Medical, Fire and Transportation Services (EMFTS Board). The authorized services can be found in sections 4765.35 (FR/EMR), 4765.37 (EMT-B/EMT), 4765.38 (EMT-I/AEMT), and 4765.39 (EMT-P/Paramedic) of the Revised Code. The scopes of practice can be found in rules 4765-12-04 (EMR), 4765-15-04 (EMT), 4765-16-04 (AEMT), 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 EMR, EMT, AEMT, and Paramedic have received training as part of an initial certification course or through subsequent training approved by the EMFTS Board. If specific training has not been specified by the EMFTS Board, the EMR, EMT, AEMT, and Paramedic must have received training regarding such services approved by the local medical director before performing those services.

In accordance with rule 4765-10-06 of the Administrative Code, the individual medical director of each EMS 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. EMS medical directors are reminded that they are not permitted to expand the scope of practice for EMS providers, but may provide clarifications or limitations on services that are permitted.

EMS medical directors and EMS providers are strongly encouraged to review the EMFTS Board’s policy statement “Regarding EMS Provider Pre-Hospital transport of Patients with Pre-Existing Medical Devices or Drug Administrations” dated January 2004 (attached to this document, page 6). This statement clarifies how EMS 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 EMFTS Board may allow EMRs, EMTs, AEMTs, 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 EMFTS Board in accordance with the requirements of rule 4765-6-04 of the Administrative Code. The EMFTS Board is not obligated to approve the proposed research study nor accept any recommendation to permanently amend the scope of practice.

Updated 11/19/03; 5/17/05; 10/26/05; 10/17/07; 3/8/12; 8/22/13, 10/16/13



**State Board Emergency Medical, Fire and Transportation Services  
Division of EMS/Department of Public Safety**

**Updated October 16, 2013**

	<b>Airway Management</b>	<b>EMR</b>	<b>EMT</b>	<b>AEMT</b>	<b>PARAMEDIC</b>
1	Open and maintain the airway	X	X	X	X
2	Oropharyngeal airway adjunct	X	X	X	X
3	Nasopharyngeal airway adjunct	X	X	X	X
4	Manual removal of obstructed airway	X	X	X	X
5	Laryngoscopy for removal of airway obstruction			X	X
6	Oral suctioning	X	X	X	X
7	Endotracheal (ET) tube suctioning via through a previously established airway or a stoma		X	X	X
8	Tracheostomy tube replacement			X	X
9	Cricothyrotomy, surgical				X
10	Cricothyrotomy, needle				X
11	Pulse oximeter and capnography equipment application and reading	X	X	X	X
12	Oxygen administration				
	a. Nasal cannula	X	X	X	X
	b. Non-rebreather mask	X	X	X	X
	c. Mouth-to-barrier devices	X	X	X	X
	d. Partial rebreather mask		X	X	X
	e. Venturi mask		X	X	X
13	Ventilation management				
	a. Bag valve mask	X	X	X	X
	b. Ventilation 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	Ventilator management - 16 years of age or older				X
15	Orotracheal intubation				X
	a. Apneic patients			X	X
	b. Pulseless <u>and</u> apneic patients			X	X
16	Nasotracheal intubation				X
17	Dual lumen airway				X
	a. Apneic patients			X	X
	b. Pulseless <u>and</u> apneic patients		X	X	X
18	Extraglottic airways				X
	a. Apneic patients			X	X
	b. Pulseless <u>and</u> apneic patients		X	X	X
19	CPAP administration and management		X	X	X
20	BiPAP administration and management				X
	Positive end-expiratory pressure (PEEP)				X

21	End tidal CO <sub>2</sub> monitoring and detecting		X	X	X
22	Oxygen humidifier equipment application and monitoring		X	X	X
23	Chest tube monitoring and management				X
24	Nasogastric (NG) tube placement				X
25	Orogastric (OG) tube placement				X

	<b>Cardiac Management</b>	<b>EMR</b>	<b>EMT</b>	<b>AEMT</b>	<b>PARAMEDIC</b>
1	Cardiopulmonary resuscitation (CPR)	X	X	X	X
2	Chest compression assist devices		X	X	X
3	Automated external defibrillator (use of an AED)	X	X	X	X
4	Manual defibrillation			X	X
5	Administration of cardiac medication				X
6	Set up cardiac monitor <sup>A</sup>		X		
7	Cardiac monitor strip interpretation			X	X
8	Cardioversion				X
9	Carotid massage				X
10	Transcutaneous cardiac pacing				X
11	12-lead EKG performance and interpretation				X
12	12-lead EKG application assisting Paramedic <sup>B</sup>		X	X	
13	12-lead EKG set up and application for electronic transmission <sup>C</sup>		X	X	X

<sup>A</sup> Set up of cardiac monitor only. Procedure shall not be performed unless an AEMT or Paramedic is present.

<sup>B</sup> Set up of 12-lead EKG application only. Procedure shall not be performed unless a Paramedic is present.

<sup>C</sup> An EMT or AEMT 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) EMT or AEMT shall not interpret the electrocardiogram; 3) delay in patient transport is minimized; and 4) EKG is used in conjunction with destination protocols approved by the local medical director.

	<b>Medical Management</b>	<b>EMR</b>	<b>EMT</b>	<b>AEMT</b>	<b>PARAMEDIC</b>
1	Epinephrine administration via auto-injector	X	X	X	X
2	Epinephrine administration via SQ or IM routes			X	X
3	Epinephrine administration via IV route				X
4	Aspirin administration		X	X	X
5	Oral glucose administration		X	X	X
6	Activated charcoal administration		X	X	X
7	Nitroglycerin administration (patient assisted) <sup>D</sup>		X	X	X
8	Nitroglycerin administration (non-patient assisted)			X	X
9	Aerosolized or nebulized medications administration (patient assisted) <sup>D</sup>		X	X	X
10	Administration of aerosolized or nebulized medications (non-patient assisted)			X	X
11	Naloxone administration via ETT, IM, IV, or SQ routes			X	X
12	Naloxone administration via intranasal route	X	X	X	X
13	Administration of intranasal medications (including naloxone)			X	X
14	Medication administration (protocol-approved) <sup>E</sup>			X	X
15	Immunizations for influenza to firefighters or EMS providers (ORC 4765.391)				X

16	Set up of IV administration kit <sup>E</sup>		X		
17	IV maintenance and fluid administration			X	X
18	Maintenance of medicated IV fluids				X
19	Central line monitoring				X
20	IV infusion pump				X
21	Intraosseous needle insertion			X	X
22	Saline lock initiation			X	X
23	Peripheral IV blood specimens			X	X
24	Maintenance of blood administration				X
25	Thrombolytic therapy initiation and monitoring				X

<sup>D</sup> Patient Assisted Definition: May assist with 1) patient's prescription upon patient request and with written protocol - OR – 2) EMS provided medications with verbal medical direction.

<sup>E</sup> See "AEMT Medications Approved by the EMFTS Board."

<sup>F</sup> Set up of IV equipment only. Procedure shall not be performed unless an AEMT or Paramedic is present.

	Trauma Management	EMR	EMT	AEMT	PARAMEDIC
1	PASG		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	Traction splint		X	X	X
6	Cervical immobilization device (CID)	X	X	X	X
7	Helmet removal		X	X	X
8	Rapid extrication procedures		X	X	X
9	Needle decompression of the chest			X	X
10	Soft tissue management	X	X	X	X
11	Management of suspected fractures	X	X	X	X
12	Controlling of hemorrhage	X	X	X	X

	Basic Performances	EMR	EMT	AEMT	PARAMEDIC
1	Body substance isolation precaution/administration	X	X	X	X
2	Taking and recording of vital signs	X	X	X	X
3	Patient Care Report (PCR) documentation	X	X	X	X
4	Trauma triage determination per OAC 4765-14-02	X	X	X	X

	Additional Services	EMR	EMT	AEMT	PARAMEDIC
1	Emergency childbirth management <sup>G</sup>	X	X	X	X
2	Glucose monitoring system use (with Clinical Laboratory Improvement Amendments (CLIA) waiver in place)		X	X	X
3	Blood chemistry analysis				X
4	Eye irrigation	X	X	X	X
5	Eye irrigation with Morgan lens				X
6	Maintenance of blood administration				X
7	Thrombolytic therapy initiation and monitoring				X

<sup>G</sup> An EMR may only assist with emergency childbirth management.

<b>Emergency Medical Services in Hospital</b>	<b>EMR</b>	<b>EMT</b>	<b>AEMT</b>	<b>PARAMEDIC</b>
An EMS 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. The EMS provider shall be under physician medical direction and has received appropriate training. (ORC 4765.36)	X	X	X	X
<b>Additional Services in a Declared Emergency</b>	<b>EMR</b>	<b>EMT</b>	<b>AEMT</b>	<b>PARAMEDIC</b>
In the event of an emergency declared by the governor that affects the public's health, an EMS provider may perform immunizations and administer drugs or dangerous drugs, in relation to the emergency, provided the EMS provider is under physician medical direction and has received appropriate training regarding the administration of such immunizations and/or drugs. (OAC 4765-6-03)	X	X	X	X
<b>Nerve Agent or Organophosphate Release</b>	<b>EMR</b>	<b>EMT</b>	<b>AEMT</b>	<b>PARAMEDIC</b>
An EMS provider may administer drugs or dangerous drugs contained within a nerve agent antidote auto-injector kit, including a MARK I kit, in response to suspected or known exposure to a nerve or organophosphate agent provided the EMS 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. (OAC 4765-6-05)	X	X	X	X

**AEMT Medication Administration Approved by the EMFTS Board**

***A certified AEMT may administer medications from the following list, provided the AEMT 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 SHALL NOT be added to the department's AEMT protocol.***

Benzodiazepines	Lidocaine for pain relief after intraosseous needle insertions
Bronchodilators	Nalbuphine
Dextrose in water	Naloxone (including intranasal)
Diphenhydramine	Narcotics or other analgesics for pain relief
Epinephrine 1:1,000 (subcutaneous or intramuscular)	Nitrous oxide
Glucagon	Sublingual nitroglycerin

***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.***

The Ohio Board of Emergency Medical, Fire, and Transportation Services  
("EMFTS Board") issues the following statement:

Regarding EMS Provider Pre-Hospital Transport of Patients with  
Pre-Existing Medical Devices or Drug Administrations  
January 2004

*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 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 pre-existing 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 pre-hospital EMS service are becoming more commonplace. The intent of this position paper is to address the EMS provider's approach to that pre-hospital 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 pre-hospital patient requiring EMS service. It applies to EMS provider situations where alternative transportation and care is not available or practical (pre-hospital or "911 scene response"). It implies that the most appropriate and available level of EMS provider will respond to the request for pre-hospital 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), and non-traditional out-of-hospital drug infusion routes (subcutaneous infusions, central venous access lines, direct subcutaneous infusions, self-contained implanted pumps).

**Conclusion:**

In conclusion, the EMS provider confronted with a pre-hospital 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 Medical Control Physician. Concerns or questions regarding previous, recurrent, or future pre-hospital transportations with a pre-existing MDDA should be directed to the appropriate EMS Medical Director and legal counsel.

Reaffirmed by EMS Board 2/20/2008

The Ohio 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  
April 2012

*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 Ohio Department of Public Safety, Division of Emergency Medical Services, has 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 and therapies that are out of their usual scope of practice and training. 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 and therapies in the medical field currently or potentially encountered by the EMS provider in the interfacility transport setting is extensive and may change frequently. The intent of this position paper is not to provide an inclusive or exclusive list of therapies and medications 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.

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 Rule 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. The addition of the registered nurse to the crew creates a mobile intensive care unit which is qualified to transport critical patients as legislated in Section 4766.01 of the Ohio Revised Code and Rule 4766-4-12 of the Ohio Administrative Code.

**Conclusion:**

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 therapies and medications that should be included or excluded from the EMS provider's scope of practice.

In addition, during the interfacility transportation of patients, the EMS provider:

- 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.
- Shall follow written protocols, which have been developed and signed by the EMS provider's medical director, for the infusion of medications that are not specifically outlined within the EMS scope of practice as outlined by the State of Ohio.
  - The training for the infusion of these specific medications shall not be done at the time of the interfacility transfer of the patient.
  - This training must be completed well in advance of the transfer.
  - The completion of the training must be documented and approved by the medical director of the EMS agency.
  - Continuing education and recurrent training on the indications, contraindications, pharmacology, and side effects of these medications is also required.
- Should refuse to initiate a transport if the EMS provider feels that adequate training on a specific intervention 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.

# APPENDIX #6: HOSPITAL INFO

Hospital Capabilities .....	18-2
NOTS Trauma Triage .....	18-3

**SPECIALITY CENTERS**

# HOSPITAL CAPABILITIES

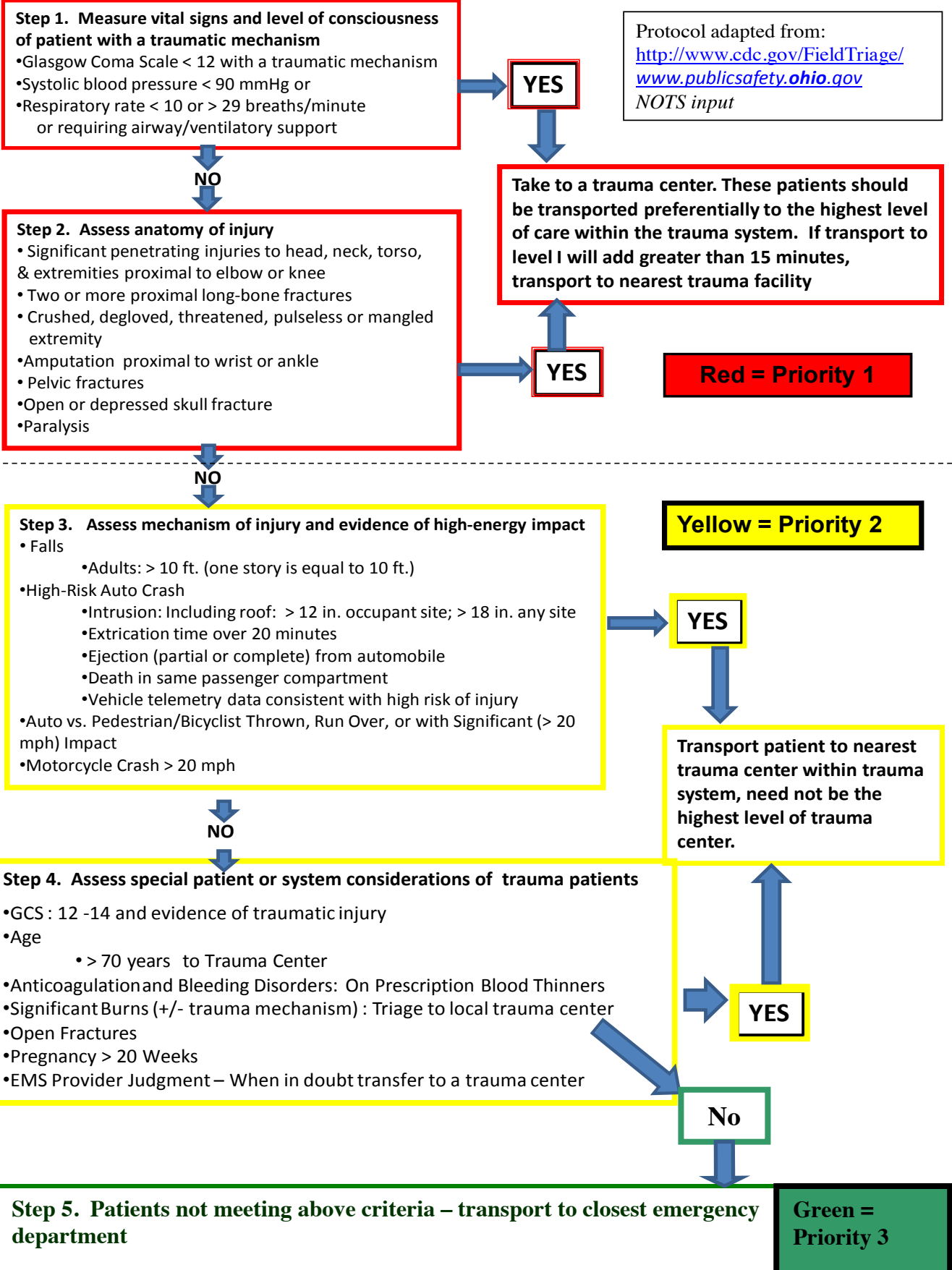
For general reference only – Verify capabilities with individual hospital prior to transport

Hospital	Affiliation	Adult Medical	Adult Trauma	Primary Stroke	Comp Stroke	STEMI	Adult SANE	Burns	OB	NICU	PED Medical	PED Trauma	PED SANE
Ahuja Medical Center	University Hospitals	✓				✓							
Akron Childrens Hospital	Akron Childrens							✓	✓	3	✓	✓	✓
Akron City Hospital	Summa	✓	1	✓		✓			✓				
Akron General Hospital	Akron City	✓	1	✓		✓			✓	2			
Ashtabula County Medical Center	Cleveland Clinic	✓		✓		✓			✓		✓		
Bedford Medical Center	University Hospitals	✓		✓									
Cleveland Clinic Avon Em. Dept.	Cleveland Clinic	✓											
Cleveland Clinic Main Campus	Cleveland Clinic	✓		✓		✓			✓	3	✓		
Cleveland Clinic Twinsburg ED	Cleveland Clinic	✓											
Elyria Memorial Hospital	University Hospitals	✓		✓		✓			✓				
Elyria Memorial Avon	University Hospitals	✓											
Euclid Hospital	Cleveland Clinic	✓		✓									
Fairview Hospital	Cleveland Clinic	✓	2	✓		✓	✓		✓	3	✓	✓	✓
Geauga Medical Center	University Hospitals	✓	3	✓					✓	2			
Geneva Medical Center	University Hospitals	✓											
Hillcrest Hospital	Cleveland Clinic	✓	2	✓+		✓	✓		✓	3	✓	✓	✓
Kaiser Cleveland Heights	Kaiser	✓											
Kasier Parma	Kaiser	✓											
Lake West Medical Center	Lake Health	✓		✓		✓			✓				
Lakewood Hospital	Cleveland Clinic	✓		✓+		✓			✓				
Lutheran Hospital	Cleveland Clinic	✓											
Marymount Hospital	Cleveland Clinic	✓		✓			✓						
Marymount South Emergency Dept.	Cleveland Clinic	✓											
Medina Hospital	Cleveland Clinic	✓		✓					✓	2			
MetroHealth Medical Center	MetroHealth	✓	1	✓+		✓	✓	✓	✓	3	✓	2	
Parma Medical Center	University Hospitals	✓		✓		✓			✓				
Richmond Medical Center	University Hospitals	✓		✓		✓							
Rainbow Babies and Children Hospital	University Hospitals								✓	3	✓	1	✓
Robinson Memorial Hospital	Summa	✓		✓					✓		✓		
Sagamore Emergency Dept.	Cleveland Clinic	✓											
South Pointe Hospital	Cleveland Clinic	✓		✓									
Southwest General Medical Center	University Hospitals	✓	3	✓		✓			✓				
St. John Medical Center	University Hospitals	✓	3	✓		✓			✓				
St. Thomas	Summa	✓		✓									
St. Vincent Charity Hospital	Sisters of Charity	✓		✓		✓							
Summa Western Reserve Hospital	Summa	✓		✓									
Tri Point Medical Center	Lake Health	✓		✓		✓			✓	2			
University Case Medical Center	University Hospitals	✓		✓	✓	✓			✓				
University Twinsburg Em. Dept.	University Hospitals												
Wadsworth Rittman Hospital	Summa	✓		✓									

# Adult (>15 years Old) Field Triage Decision Trauma Triage Protocol



Protocol adapted from:  
<http://www.cdc.gov/FieldTriage/>  
[www.publicsafety.ohio.gov](http://www.publicsafety.ohio.gov)  
 NOTS input



COVID-19 RESPIRATORY DISTRESS Supplement - 03.26.2020

**UNIVERSAL PATIENT CARE PROTOCOL**

PPE Minimum  
Surgical Mask / Gown / Gloves / Eye Protection  
Surgical Mask on Patient

12 LEAD EKG PROCEDURE  
⚠️ 1<sup>ST</sup> Contact to EKG and Transmission < 10 Min

IV / IO PROCEDURE

This protocol is intended to be used in place of the standard Adult Respiratory Distress protocol and Adult Airway protocol for patients who present with viral symptoms

Mild – Symptoms

Refer to COVID-19 TRANSPORT SUPPLEMENT PROTOCOL

OXYGEN By Nasal Cannula Under Surgical Mask if Transported

Moderate / Severe Distress

**CAPNOGRAPHY PROCEDURE**

OXYGEN By Least Aerosol Producing Method to Maintain SpO<sub>2</sub> - NC / NRB

Consider and Prioritize Injectable Bronchodilators Over Inhaled

**EPINEPHrine (ADRENALINE)**  
1 mg / ml (1:1000)  
0.3 – 0.5 mg IM

Consider **MAGNESIUM SULFATE**  
2 Grams IV over 20 minutes

⚠️ If > 50 Years or CAD  
Use MAGNESIUM SULFATE First – Add Epinephrine if Unimproved  
0.15 mg IM May Repeat Every 5 min

**methylPREDNISolone (SOLU – MEDROL)**  
125 mg IV / IO

**STOP** Only for Use in Cases Where Underlying COPD Or Asthma Are Likely Being Exacerbated by The Virus

**STOP** Use the Following Only in Extremis and Not Responding to Above Treatments

**ENHANCED PPE**  
Minimum PPE **PLUS** N95 or Higher-Level Protection **REQUIRED**

Obtain and Assist with Administration of Patients MDI Albuterol (Proventil) if Available – Preferred ALL PROVIDERS Administer 4 Puffs May Repeat

Treat with aerosol(s) **DUONEB (ALBUTEROL / IPRATROPIUM)**

⚠️ Give in Location Other Than Ambulance if Able Without Risk to Others

**CPAP PROCEDURE**  
Only If Refractory **Hypoxemia** / Not Responding to Basic Oxygenation Methods and Medications Above Use Viral Filter On CPAP if Available

Requires AIRWAY Management

**CAPNOGRAPHY PROCEDURE**

**ENHANCED PPE**  
Minimum PPE **PLUS** N95 or Higher-Level Protection **REQUIRED**

**BASIC MANEUVERS FIRST**  
Open Airway  
Nasal / Oral Airway  
Bag-Valve-Mask

**STOP** If Patient Spontaneously Breathing Place NRB on Patient While Preparing to Manage Airway  
**STOP** If Not Spontaneously Breathing or Insufficient Breathing BVM With 2 Hand Mask Seal to Minimize Leakage Use Viral Filter on BVM Where Available Move Quickly to Airway Placement

If Medication Assisted Advanced Airway Placement Required, Utilize Standard Airway Management Protocol Medications

**Extraglottic (BIAD) AIRWAY Device**

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

**STOP** Use the Following Only in Extremis and Not Responding to Above Treatments

Consider RSI Protocol **APPROVED DEPARTMENTS ONLY**

**INTUBATION PROCEDURE**

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

TRANSPORT to appropriate facility CONTACT receiving facility with **EARLY NOTIFICATION** of potential Covid-19 case **AND VERIFY HOSPITAL ARRIVAL / ACCESS PROCESS** before taking patient inside CONSULT Medical Direction where indicated **APPROPRIATE** transfer of care

EMT Intervention      AEMT Intervention      PARAMEDIC Intervention      Online Medical Control

**COVID-19 RESPIRATORY DISTRESS Supplement - 03.26.2020**

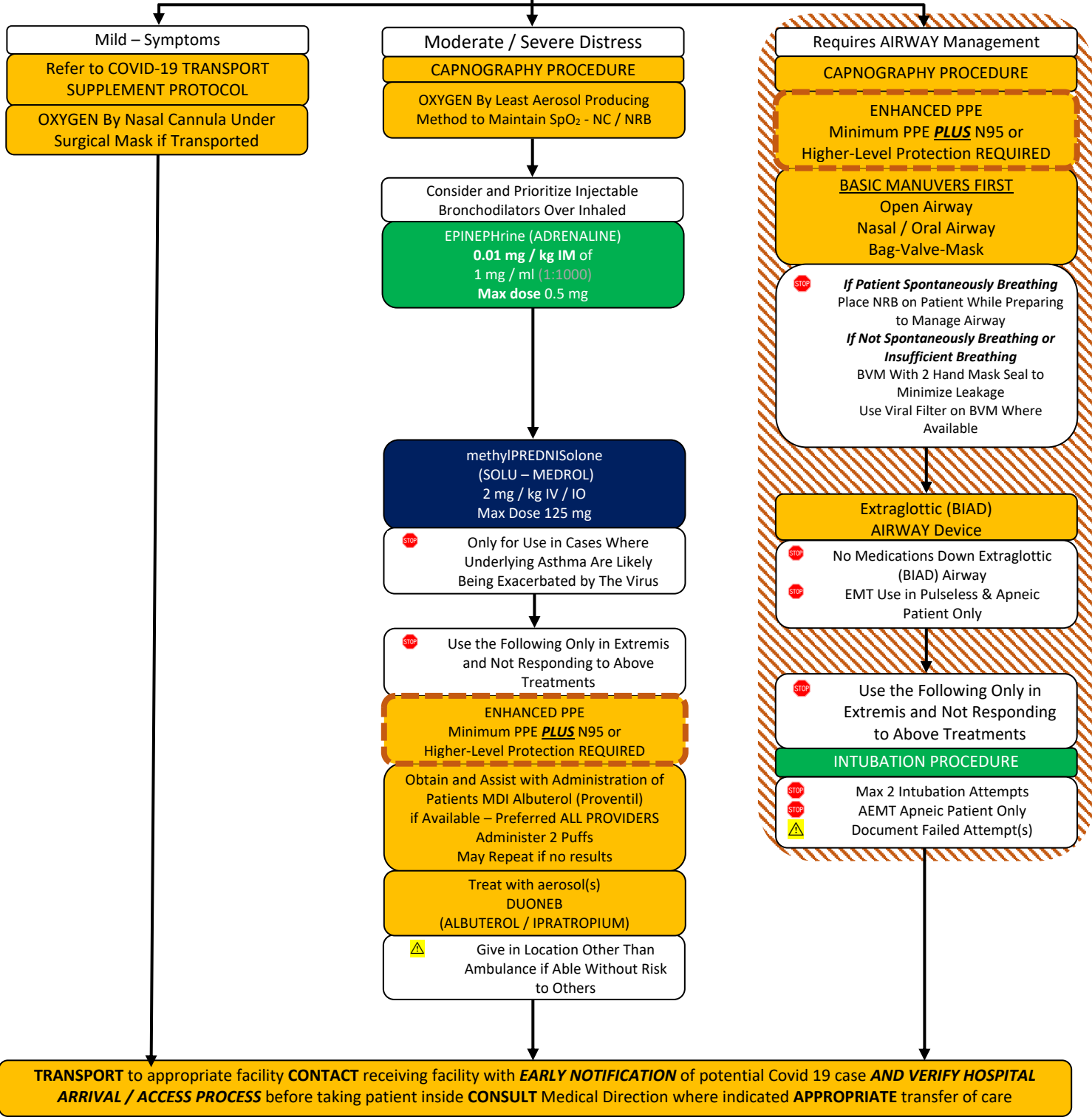
3-5 kg	6-7 kg	8-9 kg	10-11 kg	12-14 kg	15-18 kg	19-23 kg	24-29 kg	30-36 kg
6-11 lbs	13-15 lbs	18-20 lbs	22-24 lbs	26-31 lbs	33-37 lbs	42-51 lbs	53-64 lbs	66-81 lbs
18-24 in	24-26 in	26-29 in	29-33 in	33-38 in	38-43 in	43-48 in	48-52 in	52-57 in

**UNIVERSAL PATIENT CARE PROTOCOL**

PPE Minimum  
Surgical Mask / Gown / Gloves / Eye Protection  
Surgical Mask on Patient

**IV / IO PROCEDURE**

This protocol is intended to be used in place of the standard Pediatric Respiratory Distress protocol and Pediatric Airway protocol for patients who present with viral symptoms



EMT Intervention      AEMT Intervention      PARAMEDIC Intervention      Online Medical Control

# COVID-19 RESPIRATORY DISTRESS Supplement - 03.26.2020

History	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
<ul style="list-style-type: none"> <li>Flu-like Illness</li> </ul>	<ul style="list-style-type: none"> <li>Fever greater than 100.4 F</li> <li>Dyspnea</li> <li>Upper respiratory infection</li> <li>Cough</li> <li>Chills</li> <li>Weakness</li> <li>Body Aches</li> <li>Diarrhea, plus one of the above</li> </ul>	<ul style="list-style-type: none"> <li>Cancer / tumors / lymphoma</li> <li>Medication or drug reaction</li> <li>Hyperthyroidism</li> <li>Heat related emergency</li> <li>Meningitis</li> <li>Pneumonia</li> <li>Influenza A/B or RSV</li> </ul>

### COVID-19 TREATMENT POINTS

- If the patient has a metered dose inhaler, make sure this goes with the patient if transported. EMS may utilize patients MDI in place of standard aerosol treatments to help minimize risk of these procedures in these patients.
- When high risk droplet procedures are required, the provider is recommended to wear a minimum of eye protection, gown, gloves and a N95. This may include intubation, CPAP, suction, aerosol treatments or care management of symptomatic tracheostomy patient.
- If nebulized treatments must be given, attempt to give in location other than the ambulance, but also nowhere that will expose others. Assure receiving facility is aware of this in EMS to Hospital report.
- In-line HEPA filters, where available, should be utilized during ventilation of patients with ETT or supraglottic airway. Use with CPAP or nebulized treatments can vary with product. If using in-line sampling capnography as well, make sure the HEPA filter is placed closest to the patient and capnography sampling connector is after the HEPA filter.
- Consider the use of IM epinephrine or IV magnesium per standard respiratory distress protocols for severe cases. This is indicated earlier and for milder symptoms in these cases to help minimize the risk associated with nebulized treatments.
- If a patient has an unstable airway, don PPE as described above and place an advanced airway. An extraglottic airway creates less exposure to aerosols / droplets and is preferred. Intubation is permitted as a backup.
- If your PPE supply allows, all patients are to arrive at the hospitals wearing a surgical mask. If limited surgical mask, prioritize mask placement on patients with fever, cough, dyspnea or other flu like symptoms discussed in prior updates. Receiving EDs may want to place a mask on patients when then arrive.
- Do not use delivery of high flow oxygen via nasal cannula during intubation procedure in Covid-19 cases.

### GENERAL 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 oximetry 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 enough 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.
- EtCo2 measurement is mandatory with all methods of intubation. Document results of SpO2.**
- 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.**
- Do not assume hyperventilation is psychogenic - use oxygen, not a paper bag.
- Continuous pulse oximetry should be utilized in all patients with an inadequate respiratory function.
- Consider c-collar to help maintain airway placement for all managed airway patients.
- Consider the use of intubation aids such as a bougie or video laryngoscope to facilitate intubation.

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

# COVID-19 TRANSPORT Supplement - 03.26.2020

Known or suspected Covid-19 Patient

One or more viral symptoms present;

- Fever
- Cough
- Nasal / Chest Congestion
- Sore Throat
- Body Aches
- Dyspnea

Provider and Patient PPE for droplet precautions per most current guidelines

Limit number of providers with patient contact, only as many as required for indicated interventions

UNIVERSAL PATIENT CARE PROTOCOL

Conduct Patient Assessment – EMS Taken Vitals

**Vital Signs – All**

- SBP  $\geq$  100
- Resp  $<$  22
- Spo2  $\geq$  94 RA
- HR  $<$  110
- No decreased LOC

**Patient Medical History - All**

- Age  $<$  60  $>$  3 years
- Not ESRD on dialysis
- No CAD/HF
- No lung or heart disease
- Not immunocompromised
- No History of HTN

**Stable for NO TRANSPORT**

Determine Suitability for Home Care

- Appropriate Care Givers are available (if needed)
- There is separate space for the patient to recover without sharing with others
- The patient has access to food, water, and other necessities
- There are no household members with high risk history (Noted above)

Release without transport to care of self with standard non-transport release if patient consents to non-transport. Contact Medical Control only if the patient does not consent. Medical Control contact not required if within above criteria.

Provide patient resources for hotlines, testing, and / or telemedicine.

Complete thorough PCR regarding assessment and instructions given.

**Vital Signs – Any**

- SBP  $<$  100
- Resp  $>$  22
- Spo2  $<$  94 RA
- HR  $>$  110
- Decreased LOC

**Unstable - TRANSPORT**

**Patient Medical History - Any**

- Age  $>$  60  $<$  3
- ESRD on dialysis
- Lung or heart disease
- Immunocompromised
- History HTN/CAD/HF

**Patient Complaint - Any**  
Chest Pain, Shortness of breath, or Syncope

ALS ASSESSMENT (WHERE AVAILABLE)

Minimize aerosol or droplet producing procedures unless required such as CPAP and aerosol treatments

Obtain phone numbers for key family / caregivers and provide to receiving Hospital as visitation / access to patient likely to be restricted

**TRANSPORT** to appropriate facility  
**CONTACT** receiving facility as early as possible to indicate a person of interest for Covid-19.  
Follow Hospital instructions for access to Hospital once at destination.  
**CONSULT** Medical Direction where indicated

Remove PPE with caution following established doffing techniques and discard appropriately.  
Through decontamination for ambulance and equipment following current disinfection standards.

**COVID-19 TRANSPORT Supplement - 03.26.2020**

History	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
<ul style="list-style-type: none"> <li>• Flu-like Illness</li> </ul>	<ul style="list-style-type: none"> <li>• Fever greater than 100.4 F</li> <li>• Dyspnea</li> <li>• Upper respiratory infection</li> <li>• Cough</li> <li>• Chills</li> <li>• Weakness</li> <li>• Body Aches</li> <li>• Diarrhea, plus one of the above</li> </ul>	<ul style="list-style-type: none"> <li>• Cancer / tumors / lymphoma</li> <li>• Medication or drug reaction</li> <li>• Hyperthyroidism</li> <li>• Heat related emergency</li> <li>• Meningitis</li> <li>• Pneumonia</li> <li>• Influenza A/B or RSV</li> </ul>

**KEY POINTS**

- If a patient is not transported from a location other than home, discourage the use of public transportation.
- Please do not enter the Emergency Department with a suspected COVID-19 patient until you have verified the ED is ready to receive the patient. This usually involves clearing hallways of other personnel/patients, preparing isolation rooms, and closing other patient's doors.
- Consider finishing or halting aerosol producing treatments during transition from ambulance to the Emergency Department.
- If patient is transported, obtain phone numbers for family and / or caregivers if applicable as the visitation of the patient is likely to be restricted at the hospital. Give this information to the receiving facility.

# COVID-19 PPE and EXPOSURE Supplement - 03.26.2020

PPE REQUIREMENTS	
PPE Requirements <b>WITHOUT</b> Aerosol Generating Procedures	PPE Requirements <b>WITH</b> Aerosol Generating Procedures <small>Such as Breathing Treatments, Suction, CPAP, Airway Management</small>
<ul style="list-style-type: none"> <li>• Surgical mask on patient during care</li> <li>• Surgical mask minimum on all providers</li> <li>• Gown</li> <li>• Gloves</li> <li>• Eye Protection</li> </ul>	<ul style="list-style-type: none"> <li>• Surgical mask on patient when not actively managing airway</li> <li>• N95 or greater level respiratory protection</li> <li>• Gown</li> <li>• Gloves</li> <li>• Eye Protection</li> </ul>
PPE KEY POINTS	
<ul style="list-style-type: none"> <li>• Follow CDC guidelines for proper donning/doffing of PPE – PPE requirements may change frequently, check for updates</li> <li>• Surgical masks are to be used and reused throughout a shift unless soiled, damaged or exposed to person of concern (ex: coughing, aerosol generating procedure/treatment).</li> <li>• All providers are to wear at minimal a surgical mask, gloves and eye protection on all patient encounters.</li> <li>• If your PPE supply allows, all patients are to arrive at the hospitals wearing a surgical mask. If limited surgical mask, prioritize mask placement on patients with fever, cough, dyspnea or other flu like symptoms discussed in prior updates. Receiving EDs may want to place a mask on patients when then arrive.</li> <li>• N95 masks can be used by a single EMS provider until soiled, damaged, or exposed to a person of concern. This could mean multiple shift use for N95 mask. Consider placing initials on masks that are being reused and storing in a paper bag to allow moisture in a used mask to dissipate.</li> <li>• Departments using CAPR/PAPRs please follow your department policies for use and cleaning.</li> <li>• If gowns are not available and concerning droplet exposure occurred, change into a clean uniform, remembering to wash hands after touching soiled clothing.</li> <li>• Higher level of respiratory protection in excess of N95 include N99 mask, N100 mask, PAPR/CAPR, or full or partial facemasks with N95 or greater filters.</li> </ul>	

EXPOSURE	
Exposure to Covid-19 Positive Patient <b>WITH</b> Appropriate PPE	Exposure to Covid-19 Positive Patient <b>WITHOUT</b> Appropriate PPE
<ul style="list-style-type: none"> <li>• Safe to return to work without restrictions</li> <li>• Self - monitor for symptoms</li> <li>• If symptoms develop during the shift, the provider should wear a surgical mask, place themselves in self isolation and notify the receiving hospital's Infection Control Department or follow departmental policy</li> </ul>	<ul style="list-style-type: none"> <li>• Notify the receiving hospital's Infection Control Department and follow departmental exposure policies</li> <li>• The provider is to complete an exposure form</li> <li>• Self – monitor for symptoms following departmental policy</li> <li>• If symptoms develop during the shift, the provider should wear a surgical mask, place themselves in self isolation</li> </ul>
EXPOSURE KEY POINTS	
<ul style="list-style-type: none"> <li>• Self-Monitoring for symptoms includes taking temperature at least twice per day</li> <li>• Self-Monitoring programs are being initiated by many departments to assure staff are well and not reporting to work with possible symptoms. Departments may decide to use these for routine employee monitoring or just after possible exposure.</li> </ul>	