CHARLOTTESVILLE-ALBEMARLE RESCUE SQUAD

PATIENT CARE GUIDELINES AND PROTOCOLS

VERSION DATE: 09/08/2025

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- Dexamethasone (Decadron)
- Dextrose
- Diphenhydramine (Benadryl)
- Epinephrine 1mg/mL (1:1,000)
- Epinephrine 0.1mg/mL (1:10,000)
- Fentanyl
- Glucagon
- Glucose (Oral)
- Haloperidol (Haldol)
- Ipratropium Bromide (Atrovent)
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Authorization

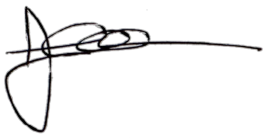
The Charlottesville-Albemarle Rescue Squad (CARS) Patient Care Guidelines are developed in conjunction with the agency's Operational Medical Directors (OMD) and Personnel and Clinical Operations (PACO) committee, and with consideration of input from field providers.

The OMDs must approve the protocols and have the authority to limit or expand implementation of protocols within the agency. Virginia Emergency Medical Services Regulations 12VAC5-31-1890 Responsibilities of Operational Medical Directors grant authority to establish and enforce protocols, policies, and procedures. All prehospital care is carried out with the express written authority of the OMDs and under their supervision. Virginia Emergency Medical Services Regulations 12VAC5-31-1040 Operational Medical Director Authorization to Practice states "EMS personnel may only provide emergency medical care while acting under authority of the operational medical director for the EMS agency for which they are affiliated and within the scope of the EMS agency license."

Drugs may be administered by an emergency medical technician upon an oral or written order or standing protocol of an authorized medical practitioner in accordance with §54.1-3408 of the Code of Virginia. Oral orders shall be reduced to writing by the technician and shall be signed by a medical practitioner[1].

These protocols serve as the general standing orders of the OMDs. They apply to all providers practicing under the license of Charlottesville-Albemarle Rescue Squad (VA OEMS Agency 00109).

By signing below, we endorse these guidelines. The most current version supersedes any previous version of these protocols.



James Forrest Calland, MD
Operational Medical Director

Harrison Brookeman, MD
Associate Operational Medical Director

[1]A medical practitioner is the licensed independent provider with prescription authority (MD, NP, PA) who provides online medical direction to the EMS provider - signature should be obtained at time of patient transfer if at all possible

Introduction

These guidelines are established to ensure safe, efficient, and effective interventions during the prehospital phase of patient care. Provider safety, coupled with the patient's best interest, should be the two imperative determining factors in all decisions. The goals of the CARS Patient Care Guidelines are:

1. Provide the highest quality patient care based on evidence-based best practices;
2. Establish minimum expectations for appropriate patient care;
3. Ensure a structure of accountability for the department's EMS program.

These guidelines have been developed by consolidating national, state, and local sources of information, with a philosophy of utilizing evidence-based best practices. Examples of bodies from which guidelines have been developed include, but are not limited to:

- American Academy of Pediatrics (AAP)
- American Heart Association (AHA)
- American College of Surgeons Committee on Trauma (ACS CoT)
- National Association of EMS Physicians (NAEMSP)
- National Association of State EMS Officials (NAEMSO)
- Charlottesville Fire Department (CFD)
- Albemarle County Fire and Rescue (ACFR)
- Thomas Jefferson EMS Council (TJEMS)

While guidelines have been developed using information from regional and national organizations, these guidelines should take precedence over any other care standard. In situations where an approved CARS Patient Care Guideline conflicts with other recognized care standards, the provider shall adhere to the CARS Patient Care Guidelines.

It is also acknowledged that there are situations where deviation from these guidelines may be needed in the interest of providing the best patient care. In these situations, on-line medical command should be consulted when possible. All instances of deviation from these guidelines should be thoroughly documented in the patient care report (PCR), noting the deviation and the specific circumstances and reasoning.

These guidelines are reviewed on an ongoing basis to remain current with evidence-based best practices. It is expected that each provider maintains a thorough knowledge of these guidelines and applies them appropriately.

Level of Practice and Delineation of Skills/Medications

Levels of Practice
CARS recognizes the following four levels of practice: Emergency Medical Technician (EMT-B), Advanced Emergency Medical Technician (AEMT), EMT-Intermediate (INT), and Paramedic (PM).

In these guidelines, Intermediate's and Paramedic's may be both referred to as a "medic." Any specific differences in care according to level of practice will be explicitly denoted.

Skill Delineation
X = Procedure is approved
O = Optional red-dot skill, specific OMD endorsement is required
MC = Authorized procedure under medical command orders only

Skill	EMT	AEMT	INT	PM
Airway				
Basic airway adjuncts (NPA/OPA)	X	X	X	X
Capnography	O	X	X	X
CPAP	O	O	O	O
Chest decompression			X	X
Cricothyrotomy (surgical/needle)				X
Endotracheal intubation (≥14yo)			X	X
Gastric decompression		X	X	X
Supraglottic airway (King, I-Gel, LMA)	O	X	X	X
Circulatory Support				
4-Lead - acquire, transmit, and interpret			X	X
12-Lead - acquire and transmit	X	X	X	X
12-Lead - interpret			X	X
Defibrillation - AED mode	X	X	X	X
Defibrillation - manual			X	X
External jugular cannulation		X	X	X
Glucometry	X	X	X	X
Intraosseous cannulation		X	X	X
Peripheral IV - initiate		X	X	X
Peripheral IV - monitor existing (without infusion)	X	X	X	X
Medication Administration				
Inhaled medication (nebulizer)	X	X	X	X
Intramuscular medication	X	X	X	X
Intranasal medication	X	X	X	X
Intraosseous medication		X	X	X
Intravenous medication		X	X	X
Oral medication	X	X	X	X
Sublingual medication	X	X	X	X
Transdermal medication		X	X	X
Diagnostic/Skill				
Ultrasonography				O
Mechanical IV pump		X	X	X
Utilize indwelling port			X	X

Level of Practice and Delineation of Skills/Medications

Medication Delineation
X = Procedure is approved
O = Optional procedure, specific OMD endorsement is required

Medication	EMT	AEMT	INT	PM
Acetaminophen	X	X	X	X
Adenosine			X	X
Albuterol	X	X	X	X
Amiodarone			X	X
Aspirin	X	X	X	X
Atropine			X	X
Cefazolin (Ancef)		X	X	X
Diphenhydramine (Benadryl)		X	X	X
Calcium Chloride / Calcium Gluconate			X	X
Dexamethasone (Decadron)		X	X	X
Dextrose (any IV form)		X	X	X
Epinephrine 1mg/1mL (1:1,000)	X[2]	X	X	X
Epinephrine 1mg/10mL (1:10,000)		O	X	X
Fentanyl		X	X	X
Glucagon		X	X	X
Glucose (oral)	X	X	X	X
Haloperidol (Haldol)			X	X
Ipratropium Bromide (Atrovent)	X	X	X	X
Ketamine			X	X
Ketorolac (Toradol)		X	X	X
Magnesium Sulfate			X	X
Metoprolol			X	X
Midazolam (Versed)			X	X
Naloxone (Narcan)	X[3]	X	X	X
Nitroglycerin	X[4]	X	X	X
Norepinephrine			X	X
Normal Saline (0.9% NS)	X[5]	X	X	X
Ondansetron (Zofran)	X[6]	X	X	X
Sodium Bicarbonate			X	X
Tranexamic Acid (TXA)		X	X	X

Notes:
1. May assist with patient's own metered dose inhaler *** TJEMS drugs class
2. Must utilize Epi-Rite syringe
3. May administer intranasal naloxone only.
4. May assist with patient's own nitroglycerin pills only.
5. May use NS for irrigation only.
6. May administer oral (ODT) version only.

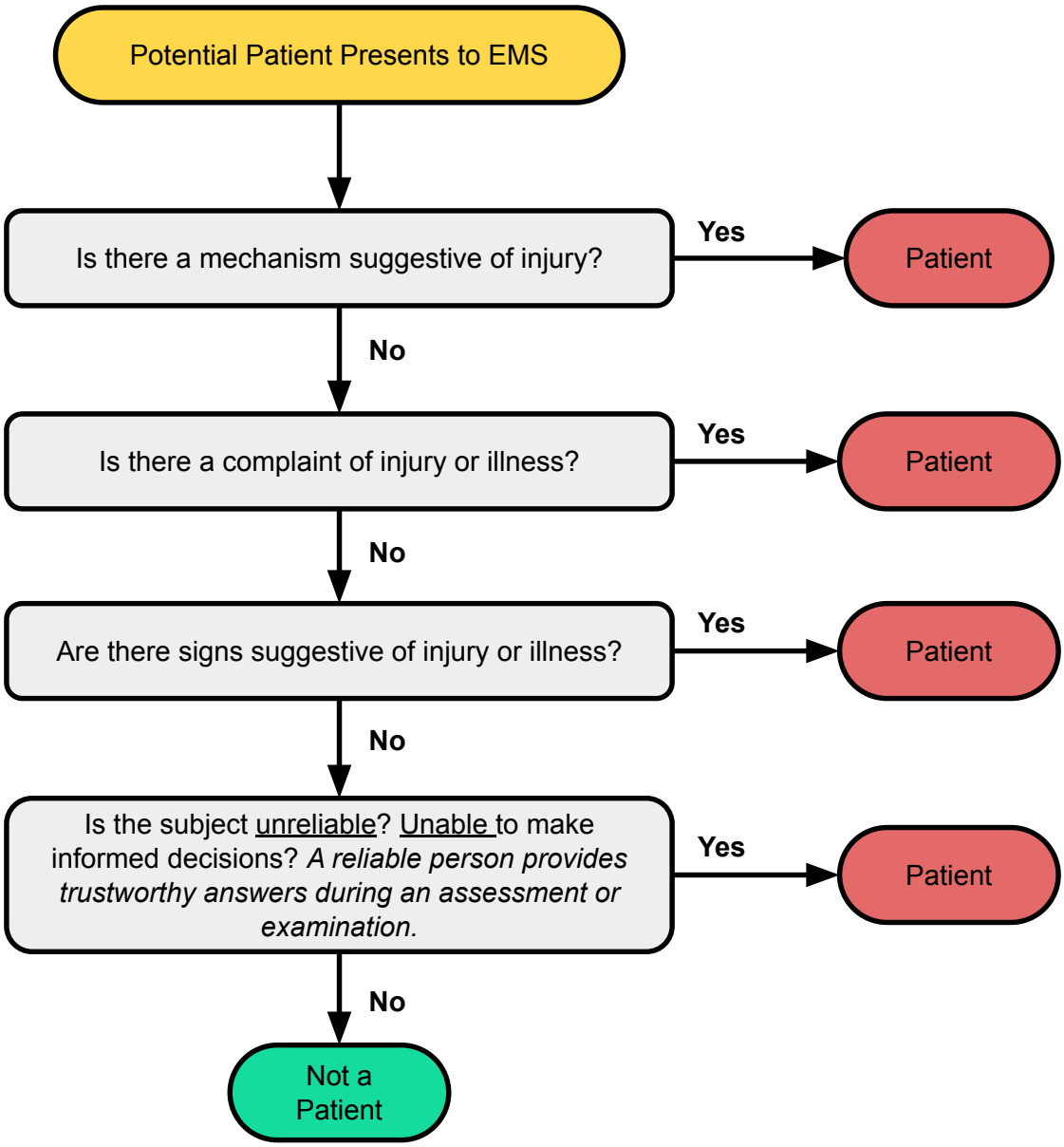
Medication Alternates

The chart below provides alternate medications in the case of a drug shortage or supply issue.

Primary Medication	Indication	Secondary Medication	Secondary Dose	
			Adult	Pediatric
Amiodarone	Wide complex tachycardia	Lidocaine 2%	1-1.5 mg/kg	1 mg/kg
D10	Hypoglycemia	D50	25 g	0.5 g/kg
Dexamethasone (Decadron)	Allergic reaction, anaphylaxis, difficulty breathing	Methylprednisolone (Solu-Medrol)	125 mg	1 mg/kg
Fentanyl	Pain management	Morphine	2-5 mg, repeated once in 10 minutes	0.1 mg/kg, max 2 mg
Albuterol	Bronchospasm, hyperkalemia	Levalbuterol (Xopenex)	0.63mg	0.63 mg (age 6+)
Normal Saline	Fluid Resuscitation	Lactated Ringers'[1]	1:1 replacement	1:1 replacement
Haloperidol	Behavioral emergencies	Droperidol	5 mg	Not approved

[1]Lactated Ringers' should not be used in patients with altered GCS due to suspected TBI

Patient Definition



Public Service/Life Assist Calls
When there is no evidence suggestive of illness or injury, the patient is ONLY requesting assistance with lifting/moving, and the patient is fully alert and oriented, no patient-provider relationship is established. If, at any point, the patient has a complaint, requests to be assessed, has a visible injury, or appears altered, they become a patient and an appropriate disposition selected.

Patient Disposition

Destination Determination
Patients may opt to be transported to any of these destinations, assuming they meet the criteria for those destinations.

Facility	Address	Phone	Trauma	PCI	Stroke*	Psych	Acute Peds	L&D
University of Virginia (UVA)	1215 Lee St, Charlottesville, VA 22903	(434) 924-9287	Level 1	Yes	CSC	Yes	Yes	Yes
Sentara Martha Jefferson Hospital (MJH)	500 Martha Jefferson Dr, Charlottesville, VA 22911	(434) 654-7150	No	Yes	PSC	No*	No	Yes
Sentara Martha Jefferson Freestanding ED (FSED)	3263 Proffit Rd, Charlottesville, VA 22911	(434) 654-8504	No	No	No	No	No	No

Note:

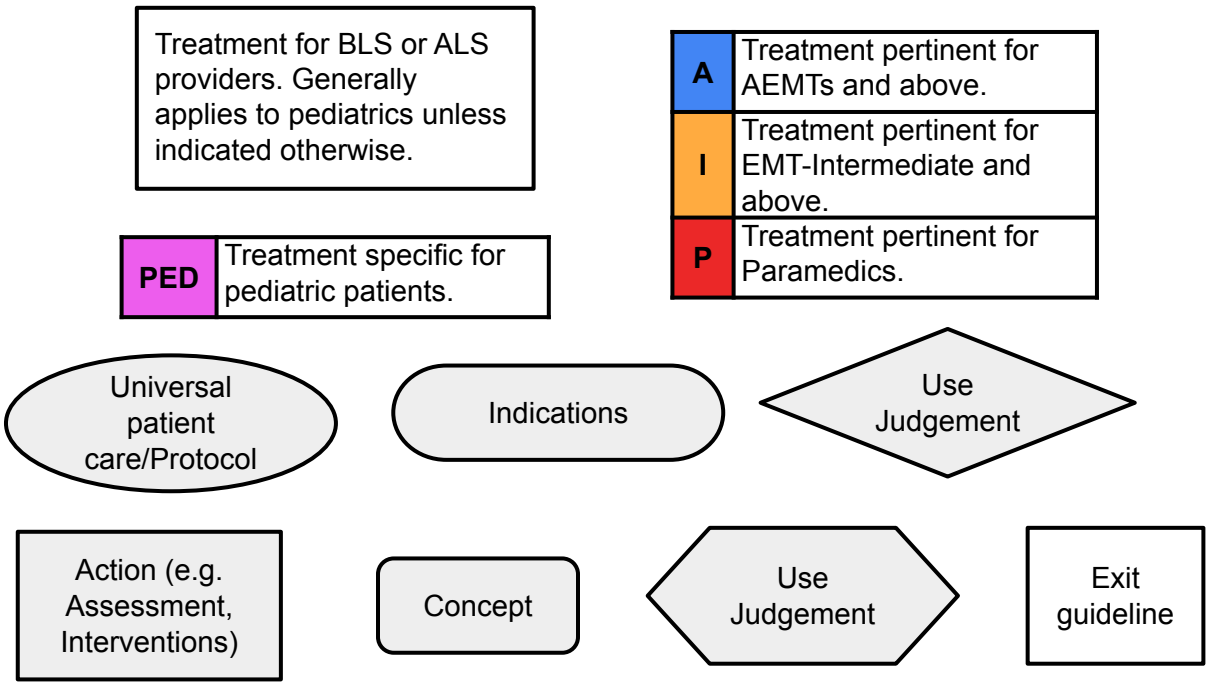
- UVA is a Joint Commission Certified Comprehensive Stroke Center (CSC). CSCs have all levels of stroke care available including endovascular and neurosurgical capabilities.
- MJH is a Primary Stroke Center (PSC). PSCs can provide fibrinolytic therapy and may have some endovascular therapy available.
- Patients who are VAN Positive with an onset of less than 24 hours should be taken to UVA.
- MJH does have remote psychiatric capability. However, as they do not have on-site psychiatric resources or inpatient services available, psychiatric patients should ideally be transported to UVA.
- MJH has L&D services; however, any obstetrical patients with likely complications (premature labor, breech presentation, trauma in pregnancy) should be transported to UVA as MJH does not have neonatal intensive care capability

Definitions

Term	Definition
Advanced Life Support (ALS) Provider	A released advanced EMT, EMT-Intermediate, or Paramedic who is credentialed to practice at CARS by the OMDs and PACO, or a certified advanced EMT, EMT-Intermediate, or Paramedic practicing under an approved preceptor.
Adult Patient	Unless otherwise defined, an adult patient is considered to be anyone presenting to EMS for care who is 12 or older with evidence of development of secondary sexual characteristics (armpit hair in boys, breast development in girls)
Basic Life Support (BLS) Provider	A released EMT who is credentialed to practice at CARS by the OMDs and PACO or a certified EMT practicing under an approved preceptor.
MedCom	The team responsible for receiving field communications at UVA Health.
Medical Command	On-line medical direction/orders received from a physician
Multiple Casualty Incident (MCI)	Also known as “mass casualty incident.” Any incident that generates more patients than can be handled by the system.
Office of EMS (OEMS)	The state agency housed within the Virginia Department of Health (VDH) that regulates emergency medical services care within the Commonwealth.
Pediatric Patient	Unless otherwise defined, a pediatric patient is considered to be anyone up to signs of puberty (e.g. breast development in females, underarm or chest hair in males), or approximately age 14.
Rescue 107 (R-107)	An officer within the CARS on-call supervisor program who is available by phone for a designated shift.
Thomas Jefferson EMS Council (TJEMS)	An independent organization contracted with OEMS to provide specific regional EMS services, to include coordination of regional trauma, stroke, STEMI, and MCI plans.

Legend of Symbols

Legend Notes
***
Assessments that are done by any level are noted by a rectangle without colored boxes next to it. The colored boxes indicate a treatment, with each level of care denoted by a specific color:



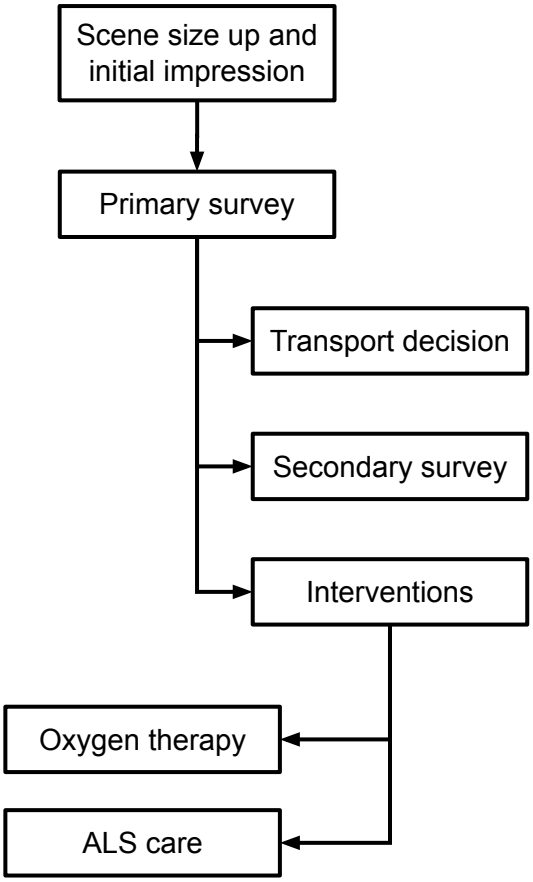
Medication Formulary
In the following medication protocols in Section ***, GREEN highlighted designations indicate a drug permitted for that level, YELLOW indicates reservations or considerations at that level, and RED indicates not allowed at that level.

SECTION I: GENERAL/OPERATIONAL GUIDELINES

I.1 Universal Patient Care

Standard of Care
Using these guidelines, CARS providers will decide appropriate management of the patient based on a review of the specific incident, environment, and available resources. The Universal Patient Care guideline outlines the most basic expectations of patient care and is assumed to be required for every patient encounter.

This guideline is not necessarily in stepwise fashion. Providers should perform a scene size up, make an initial impression, then complete a primary survey. These findings will guide any follow-up assessments and treatments. The assumption is that providers will apply and adapt this standard as required based on the patient.



<u>Scene Size-Up & Initial Impression</u>
- Ensure scene safety (patient, provider, public)
- Determine mechanism of injury
- Determine number of patients
- Request additional resources as needed (e.g., fire, ALS, law enforcement, etc)

<u>Primary Survey</u>
Assess level of consciousness (AVPU)
Assess for and address life threats with:
- X - Exsanguinating hemorrhage
- A - Airway
- B - Breathing
- C - Circulation
- D - Disability

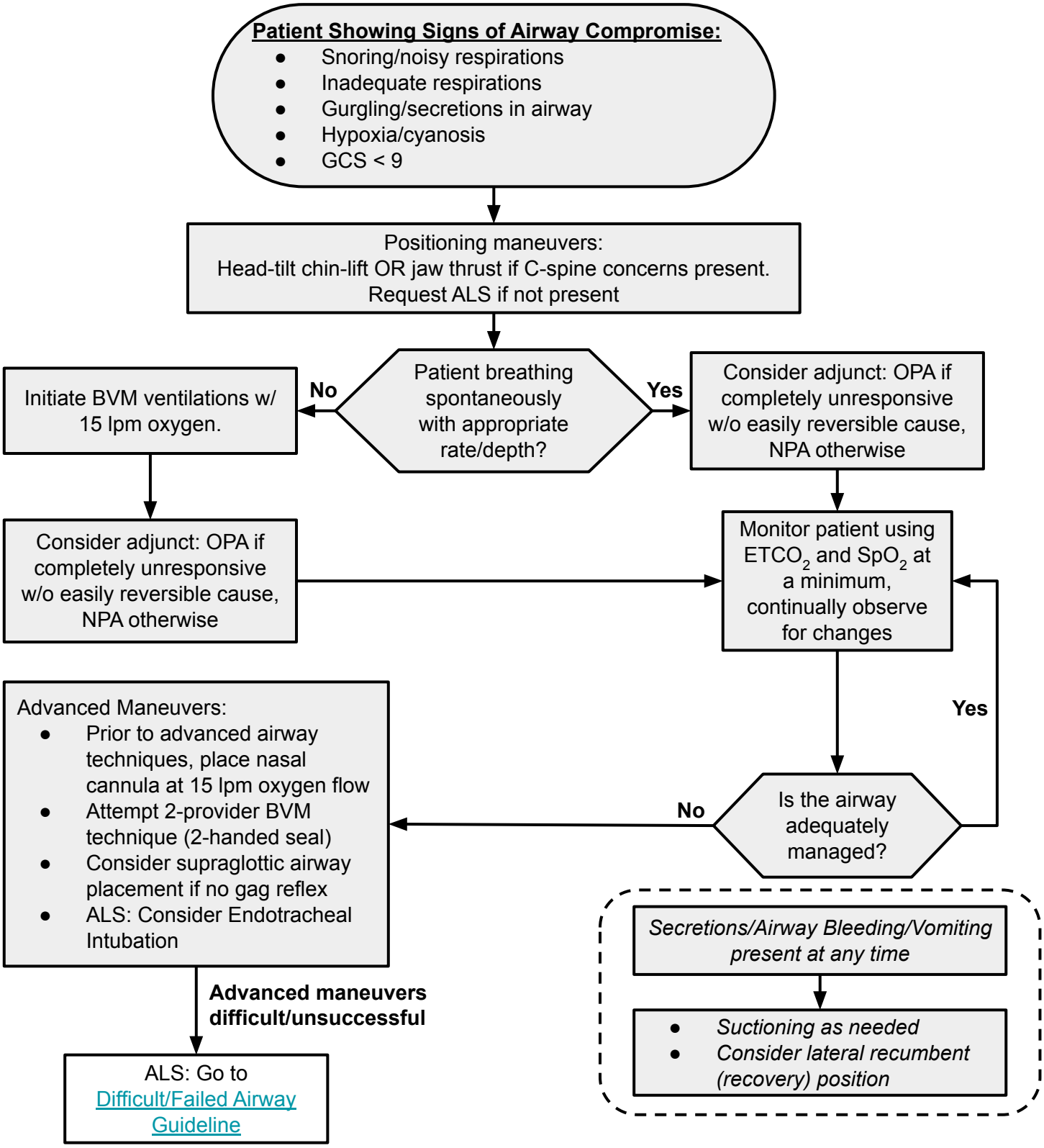
The order of the following may differ based on patient needs.

<u>Transport Decision</u>
- Destination and method

<u>Secondary Survey</u>
- Vital signs (BP, HR, RR, SpO_2, others as necessary)
- History taking (SAMPLE, OPQRST, etc)
- Focused or full assessment as appropriate
- ECG, $EtCO_2$, lung sounds, etc

<u>Interventions</u>
- Consider medications and other interventions as indicated

I.2 Airway Management Algorithm

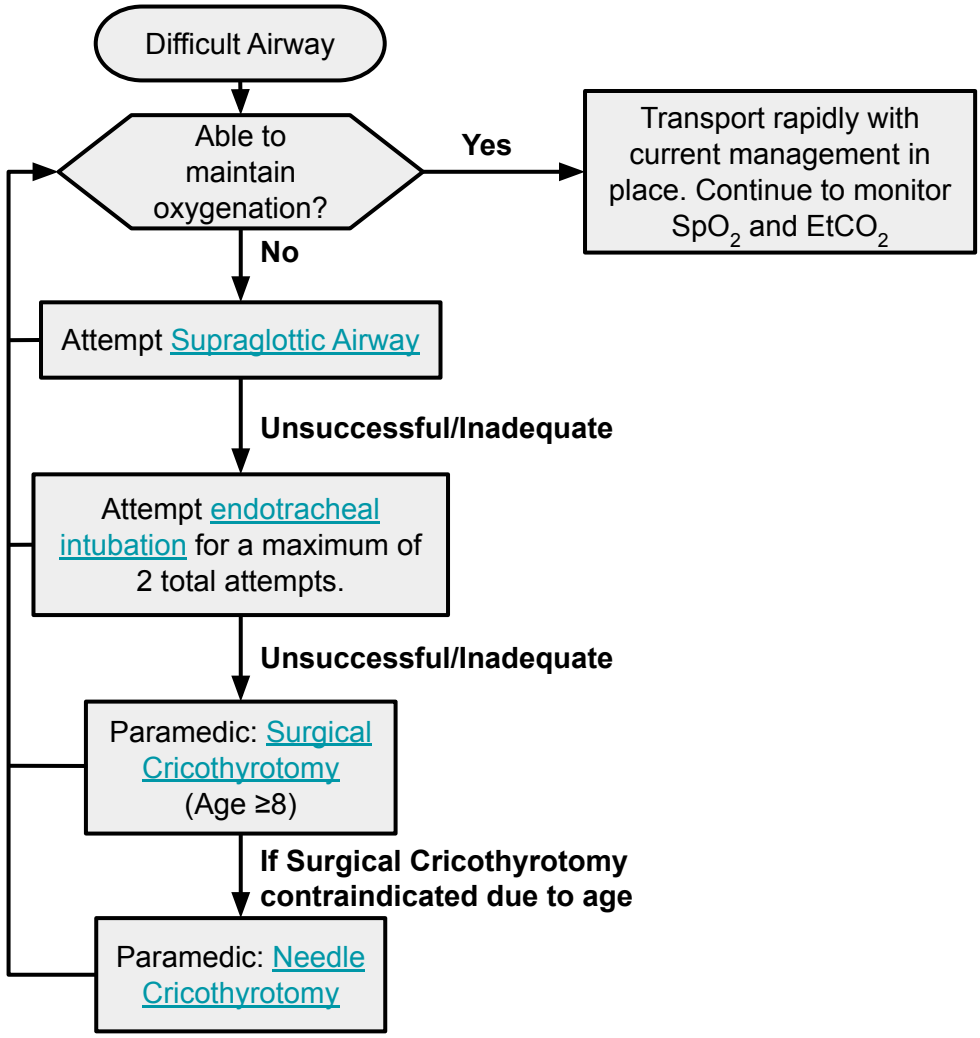


I.3 Difficult/Failed Airway (ALS)

RATIONALE

Indications: Patients requiring airway management in whom the steps listed in the airway management algorithm have been attempted unsuccessfully or in whom the airway assessment reveals an anticipated difficult airway.

TREATMENT



PEARLS

- In severe facial trauma or angioedema, consider moving directly to cricothyrotomy
- Position the patient to optimize intubation attempts
- Consider placement of nasal cannula at 15 lpm to maximize apneic oxygenation
- Consider use of PEEP valve w/ BVM as needed for additional oxygenation - contraindicated for cardiac arrest

I.4 Clinical Error Self-Reporting Guideline

RATIONALE	In high-reliability organizations, a non-punitive process for self-reporting of errors can lead to identification of systemic safety issues and improvements to patient safety. This guideline aims to be used for provider and system development, rather than disciplinary action towards providers. Clinical error reporting can be performed by any member of the care team (e.g. Observers, Collectors, Students, Driver-Only, AIC).

INDICATIONS

An error that should be reported under this protocol is any event that occurs during the course of patient care or incident response which deviates from CARS protocol/SOG or had the potential to result in patient harm.

- Examples include: Medication errors, failure to identify or properly address a patient's condition, patient injury relating to extrication or transport, protocol deviations
- Consider reporting errors that almost reached the patient but were caught in time (i.e. a medication error that almost occurred but was identified and stopped during cross-check)

Procedure:

1. The first priority is patient care - if an error which reaches a patient occurs, the patient and their receiving care team should be promptly notified so that consequences of the error can be mitigated.
2. If an error which reaches a patient occurs (no need to do this for near misses) - following transfer of care, promptly contact supervisory personnel until one of the following is reached and provide a verbal description of the incident
    a. Operational Medical Director Dr. Calland: (434) 242-9458 or Dr. Brookeman (434) 806-5837
    b. Chief Paxton: (434) 531-1424
    c. Division Chief Kothmann: (757) 323-2897
    d. R107: (434) 531-5954
3. Following the incident, submit an SIR for 'clinical error self report' detailing the incident. This documentation should include what occurred, whether the error reached the patient, and a description of mitigating actions taken following the error (notifying receiving care providers, etc). Providers should also highlight any systematic factors they believe contributed to the error or near-miss (similar-looking medications near one another, problems with equipment, etc).
4. Providers who submit a self-report under this policy will not face disciplinary action from the agency unless the incident reflects gross negligence, a pattern of repeated behavior, or willful misconduct.
5. Providers who submit a self-report under this policy should expect to receive follow-up from agency leadership within 7 calendar days regarding any action to be taken to rectify the issue
6. Agency leadership will submit an appropriately anonymized report of the incident to the EMS Voluntary Event Notification Tool (EVENT).

I.5 Determination of Death (Medical Causes)

RATIONALE

When called to an unwitnessed cardiac arrest, EMS providers must perform a rapid assessment to determine the feasibility of resuscitation. EMS providers are also occasionally called upon to confirm the death of a patient in a long-term care facility with no nursing staff available. Traumatic cardiac arrests should be assessed under the traumatic cardiac arrest protocol, rather than this protocol.

Procedure:

1. Determine (from call notes/bystanders) if the cardiac arrest was witnessed or not - witnessed cardiac arrests of medical origin should always have resuscitation attempted unless an appropriate DNR is present (see DNR/POST protocol)
2. If arrest was unwitnessed, rapidly assess patient for signs of death:
3. Irreversible death requires all of the following to be present:
    a. Unresponsiveness
    b. Apnea
    c. Pulselessness
    d. AND one or more of the following:
        i. Rigor mortis (2 or more large joints like elbows or shoulders)
        ii. Dependent lividity
        iii. Putrefaction/decomposition
4. If the patient does not meet above criteria or there is any uncertainty, initiate resuscitation promptly and follow appropriate guidelines.
5. If patient meets criteria in step 3, do not attempt resuscitation. Verify death by auscultating apical heart sounds; for Intermediate/Paramedic level units, attach a 3-lead ECG and record 60 seconds of asystole. If any other rhythm is present, attempt resuscitation.
6. Notify law enforcement and do not clear the scene until their arrival. Minimize the number of providers present for evidence preservation.
7. Document at a minimum the criteria used to determine non-resuscitation, the further verification of death by auscultation of heart sounds/ECG strip if applicable, and the law enforcement unit the scene was turned over to.

PEARLS

- Barring exigent circumstances (i.e. cases in public view), CARS does not transport bodily remains to the morgue. Consider contacting your R-107 if asked to do so.
- Rigor, clenching, or trismus of the jaw is not criteria for determination of death.

I.6 Do Not Resuscitate/POST Orders

RATIONALE

Virginia law allows for patients to outline wishes for EMS care in advance via several standardized approaches including the durable do-not-resuscitate (DDNR) system, and the Physician Orders for Scope of Treatment (POST) system. This protocol outlines the approach used by CARS providers in responding to these orders when present.

Durable Do-not-Resuscitate Orders

1. DDNR orders apply only when the patient is in cardiopulmonary arrest and would otherwise meet criteria for resuscitation.
2. Verify that the patient is the person named on the DDNR form and that the form is completely filled out with a physician or PA/NP signature and patient/patient representative's signature.
3. Photocopies of complete paperwork are acceptable as well as authorized DDNR jewelry (photos on next page) so long as all necessary information is present (patient, authorizing provider, provider phone #)
4. Perform a patient assessment to verify cardiopulmonary arrest, auscultate apical heart sounds.
5. Notify law enforcement and do not clear scene until they arrive. Document the provider who signed the DNR, the number on the DDNR form if one is present, or obtain photo of DDNR form and attach to PPCR.

POST forms

1. POST forms apply to all care provided to patients, and allow specification of general EMS care in addition to serving as a DDNR in cases of cardiopulmonary arrest.
2. Verify that the patient is the person named on the POST form and the form is completely filled out with a physician or PA/NP signature and the patient/patient representative signature.
3. Photocopies or electronic copies of complete paperwork are acceptable as long as all necessary information is present.
4. If a section of the POST form has no preference indicated, treat the patient with the standard of care for that section.
5. If using a POST form to cease or not begin resuscitation, follow steps 4 and 5 from the DDNR section above.
6. Document the provider who signed the POST form, the number on the form if one is present, and consider obtaining a photo of the POST form and attach to PPCR.

PEARLS

- DNR orders in a patient's chart may be honored without a DDNR form IF the patient is being transported between two medical facilities (i.e. SNF to ED transport).
- Out-of-state DNR forms may be honored. Contacting medical control in these circumstances is recommended due to unfamiliarity with the paperwork.
- If patients or families express uncertainty about EMS handling of end-of-life care while EMS is responding on a non end-of-life related call, EMS may recommend discussing the POST form with their physician.
- DNRs may only be revoked by the patient, the authorizing physician, or the patient's healthcare POA.

I.6 Do Not Resuscitate/POST Orders

Verify patient's name matches name on form

Durable Do Not Resuscitate Order

Virginia Department of Health

Patient's Full Legal Name _____ **Date** _____

Physician's Order

I, the undersigned, state that I have a bona fide physician/patient relationship with the patient named above. I have certified in the patient's medical record that he/she or a person authorized to consent on the patient's behalf has directed that life-prolonging procedures be withheld or withdrawn in the event of cardiac or respiratory arrest.

I further certify (must check 1 or 2):

☐ 1. The patient is CAPABLE of making an informed decision about providing, withholding, or withdrawing a specific medical treatment or course of medical treatment. (Signature of patient is required)

☐ 2. The patient is INCAPABLE of making an informed decision about providing, withholding, or withdrawing a specific medical treatment or course of medical treatment because he/she is unable to understand the nature, extent or probable consequences of the proposed medical decision, or to make a rational evaluation of the risks and benefits of alternatives to that decision.

If you checked 2 above, check A, B, or C below:

☐ A. While capable of making an informed decision, the patient has executed a written advanced directive which directs that life-prolonging procedures be withheld or withdrawn.

☐ B. While capable of making an informed decision, the patient has executed a written advanced directive which appoints a "Person Authorized to Consent on the Patient's Behalf" with authority to direct that life-prolonging procedures be withheld or withdrawn. (Signature of "Person Authorized to Consent on the Patient's Behalf is required.)

☐ C. The patient has not executed a written advanced directive (living will or durable power of attorney for healthcare). (Signature of "Person Authorized to Consent on the Patient's Behalf is required)

I hereby direct any and all qualified health care personnel, commencing on the effective date noted above, to withhold cardiopulmonary resuscitation (cardiac compression, endotracheal intubation and other advanced airway management, artificial ventilation, defibrillation, and related procedures) from the patient in the event of the patient's cardiac or respiratory arrest. I further direct such personnel to provide the patient other medical interventions, such as intravenous fluids, oxygen, or other therapies deemed necessary to provide comfort care or alleviate pain.

Physician's Printed Name	Physician's Signature	Emergency Phone Number
Patient's Signature	Signature of Person Authorized to Consent on the Patient's Behalf	

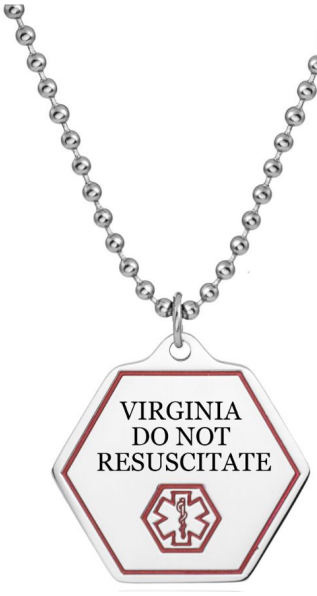
Copy 1 – To be kept by patient

Verify presence of:
- ❑ *Physician name*
- ❑ *Physician signature*
- ❑ *Physician phone #*
- ❑ *Bottom signatures*

(continued on next page)

I.6 Do Not Resuscitate/POST Orders

VA Authorized DDNR jewelry: always a bracelet or necklace. Must display “Virginia do not resuscitate” and must have patient’s full name and authorizing provider’s name and phone number



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I.6 Do Not Resuscitate/POST Orders

HIPAA PERMITS DISCLOSURE OF POLST ORDERS TO HEALTH CARE PROVIDERS AS NECESSARY FOR TREATMENTWHENEVER TRANSFERRED OR DISCHARGED

National POLST Model Form: A Portable Medical Order

Health care providers should complete this form only after a conversation with their patient or the patient's representative. The POLST decision-making process is for patients who are at risk for a life-threatening clinical event because they have a serious life-limiting medical condition, which may include advanced frailty (www.polst.org/guidance-appropriate-patients-pdf).

Patient Information. **Having a POLST form is always voluntary.**

This is a medical order, not an advance directive. For information about POLST and to understand this document, visit: www.polst.org/form

Patient First Name: _____

Middle Name/Initial: _____ Preferred name: _____

Last Name: _____ Suffix (Jr, Sr, etc): _____

DOB (mm/dd/yyyy): ____/____/_____ State where form was completed:_____

Gender: ☐ M ☐ F ☐ X Social Security Number's last 4 digits (optional): xxx-xx-___ ___ ___ ___

Verify patient's identity matches person on form

A. Cardiopulmonary Resuscitation Orders. Follow these orders if patient has no pulse and is not breathing.

Pick 1

☐ **YES CPR: Attempt Resuscitation, including mechanical ventilation, defibrillation and cardioversion.** (Requires choosing Full Treatments in Section B)

☐ **NO CPR: Do Not Attempt Resuscitation.** (May choose any option in Section B)

*This section acts as a DDNR if **NO CPR** is selected*

B. Initial Treatment Orders. Follow these orders if patient has a pulse and/or is breathing.

Reassess and discuss interventions with patient or patient representative regularly to ensure treatments are meeting patient's care goals. Consider a time-trial of interventions based on goals and specific outcomes.

Pick 1

☐ **Full Treatments (required if choose CPR in Section A).** Goal: Attempt to sustain life by all medically effective means. Provide appropriate medical and surgical treatments as indicated to attempt to prolong life, including intensive care.

☐ **Selective Treatments.** Goal: Attempt to restore function while avoiding intensive care and resuscitation efforts (ventilator, defibrillation and cardioversion). May use non-invasive positive airway pressure, antibiotics and IV fluids as indicated. Avoid intensive care. Transfer to hospital if treatment needs cannot be met in current location.

☐ **Comfort-focused Treatments.** Goal: Maximize comfort through symptom management; allow natural death. Use oxygen, suction and manual treatment of airway obstruction as needed for comfort. Avoid treatments listed in full or select treatments unless consistent with comfort goal. Transfer to hospital **only** if comfort cannot be achieved in current setting.

Follow these orders for patients not in cardiac arrest

C. Additional Orders or Instructions. These orders are in addition to those above (e.g., blood products, dialysis).
[EMS protocols may limit emergency responder ability to act on orders in this section.]

Orders may be followed if within scope - contact medical command for guidance

D. Medically Assisted Nutrition (Offer food by mouth if desired by patient, safe and tolerated)

Pick 1

☐ Provide feeding through new or existing surgically-placed tubes ☐ No artificial means of nutrition desired

☐ Trial period for artificial nutrition but no surgically-placed tubes ☐ Not discussed or no decision made (provide standard of care)

E. SIGNATURE: Patient or Patient Representative (eSigned documents are valid)

I understand this form is voluntary. I have discussed my treatment options and goals of care with my provider. If signing as the patient's representative, the treatments are consistent with the patient's known wishes and in their best interest.

✖ (required) | The most recently completed valid POLST form supersedes all previously completed POLST forms.

If other than patient, print full name: | **Authority:**

F. SIGNATURE: Health Care Provider (eSigned documents are valid) Verbal orders are acceptable with follow up signature.

I have discussed this order with the patient or his/her representative. The orders reflect the patient's known wishes, to the best of my knowledge. [Note: Only licensed health care providers authorized by law to sign POLST form in state where completed may sign this order]

✖ (required) | **Date** (mm/dd/yyyy): Required ___/___/_____ | **Phone # :** (___)_____

Printed Full Name: | **License/Cert. #:**

Supervising physician signature: ☐ N/A | **License #:**

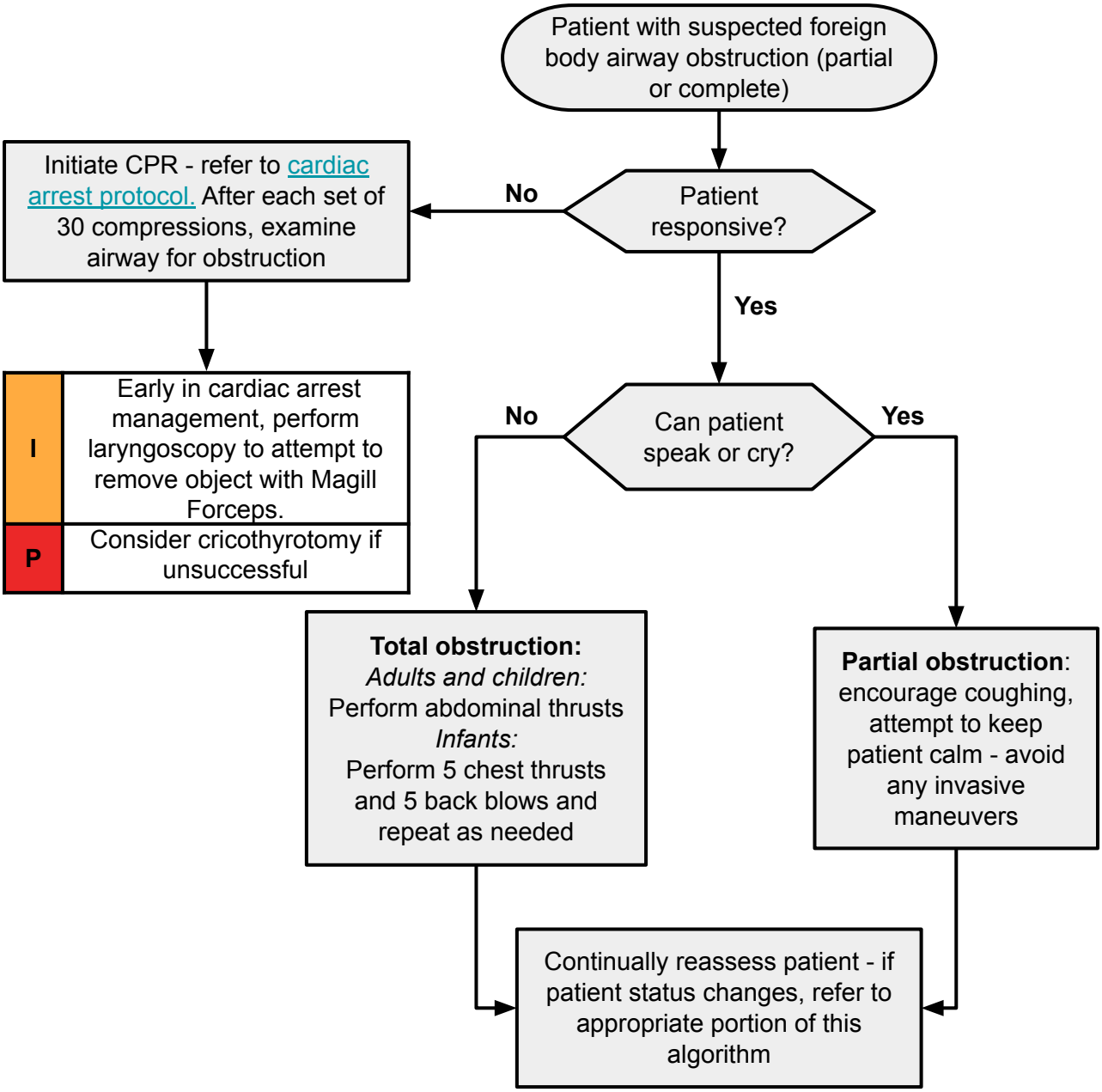
Verify both signature sections are fully completed

A copied, faxed or electronic version of this form is a legal and valid medical order. This form does not expire. 2019

I.7 Foreign Body Airway Obstruction

RATIONALE

Foreign Body Airway Obstruction (choking) is an uncommon, yet potentially lethal presentation that must be rapidly addressed by prehospital providers. Complete obstruction can rapidly lead to hypoxia, coma, and death; while partial obstructions can progress to complete obstructions or lead to pneumonia and other complications. Treatment is focused on rapidly restoring oxygenation and ventilation.



I.8 Infection Control/PPE Usage

RATIONALE

Infection control is essential in EMS to protect patients, providers, and the public from the transmission of infectious diseases. EMS providers should consistently use appropriate personal protective equipment (PPE), follow proper hand hygiene, employ safe equipment handling and disposal, and decontaminate surfaces and vehicles after patient contact.

Clinical Circumstance	When to Apply	PPE/Precautions
Standard Precautions	● Every patient encounter	- Gloves should be worn for all encounters. - Thorough hand hygiene should be performed after patient contact. - Patient contact surfaces should be wiped down with germicidal solution after care is turned over - Goggles should be immediately available to providers throughout patient contact - in jump bag or pocket on person
Aerosolizing Procedure Precautions	● **Any** airway management procedure ● Nebulizer treatments ● CPAP therapy ● CPR	- Before initiating aerosolizing procedures, providers should don eye protection and a surgical mask
Suspected *Clostridium Difficile* infection	● Known *C. Diff* infection (from nursing home or prior diagnosis) ● Patient presenting with severe diarrhea, especially in healthcare settings	- Providers should wear gowns and gloves - *C. Difficile* forms spores that are not killed by alcohol or ammonium-based sanitizers. Use bleach (orange wipes) to wipe down all patient contact surfaces and wash hands with soap and water following transfer of care

(continued on next page)

I.8 Infection Control/PPE Usage

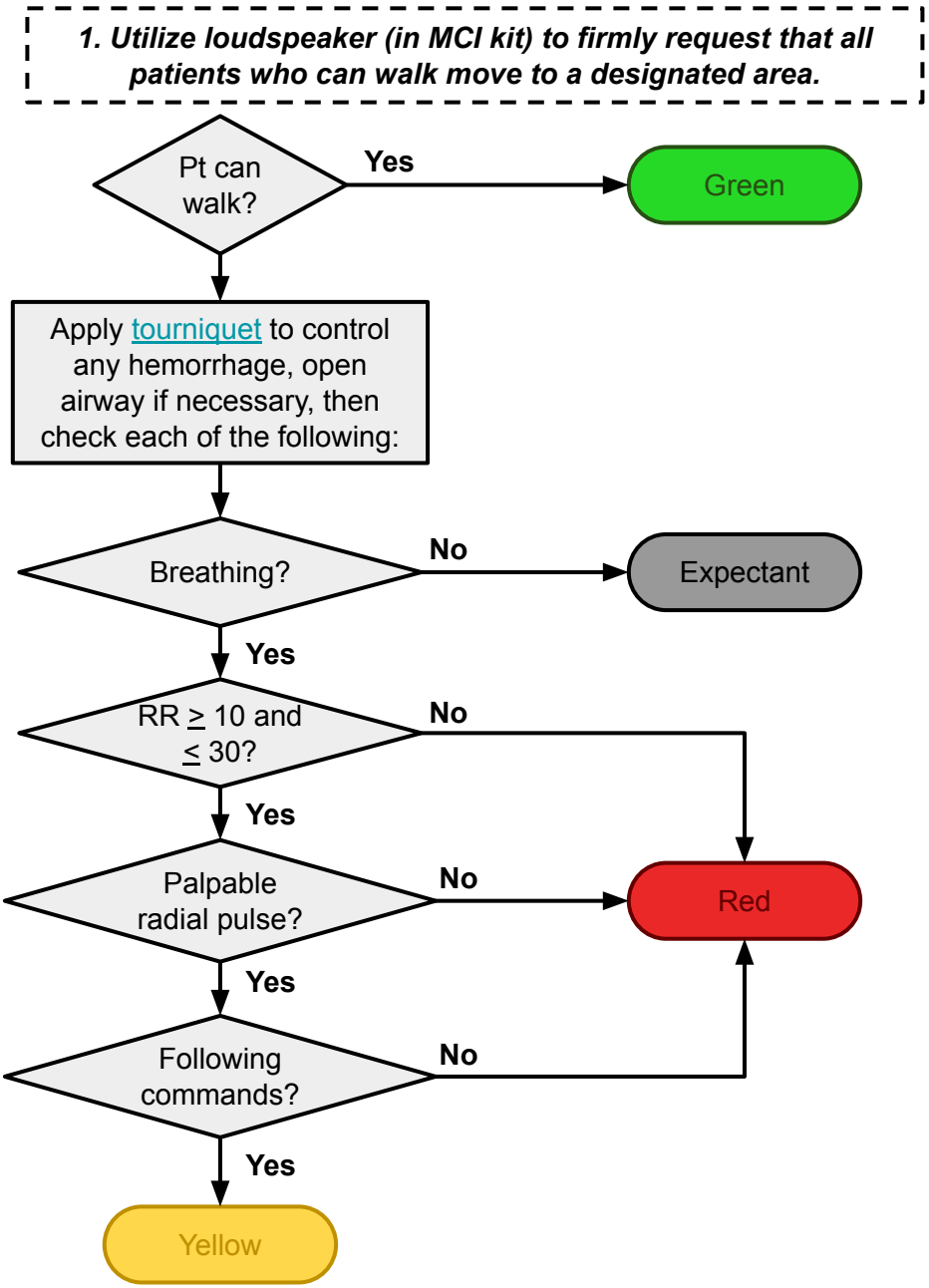
Clinical Circumstance	When to Apply	PPE/Precautions
Suspected Respiratory Infection	● Known diagnosis or suspicion of influenza, mononucleosis, or COVID-19 ● Signs and symptoms including cough, fever, nasal discharge, vomiting ● Suspicion for meningitis ● Signs and symptoms of meningitis include flu-like illness with neck pain or stiffness	- Providers should wear N95 or P100 masks, gloves, and eye protection - If call notes suspicious for any of these symptoms, don PPE before approaching patient
Suspected skin parasite contamination	● Patients with visible bedbug, lice, or scabies contamination ● Patients with complaints of generalized itching or small red bumps/”burrow track” rash.	- Hospital should be alerted early - Providers should don gowns - Following return to station, providers should promptly change uniforms and place soiled uniform in dryer on hottest temperature setting
Methicillin-resistant staphylococcus aureus (MRSA) or Vancomycin-resistant enterococcus (VRE)	● Diagnosed MRSA or purulent/draining skin wounds/infections ● VRE causes a variety of infections including UTIs and wound infections.	- Providers should wear gloves and utilize especially thorough cleaning of equipment with sanitizer wipes following transfer of care. - Ensure hospital is aware if patient is diagnosed with one of these pathogens

I.9 Mass-Casualty Incident and Triage Guidelines

RATIONALE

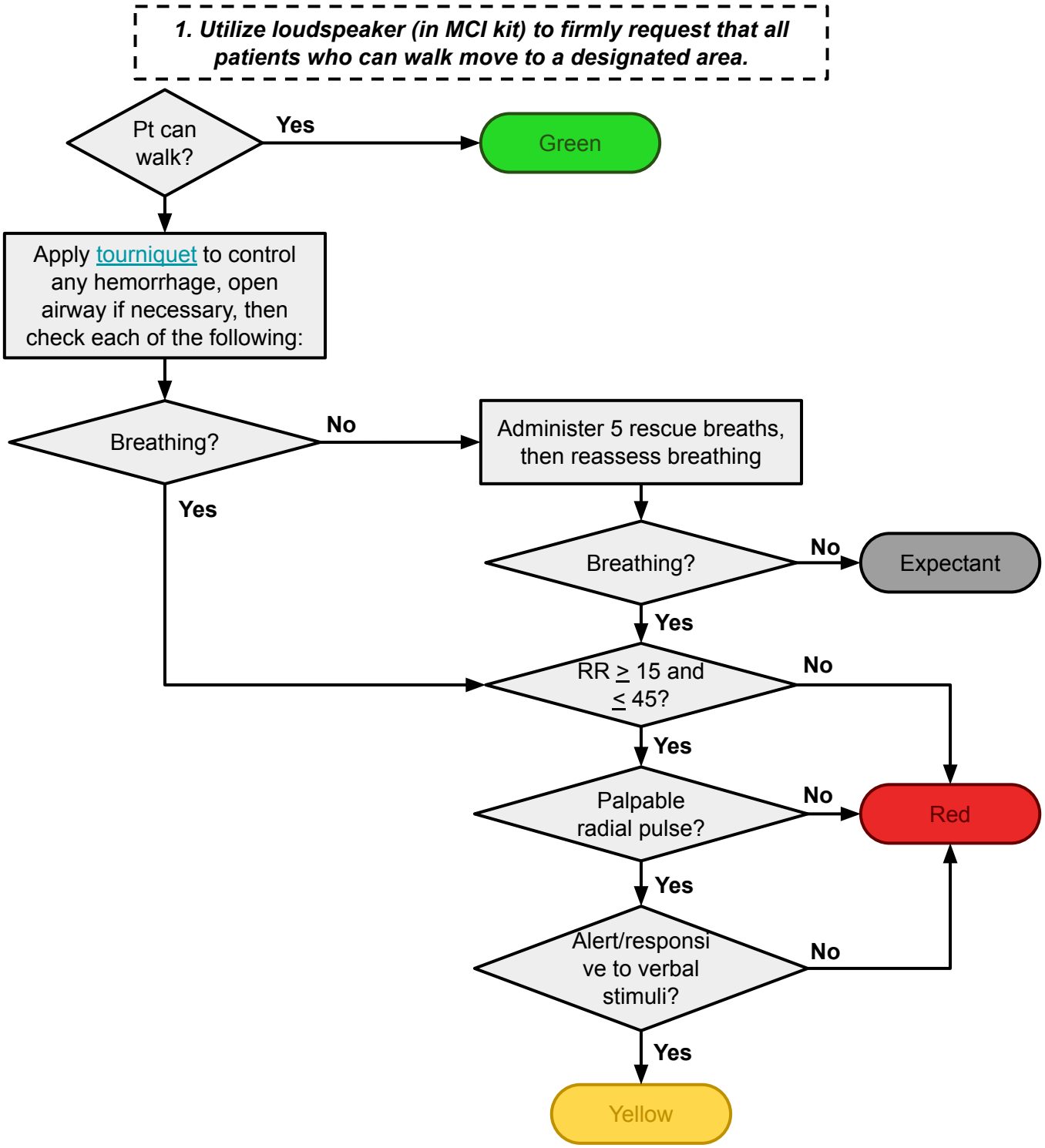
A **mass casualty incident (MCI**) occurs when the number of patients exceeds available resources. The goal of triage is not definitive care but rapid patient assessment to prioritize treatment and transport for the greatest good of the greatest number. CARS utilizes START and jumpSTART triage criteria for mass-casualty incidents. Triage should be performed quickly and efficiently - secondary care should not be provided at the point of triage.

START Triage (Adult Patients):



I.9 Mass-Casualty Incident and Triage Guidelines

jumpSTART Triage (Pediatric Patients):



I.10 Medical Command

RATIONALE	
	Medical Command is a resource available to providers anytime there is a question of how to best clinically manage a patient or when a patient's anticipated EMS care needs may fall outside the scope of these guidelines. Medical command may provide orders for providers to administer medications or interventions, so long as the medication/intervention is within the authorized VA EMS scope of practice at that provider's release level.

INDICATIONS
Medical command should be contacted when any of the following conditions are met 1. Protocol requires contacting medical command before performing an indicated action (i.e. needle decompression, termination of resuscitation) 2. Patient assessment indicates that care outside of these guidelines is required for treatment, and the EMS provider is seeking online medical control orders 3. There is a disagreement between EMS providers at the same level regarding patient care that must be urgently resolved and has not been resolved by discussion between the providers 4. EMS provider discretion

Steps:

1. To contact medical command, contact the agency OMD - Dr. Calland at (434) 242-9458 or Dr. Brookeman at (434) 806-5837. If OMD is unavailable after 1 attempt, contact receiving hospital and ask to speak to a physician for medical command.
2. Once connected, identify yourself and your request, give a brief report on the patient's condition, then restate your request.
3. All orders given via medical command should be read back to the ordering physician to ensure accurate communication.
4. All contact with medical command should be documented as a procedure as well as within the narrative of the associated PPCR, even if orders were not granted.

I.11 Medication Administration Cross-Check/Medication Safety

RATIONALE	
	Medication administration is a point in patient care at which many errors can occur (wrong medication, dose, dilution, etc.) and can result in serious harm or death. The medication cross-check is a procedure performed to reduce the incidence of these errors by repeat verification of medication parameters before administration.

Procedure:

1. Whenever possible, medications should be administered with two providers available to perform the cross-check. If not logistically feasible, the administering provider should verbally (out loud) run through the steps below.
2. First, the administering provider should verify that the second provider is ready for a cross-check. Medication cross-check should occur with a minimum of distractions whenever possible to reduce the possibility of error.
3. The first provider should verbalize the drug, dose, and route to be given, and verbalize that they have confirmed the medication is in date and the patient is not allergic.
4. The second provider should verbally repeat the drug, dose, and route to be given and concur.
5. The first provider should then show the vial and syringe containing the medication (or pills if oral medication) to the second provider and verbally state the concentration and volume (i.e. “I have 1 mL of fentanyl 50 mcg/mL”).
6. The second provider should then repeat this back to the first provider verbally.
7. At this point, the administering provider may administer the medication.

Other Medication Safety Guidelines:

1. All medications that are drawn up for later administration or mixed in an IV bag for administration **must** be labeled at the time of drawing up or mixing the medication
2. Medication labels should be read multiple times by the administering provider - at least once on removal from the drug box and once immediately prior to administration.

High-Alert Medications at CARS:

Epinephrine	Midazolam	Fentanyl
Ketamine	Metoprolol	Amiodarone

I.12 Patient Advocacy/Safety Challenge Process

RATIONALE

In high-reliability systems, it is important that all team members feel empowered to speak up about safety concerns. This protocol is intended to establish a standard process by which team members of all release levels can feel empowered to challenge an action they feel is unsafe or raise a safety concern at any time. Use “CUS words” - Concerned, Uncomfortable, unSafe!

Procedure:

1. Any team member of any release level can utilize this protocol at any time during a call when something they believe to be unsafe is occurring.
2. CARS utilizes the “concerned-uncomfortable-stop for safety” approach.
3. When a potential safety issue is recognized, start by raising the concern with your team/team leader by stating “**I am concerned that…**”
4. The team leader or other team members should reply with their reasoning for the decision being made or the way that the safety issue is being addressed.
5. If the safety issue is not resolved, the concerned member should escalate by stating “**I am uncomfortable with …**”
6. Providers should recognize the use of the “uncomfortable” terminology as the second phase of escalation, and further explain their reasoning/the mitigation measures
7. If the safety issue remains unresolved/inadequately addressed, the concerned member should state “**stop, it is unsafe to continue because …**”
8. Ultimately, decision-making lies with the highest level released provider on scene. However, this provider should address and respond to concerns by anyone on scene. If safety concerns are brought up in this manner and inadequately addressed after escalation, an SIR should be submitted.

Example:

1. *Bob and Jimmy are a paramedic/AEMT crew responding to an ALS unconscious. Upon arrival, they determine that the patient is suffering from a hypoglycemic event, and requires dextrose administration.*
2. *Jimmy, the AEMT, is managing the airway and obtaining vital signs, while Bob, the paramedic, is establishing an IV. The patient has difficult IV anatomy, so Bob is only able to obtain a 22ga in the patient’s wrist after 1 unsuccessful attempt.*
3. *As Bob prepares the dextrose, Jimmy flushes the IV with saline, and notices it is quite difficult. Jimmy states “Bob, I am concerned about our IV being infiltrated”*
4. *Bob says “I’m sure it’s fine, I just placed it.” Bob continues preparing the dextrose to administer.*
5. *Jimmy escalates his concern by saying “Bob, I’m uncomfortable with giving dextrose through this IV due to the extravasation risk, I really think we should try again or go with glucagon”*
6. *Bob says “Don’t worry, I’ve been a paramedic a long time, I know when the IV is patent or not” and motions to administer the dextrose.*
7. *Jimmy further escalates by stating “Bob, STOP. It is not safe to give hypertonic dextrose through a potentially faulty IV”*
8. *Bob recognizes the severity of Jimmy’s concern and re-tests the IV, finding it not patent. The team decides to administer glucagon and the safety issue was avoided.*

I.13 Patient Refusal of Care

RATIONALE	Patients with capacity have a right to refuse any or all aspects of EMS care. **Refusals** can nonetheless be some of the most challenging calls in EMS and frequently have difficult ethical and medico-legal questions that must be answered. EMS providers should have a low threshold for contacting medical command or supervising units to assist on these incidents.

INDICATIONS
- Patients who have capacity expressing a desire to refuse EMS treatment or transport.

Procedure:

1. Determine whether the patient has capacity to refuse. A patient with capacity must:
    a. Understand the nature of their illness/injury and the risks they are accepting by refusing treatment and transport
    b. Not be significantly intoxicated by drugs or alcohol
    c. Not meet criteria for a psychiatric emergency custody order. Under VA Code § 37.2-808, a psychiatric ECO may be issued when “probable cause to believe that any person (i) has a mental illness and that there exists a substantial likelihood that, as a result of mental illness, the person will, in the near future, (a) cause serious physical harm to himself or others as evidenced by recent behavior causing, attempting, or threatening harm and other relevant information, if any, or (b) suffer serious harm due to his lack of capacity to protect himself from harm or to provide for his basic human needs, (ii) is in need of hospitalization or treatment, and (iii) is unwilling to volunteer or incapable of volunteering for hospitalization or treatment.”
        - *If there is any question as to a patient’s capacity, providers should contact medical command.*
2. If a patient has capacity, EMS providers should do all of the following before obtaining a refusal:
    a. Inform the patient of the risks of their refusal. Emphasize any possible life-threatening complications that could arise from the patient’s condition. Never downplay the risks of a refusal of treatment/transport.
    b. Inform the patient that EMS is incapable of fully assessing their condition in the field. Providers may describe possible needs that cannot be met in the field (i.e. X-ray for orthopedic injury, etc.). Emphasize that EMS providers are not physicians and do not have sufficient training to make diagnoses in the field.
    c. Recommend that the patient receive follow-up care with a primary care physician or other physician as appropriate.
    d. Ensure the patient knows that they can call EMS back at any time and their refusal of care now does not affect their ability to receive care at any future time.
3. For documentation, ensure the patient has signed the refusal of care and you have obtained a witness signature (order of preference is family/friend > bystander > police > fire > your own crew members).

(continued on next page)

I.13 Patient Refusal of Care

PEDIATRICS

- For pediatric patients, the parent/guardian or person acting “in loco parentis” (a person in whom the care of the child is trusted i.e. teachers, school bus drivers, babysitters (if adult)) has the right to refuse or consent to treatment.
- **In patients under 4 years of age, if the parent/guardian wishes to refuse, medical command must be contacted to discuss the refusal with the parent/guardian (Obtain physician name)**
- Patients under 14 years of age cannot independently refuse treatment, except in cases relating to pregnancy
- Patients 14-17 years of age may independently refuse treatment/transport unless parents/persons *in loco parentis* direct otherwise. Efforts should be made to contact the patient’s parents if they are not on scene. Contact medical command if disagreements arise.

SPECIAL CONSIDERATIONS

- Medical ECOs
  - In the case where a patient is believed not to have capacity due to a medical illness, a surrogate healthcare decision maker (immediate family, healthcare power of attorney) is not available, and the patient expresses intent to resist treatment/transport, a medical emergency custody order (ECO) can be obtained.
  - A surrogate decision maker can consent for medical treatment for the patient if they do not have capacity themselves. This includes medication administration to facilitate safe transport to a healthcare facility by EMS
  - Medical ECOs require a licensed physician to certify to the magistrate that the patient does not have capacity to refuse treatment/transport due to a potentially life-threatening medical illness that requires urgent treatment. If the magistrate agrees, the patient will then be taken into custody by law enforcement to facilitate medical treatment. Discuss with medical control if you have questions regarding capacity. See Virginia Code § 54.1-2986 regarding surrogate decision makers.
  - The medical ECO process can often be lengthy, and the best approach is typically to simultaneously initiate the process and continue to convince the patient to accept treatment/transport. To initiate this process, contact medical command and your R-107.

PEARLS

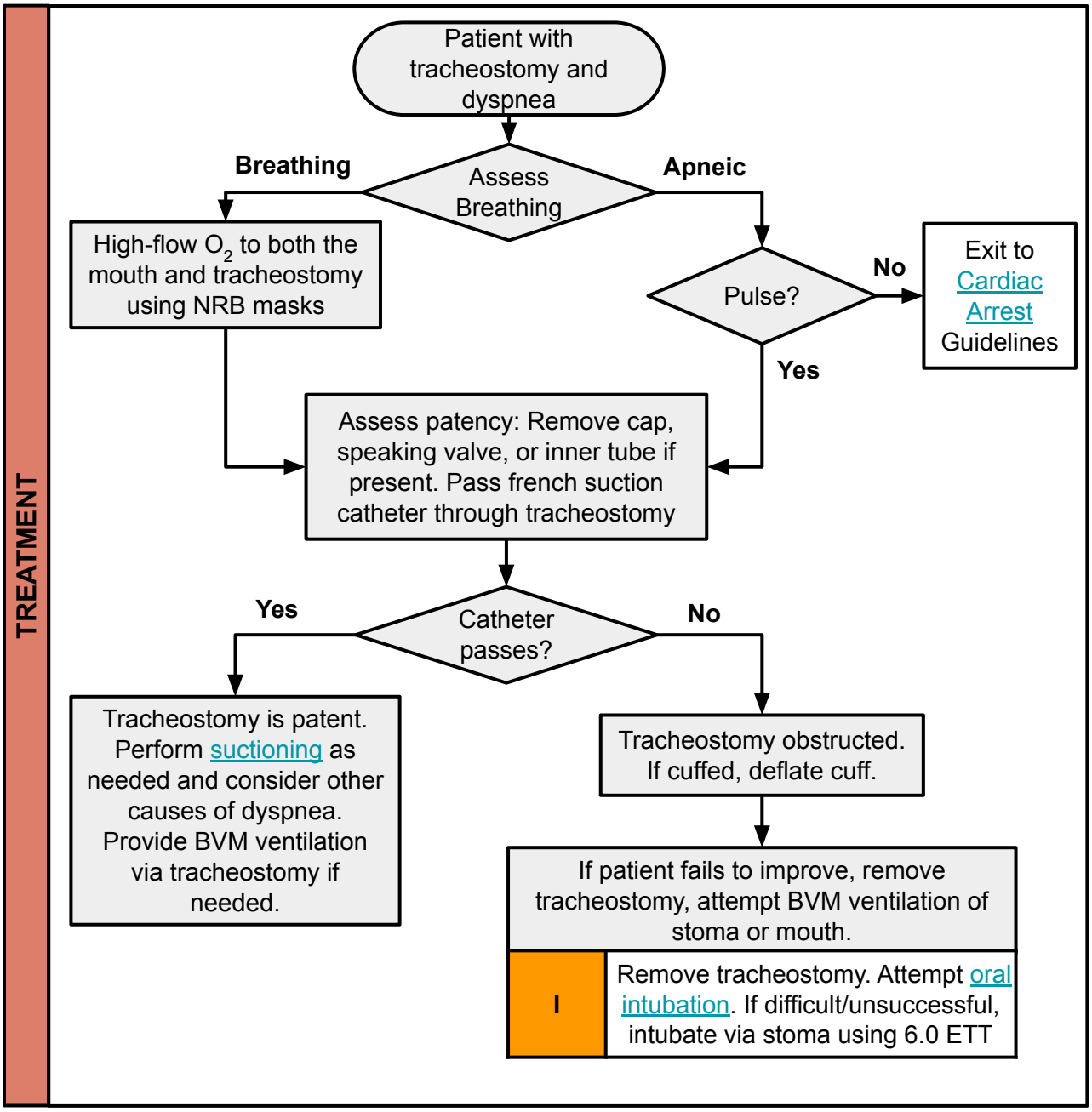
- For refusals in which the patient may need follow-up behavioral healthcare, or those relating to major substance use concerns, consider a referral to the HART (ACFR) or ANCHOR (CFD) team. During business hours, they may be requested from ECC, or outside normal hours providers may use the ImageTrend checkbox or email the team directly at anchor@charlottesville.gov.

I.14 Tracheostomy Emergency

RATIONALE

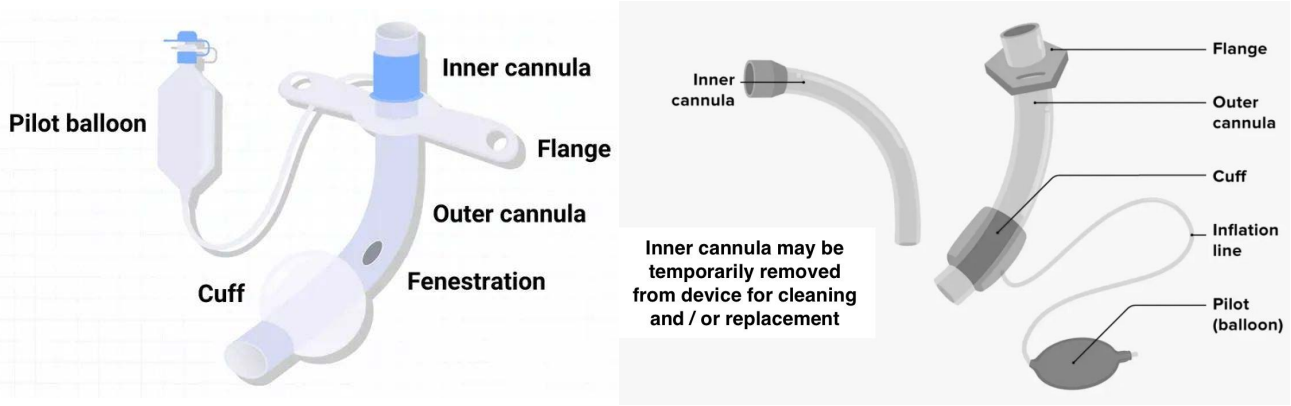
Tracheostomies can become dislodged or obstructed with foreign bodies or secretions and this can result in dyspnea or apnea. Rapid assessment and intervention is critical in these situations, as they can lead to complete airway loss and rapid death if not appropriately managed. In cases of tracheostomy patient with dyspnea, ALS should be summoned early to manage potential airway complications.

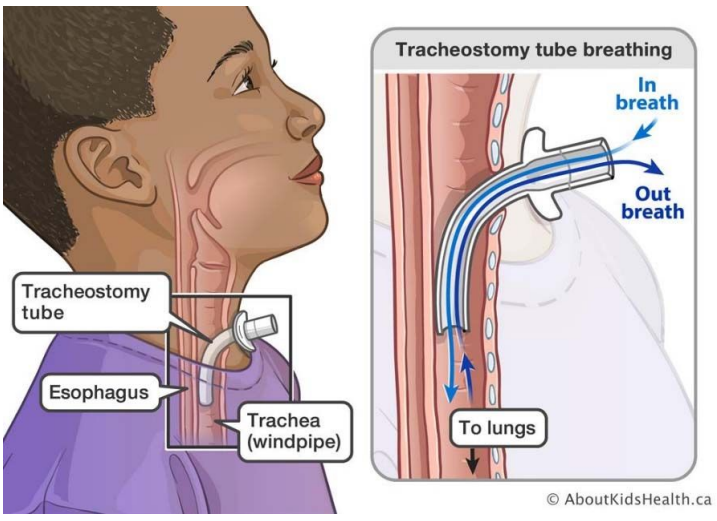
TREATMENT



I.14 Tracheostomy Emergency

PEARLS	
	• Tracheostomies can be cuffed or uncuffed. The main way to tell externally is to observe for the presence of the pilot balloon, which is used to inflate/deflate the cuff. • A mature tracheostomy is much safer to remove/reinsert than a new one, as the wound has healed and there is less chance of a false passage. Make sure to determine how recently the patient received their tracheostomy. • Patients with tracheostomies may have difficulty speaking depending on whether they are inflated/deflated and if they have a speaking valve. • If the trach has been removed, a stoma (hole in the trachea) is left. A peds NRB or peds BVM mask can be used for oxygenation and ventilation through the stoma in cases of emergencies.





I.15 Transfer of Care to Provider of Lesser Certification Level

RATIONALE

When caring for a prehospital patient, the patient's condition, availability of resources, and providers' scope of practice and experience levels must be considered in the determination of which unit and provider is to be the primary care provider (AIC) for the patient. All decisions should be made in the patient's best interest based on current and anticipated care needs.

Procedure:

- When an ALS unit makes patient contact with or after a BLS unit, the primary ALS provider should perform an ALS assessment to determine the patient's need (or lack thereof) for ALS care.
- A BLS unit that arrives on scene with enough lead-time to perform a patient assessment may cancel an incoming ALS unit based on findings.
- A BLS unit dispatched without an incoming ALS resource who encounters the following findings should consider adding ALS to the call, keeping in mind that the closest ALS resource may be the destination facility.
- If an ALS provider makes patient contact, the ALS provider must be added as a crew member, and an ALS assessment should be documented by one of the following methods:
    - An addendum to the BLS unit's call sheet briefly documenting findings; example: ALS assessment performed, pt complaining of dyspnea, speaking in full sentences w/o increased work of breathing, vitals stable, 12-lead unremarkable, no ALS care required.
    - A call sheet for the ALS provider's response vehicle (if desired or if BLS call sheet cannot be accessed) with short narrative as described above.

PEARLS

- If multiple levels of ALS provider are on scene, the providers should jointly determine the level of ALS care required for the patient with the patient's best interest in mind, and do not need to abide by the protocol criteria (i.e. a paramedic may transfer care to an AEMT to serve as the AIC for acute hypoglycemia)
- In cases where system resources are low (i.e. calls are holding), additional consideration can be made for the ideal distribution of resources at discretion of highest provider level on scene - as always, make decisions with the patient's best interests in mind

(continued on next page)

I.15 Transfer of Care to Provider of Lesser Certification Level

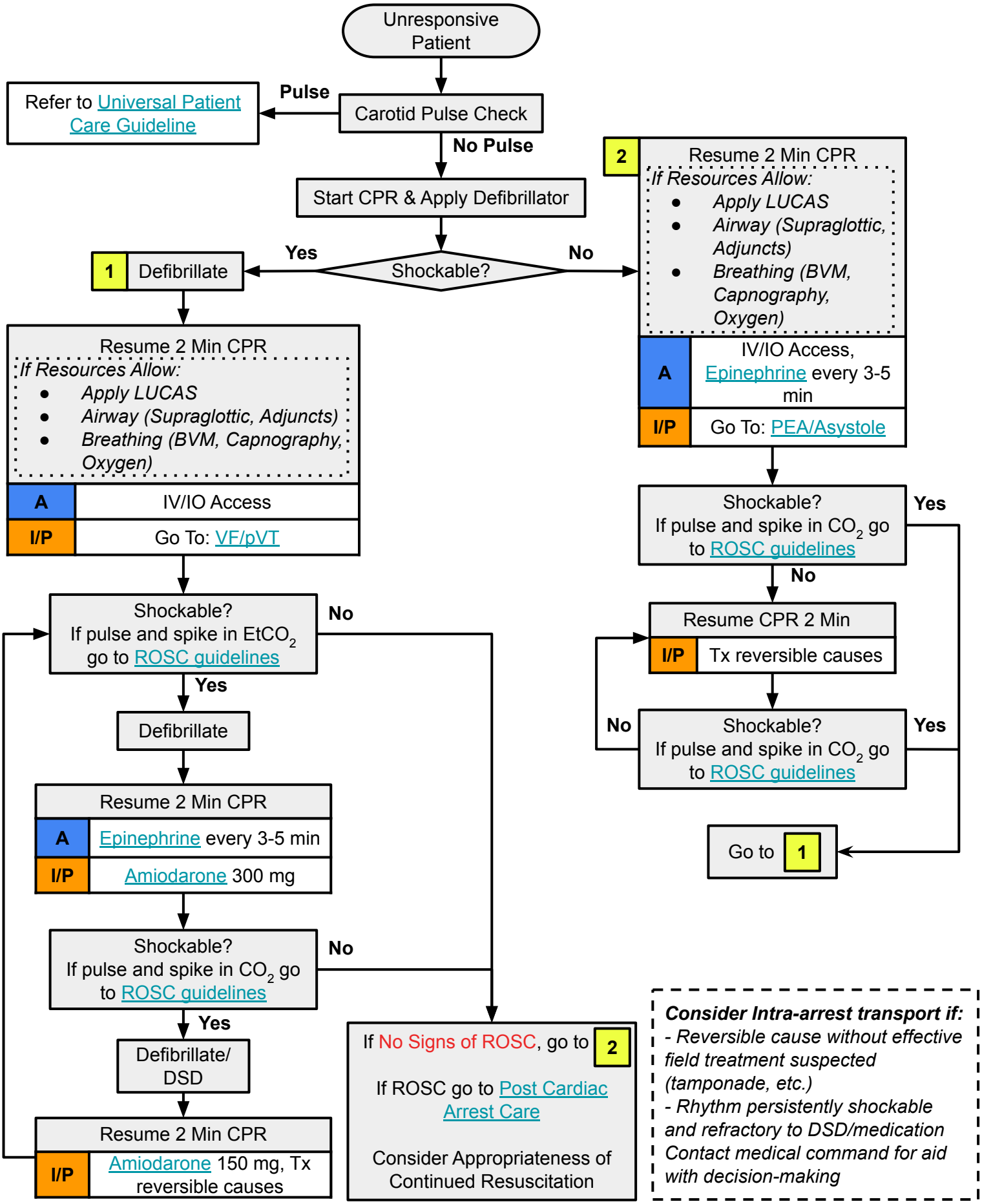
Criteria *If any of the following are present, the ALS provider should strongly consider running the call into the receiving facility:*	

Neurological	- Acute onset stroke symptoms
	- Substantially diminished mentation
	  - GCS ≤ 12 if GCS 15 at baseline
	  - GCS diminished by 2 or more points from baseline
	- Hypoglycemia not resolved by oral glucose
	- Seizure not returned to baseline or multiple seizures
	- Acute agitation/aggression/psychosis not resolved by verbal de-escalation with provider/patient safety concerns

Airway	- Anticipated need for any airway management procedures beyond positioning - Pts w/ suspected ETOH intoxication requiring only an NPA may be transferred at provider's discretion
Respiratory	- Respiratory distress w/ rate < 10 or > 24 - Acute hypoxia not resolved by ≤ 6 lpm oxygen by nasal cannula
Cardiac	- Acute Bradycardia/tachycardia (HR < 50 or > 130) - Acute hypotension (Systolic BP < 90 or MAP < 65) - EKG indicating STEMI or ischemia/infarction, especially if patient endorses anginal equivalent or concern for ACS
Trauma	- Patients meeting UVA trauma alert criteria
Additional Circumstances	- ALS medication (including naloxone and epinephrine) administered by any EMS provider - Imminent or in-progress childbirth - Fundamental clinical concern for any other reason - ALS procedure performed (not to include ECG interpretation)

SECTION II: CARDIAC

II.1 Cardiac Arrest (General/BLS Care)



II.1 Cardiac Arrest (General/BLS Care)

RATIONALE

Cardiac arrest is the absence of effective cardiac contraction that immediately results in systemic circulatory failure. Rapid recognition and treatment of lethal dysrhythmias provide the best opportunity for a return of spontaneous circulation (ROSC). Prehospital goals are to identify and treat dysrhythmias and their underlying causes in order to achieve ROSC.

TREATMENT

- All efforts should be directed towards team-based, high-quality CPR and early defibrillation (when appropriate) with limited interruptions.
- Defibrillation pads should be placed either in the Anterior-Posterior (A-P) placement (preferred) or Anterior-Lateral (A-L). The rhythm should be analyzed as soon as possible.
- Monitor capnography.
- Airway management (e.g. NPA, OPA, Supraglottic) should be accomplished as appropriate for patient and resources.

A

- Establish IO/IV access.
- Administer 1 mg epinephrine 0.1 mg/mL every 4 minutes; if shockable defer until after 2nd defibrillation
- Consider up to 1 L normal saline IV/IO if no signs of fluid overload

I

- For Shockable Rhythms:
  - Give Amiodarone 300 mg IO/IV after the 3rd defibrillation.
  - Give Amiodarone 150 mg IO/IV 3-5 minutes after the first dose
- For Renal/Dialysis patient with suspected hyperkalemia:
  - Give Calcium Gluconate 1 gram IO/IV and Sodium Bicarbonate 50 mEq IO/IV after the first dose of standard ACLS medications.
  - Be sure to flush well between medications or use a separate line.
- For Torsades de Pointes:
  - Give Magnesium Sulfate 2 grams IO/IV in 100 mL D5W over 5 minutes in lieu of Amiodarone.
- Consider H's & T's early, and refer to Special Resuscitation Circumstances/Reversible Causes guideline.

SPECIAL CONSIDERATIONS

- Make room to work early. Resuscitation is based on proper planning and execution. Procedures require space and patient access. Move the patient into a space with adequate room as soon as resources are available.
- Sodium bicarbonate should NOT be given for prolonged downtime or "respiratory acidosis." It is ONLY indicated for highly suspected metabolic acidosis.

II.2 Special Resuscitation Circumstances/Reversible Cause Treatment

Condition	Actions/modifications to algorithm
Hypoxia	Consider obtaining an advanced airway early in resuscitation. Otherwise manage as normal.
Hypothermia	Perform warming as described in hypothermia protocol. Handle patient with gentle movements. Administer only 1 shock and one dose of indicated medications until body temperature exceeds 30 ℃.
Acidosis	Treat under standard guidelines.
Hypovolemia	Administer 1-2 L normal saline via IV/IO infusion under pressure. Patients with suspected hemorrhagic etiology should be transported rapidly if resuscitation is being performed.
Hyperkalemia	If patient shows ECG findings suggestive of hyperkalemia, or has history of ESRD, administer 1 g calcium gluconate and 50 mEq sodium bicarbonate via IV/IO push. If using the same line for both medications, flush with 30 mL normal saline between administrations.
Cardiac Tamponade	If suspected or identified on ultrasound, consider intra-arrest transport for pericardiocentesis procedure.
Tension pneumothorax	If cardiac arrest with penetrating chest trauma or blunt trauma, consider needle decompression (on standing order)
Thrombosis	Manage with normal ACLS procedure.
Toxicology	Refer to appropriate toxicology guideline.
Pregnancy	Utilize left manual uterine displacement during compressions. Do not utilize LUCAS device. Otherwise, perform normal ACLS procedure. If short downtime and short transport, consider rapid intra-arrest transport for perimortem caesarean delivery.

II.3 ALS: Ventricular Fibrillation/Pulseless Ventricular Tachycardia

RATIONALE

VFib and pulseless VTach are shockable cardiac arrest rhythms caused by disorganized or rapid ventricular activity that prevents effective cardiac output. Early high-quality CPR and rapid defibrillation are the most critical interventions for survival. Defibrillation aims to depolarize myocardial cells simultaneously, allowing the heart's intrinsic pacemaker to regain control. Administration of epinephrine supports coronary and cerebral perfusion, while antiarrhythmics (e.g., amiodarone or lidocaine) help stabilize the myocardium and reduce recurrence.

TREATMENT

- Perform Cardiac Arrest General/BLS Care

–

- As soon as practicable, administer initial defibrillation at 200 J.
- Perform rhythm checks every 2 minutes with defibrillator pre-charged to maximize chest compression fraction.
- Utilize escalating doses for subsequent defibrillations (200 J - 300 J - 360 J)
- Following second defibrillation, administer 1 mg epinephrine 0.1mg/mL IV/IO. Repeat every 3-5 minutes while patient remains in cardiac arrest.
- Following third defibrillation, administer amiodarone 300 mg IV/IO. If no ROSC 5 minutes after administration of initial amiodarone, administer amiodarone 150 mg IV/IO.
- After 2 unsuccessful defibrillation attempts with no rhythm change, consider double-sequential external defibrillation.
- For persistent VF/pulseless VT in a patient without substantial comorbidity, consider intra-arrest transport for possible ECMO initiation. Contact medical command for assistance with decision-making.

II.3 ALS: Pulseless Electrical Activity/Asystole

RATIONALE	**PEA and asystole** are non-shockable cardiac arrest rhythms where defibrillation is not effective. Management focuses on immediate high-quality CPR to maintain circulation and rapid administration of epinephrine to improve perfusion pressures. Identifying and treating reversible causes (the “Hs and Ts” such as hypoxia, hypovolemia, acidosis, tension pneumothorax, tamponade, toxins, thrombosis) is essential to address the underlying problem. Prognosis is generally poor, but adherence to protocol ensures that reversible causes are not missed and that patients receive the best chance at achieving return of spontaneous circulation (ROSC).

TREATMENT		• Perform Cardiac Arrest General/BLS Care
	A	• Obtain IV/IO access as soon as practical
	I	• Administer 1 mg epinephrine 0.1 mg/mL IV/IO. Repeat every 3-5 minutes. • Secure advanced airway. SGA and ETT are equally acceptable as first-line airway devices. If initial intubation attempt unsuccessful, utilize SGA unless contraindicated. • Search for and treat reversible causes as listed in Special Resuscitation Circumstances. • For witnessed arrest with no substantial comorbidities, consider intra-arrest transport for ECMO initiation. Contact medical command for assistance with decision-making.

II.4 Post-Resuscitation Care (ROSC)

RATIONALE

Return of spontaneous circulation (ROSC) is the return of a perfusing rhythm after cardiac arrest. It is often indicated by a sudden rise in end-tidal CO_2, palpable pulses, increased blood pressure, organized rhythm with perfusion, or patient movement. Recognition allows EMS to shift to post-arrest care: maintaining oxygenation/ventilation (avoiding hyperoxia and hypocapnia), supporting circulation with fluids or pressors, and addressing reversible causes. Prompt stabilization helps prevent re-arrest and improves survival and neurologic outcomes.

TREATMENT

- After ROSC verified, the following are goals of care throughout remainder of treatment:
  - Maintain SpO_2 92-96%. Hyperoxia has been shown to be harmful in ROSC
  - Maintain $EtCO_2$ 35-45 mmHg by managing depth and rate of ventilation.
  - Maintain MAP > 65 mmHg
- Obtain a full set of vitals before moving the patient. Wait for at least 7 minutes while optimizing oxygenation and perfusion before initiating patient transport.
- Obtain a 12-lead ECG no sooner than 7 minutes following ROSC. 12-lead ECGs immediately following ROSC have been shown to have high false-positive rates, likely due to reperfusion injury.
- With each patient movement, reverify airway placement. Consider placing a cervical collar to minimize neck flexion and risk of airway device dislodgement.

–

- Consider early vasopressor initiation to prevent hypotension. Norepinephrine is generally preferred over epinephrine.
- Refer to HYPOTENSION, AIRWAY MANAGEMENT, and post-airway management sedation protocols as needed.

II.5 Tachycardia

RATIONALE

Tachycardia in adult patients is generally defined as a heart rate greater than 100 bpm and can be a sign of a wide variety of disease processes. In particular, tachycardia is often the first noticeable sign of a compensated shock state. For purposes of EMS care, apply this protocol when you have a patient with a sustained resting HR > 140 bpm.

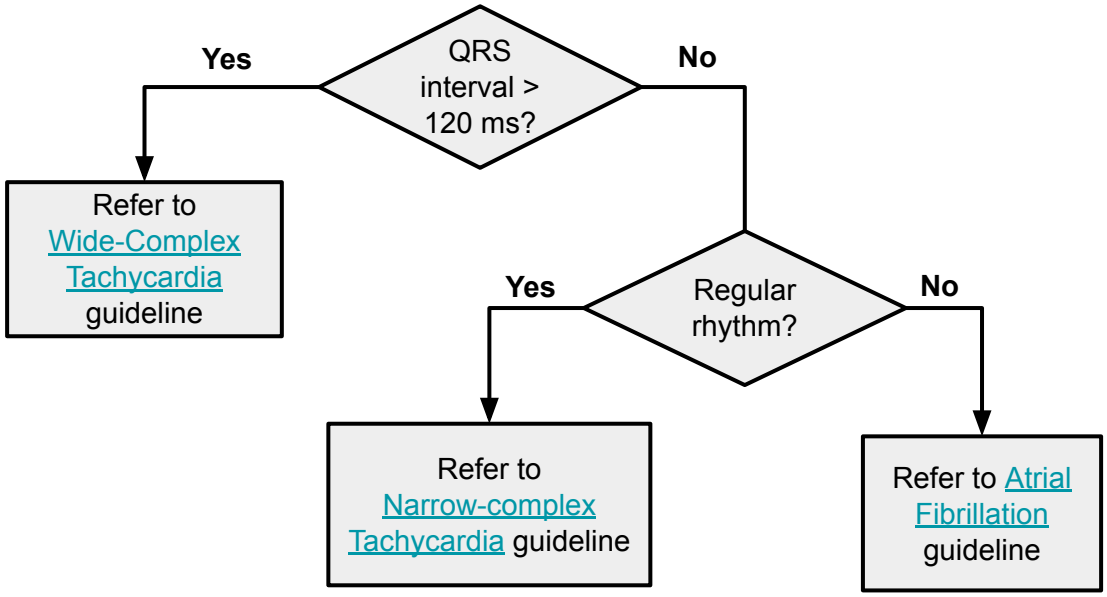
TREATMENT

- Perform Universal Patient Care.
- Obtain 12-lead ECG.
- Consider underlying causes of tachycardia, including sepsis, shock, toxicological causes, withdrawal syndromes, and refer to appropriate guideline.
- Consider requesting ALS support if practical.

A

- Obtain IV access.
- Consider 500 mL normal saline IV. Repeat if needed after auscultating breath sounds. Stop if pulmonary edema develops.

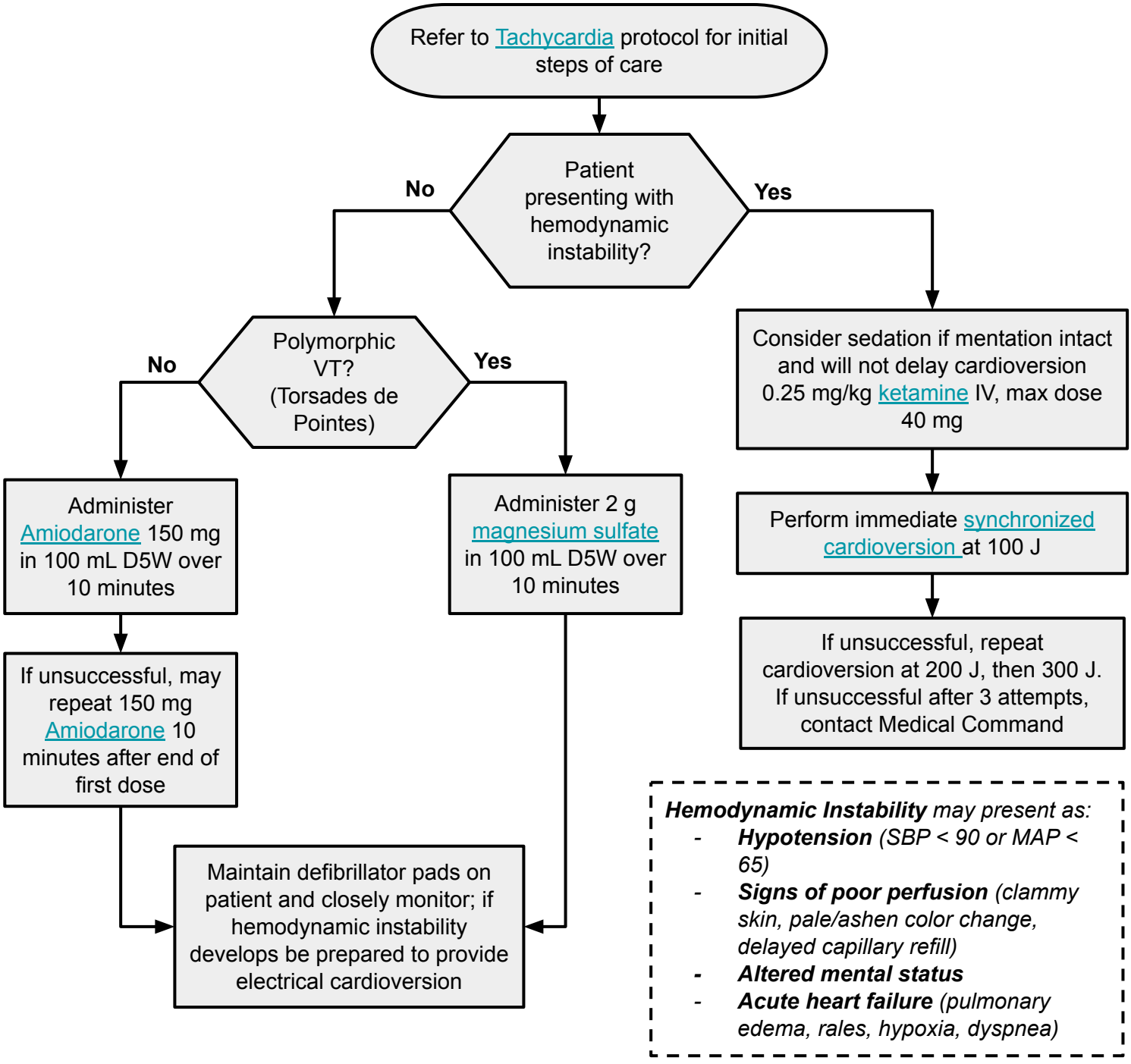
I



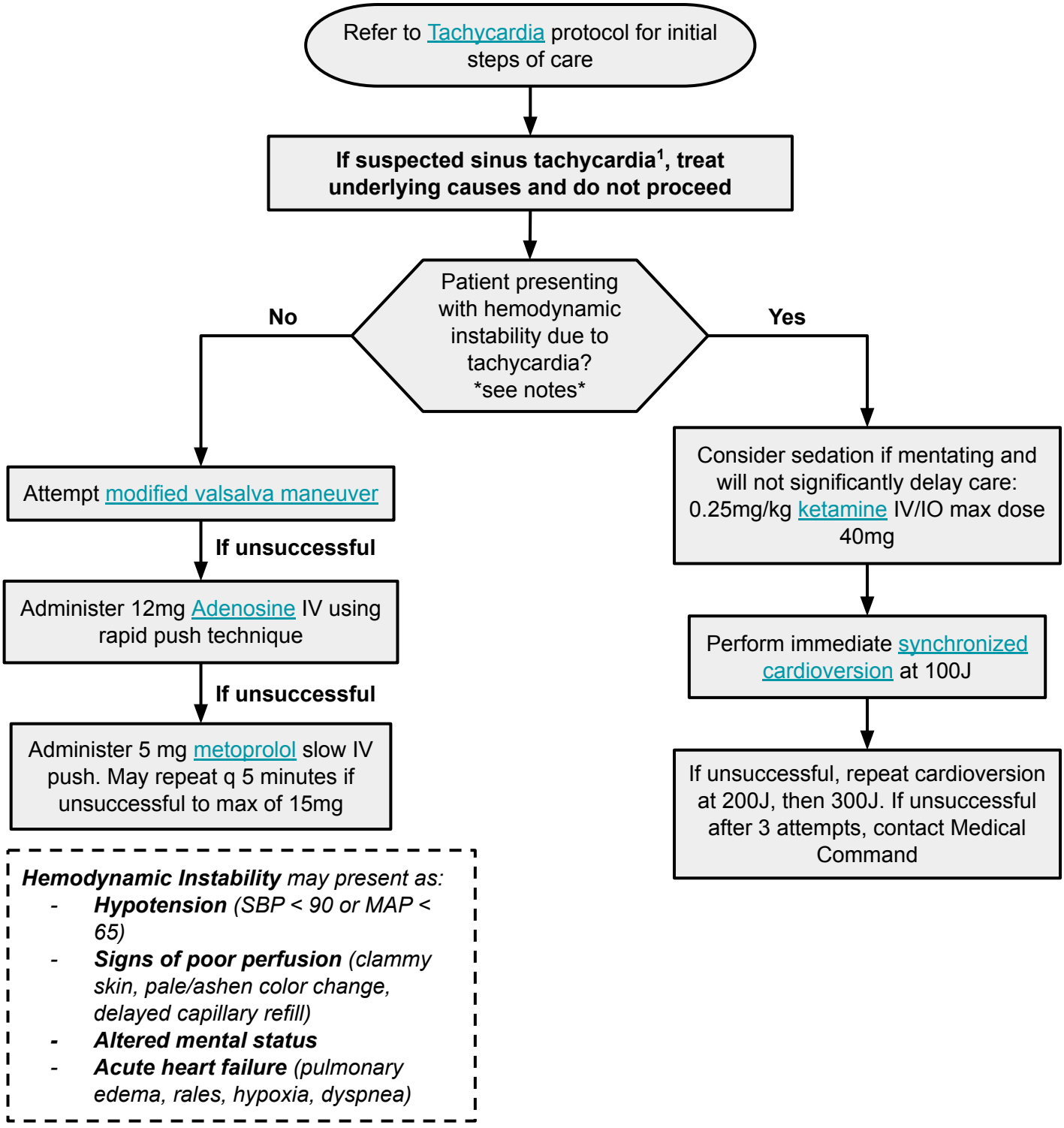
PEARLS

- ALS: At rapid rates, atrial fibrillation with RVR and atrial flutter may be difficult to differentiate from SVT. If QRS is narrow, consider using adenosine 12 mg rapid push IV diagnostically to differentiate rhythm origin.

II.6 ALS: Wide-Complex Tachycardia

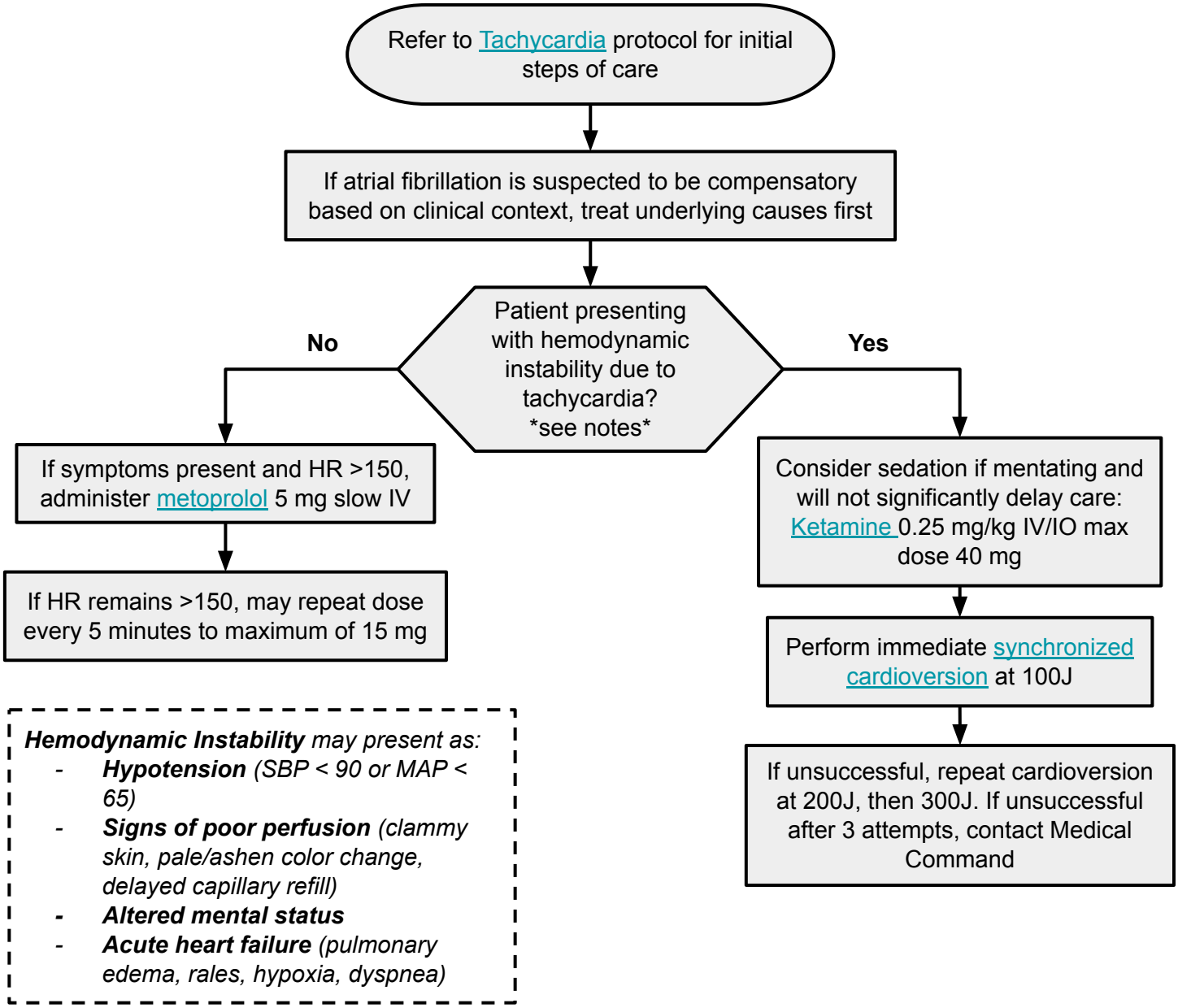


II.6 ALS: Regular Narrow-Complex Tachycardia



[1]Sinus tachycardia is typically compensatory for another disease process, presents with P-waves, varies with activity level, and has a more gradual onset of symptoms. Reentrant tachycardias (SVT) do not have P-waves, appear rapidly, and do not have variable rates.

II.7 ALS: Atrial Fibrillation with Rapid Ventricular Response



Hemodynamic Instability *may present as:*

- ***Hypotension*** *(SBP < 90 or MAP < 65)*
- ***Signs of poor perfusion*** *(clammy skin, pale/ashen color change, delayed capillary refill)*
- ***Altered mental status***
- ***Acute heart failure*** *(pulmonary edema, rales, hypoxia, dyspnea)*

PEARLS

- Atrial fibrillation often occurs as a compensatory mechanism rather than as a primary dysrhythmia. In cases where there is coexisting sepsis, hemorrhage, hypoxia etc. treat the underlying cause rather than attempting rate control
- Use caution with treatment of stable atrial fibrillation. Prolonged atrial fibrillation increases risk of atrial appendage clot formation, and without adequate anticoagulation subsequent rate control/cardioversion can cause thromboembolic stroke when atrial contraction is restored

II.8 Bradycardia

RATIONALE

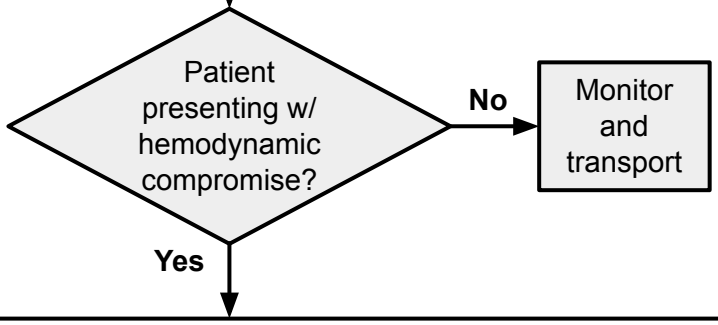
Bradycardia, defined for this protocol as a heart rate less than 50 beats per minute in adults, can be a normal physiologic finding or a sign of serious underlying pathology. In the EMS setting, it is critical to rapidly distinguish between stable and unstable presentations. Causes range from hypoxia, hypothermia, and medication effects to conduction system disease and myocardial infarction. Providers should assess for signs of poor perfusion—such as hypotension, altered mental status, chest pain, or shock—and initiate appropriate interventions including airway support, oxygenation, and, when indicated, pharmacologic or electrical therapy.

TREATMENT

- Perform universal patient care, emphasize oxygenation as a possible cause of bradycardia.
- Obtain 12-lead ECG within 10 minutes of patient contact. If ECG automated interpretation reads ***Acute MI***, refer to STEMI Alert guideline.
- Consider possible causes, emphasizing hypoxia, hypothermia, hemorrhagic shock, toxicology, and increased intracranial pressure.
- Consider requesting ALS support if practical.

A

- Establish IV access.



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- Administer atropine 1 mg IV/IO. If incomplete response, may repeat in 3 minutes for a maximum of 2 mg.
- If atropine impractical or unsuccessful, perform transcutaneous pacing
- If unable to obtain capture or patient remains hypotensive, administer 10-20 mcg 10 mcg/mL push-dose epinephrine IV/IO repeated q1-2 minutes PRN, and consider 2-10 mcg/min epinephrine drip IV/IO.

PEARLS

- Heart transplant patients do not have intact parasympathetic innervation and will therefore not respond to atropine.
- Bradycardia should be treated only if it is suspected to be the *cause* of the symptoms of hemodynamic instability
- In bradycardia caused by trauma, focus on standard trauma management rather than cardiac interventions.

II.9 Chest Pain/AMI

RATIONALE	**Chest Pain** is a common presenting complaint for prehospital patients, and the differential is broad and ranges from life-threatening conditions to minor musculoskeletal pains. Chest pain should be taken very seriously by the EMS provider and patients monitored closely throughout care. **Indication:** Adult patients experiencing chest pain, tightness, discomfort OR patients who have a 12-lead ECG suggestive of acute myocardial infarction

TREATMENT		• Perform universal patient care. • Obtain 12-lead ECG within 10 minutes of patient contact; If ECG automated interpretation reads ***Acute MI***, refer to STEMI Alert guideline. • Administer 324 mg aspirin PO, if not contraindicated. Instruct patient to chew tablets. • Administer oxygen **only** if patient is hypoxic - maintain SpO_2 ≥ 90%
	A	• Establish IV access. • Consider nitroglycerin 0.4 mg SL, repeated every 5 minutes as needed for pain control. Maintain systolic blood pressure > 100 mmHg. • Consider nitropaste 1” transdermally if systolic blood pressure > 100 mmHg. • If nitroglycerin is contraindicated or does not relieve pain adequately, consider 25 mcg fentanyl IV or 50 mcg fentanyl IN, may repeat once in 5 minutes if pain persists.
	I	• If ECG interpretation suspicious for acute MI, refer to STEMI alert guideline. • Consider administering fentanyl with a 50 mcg initial IV dose for pain. Dose may be repeated once 5 minutes if pain persists.

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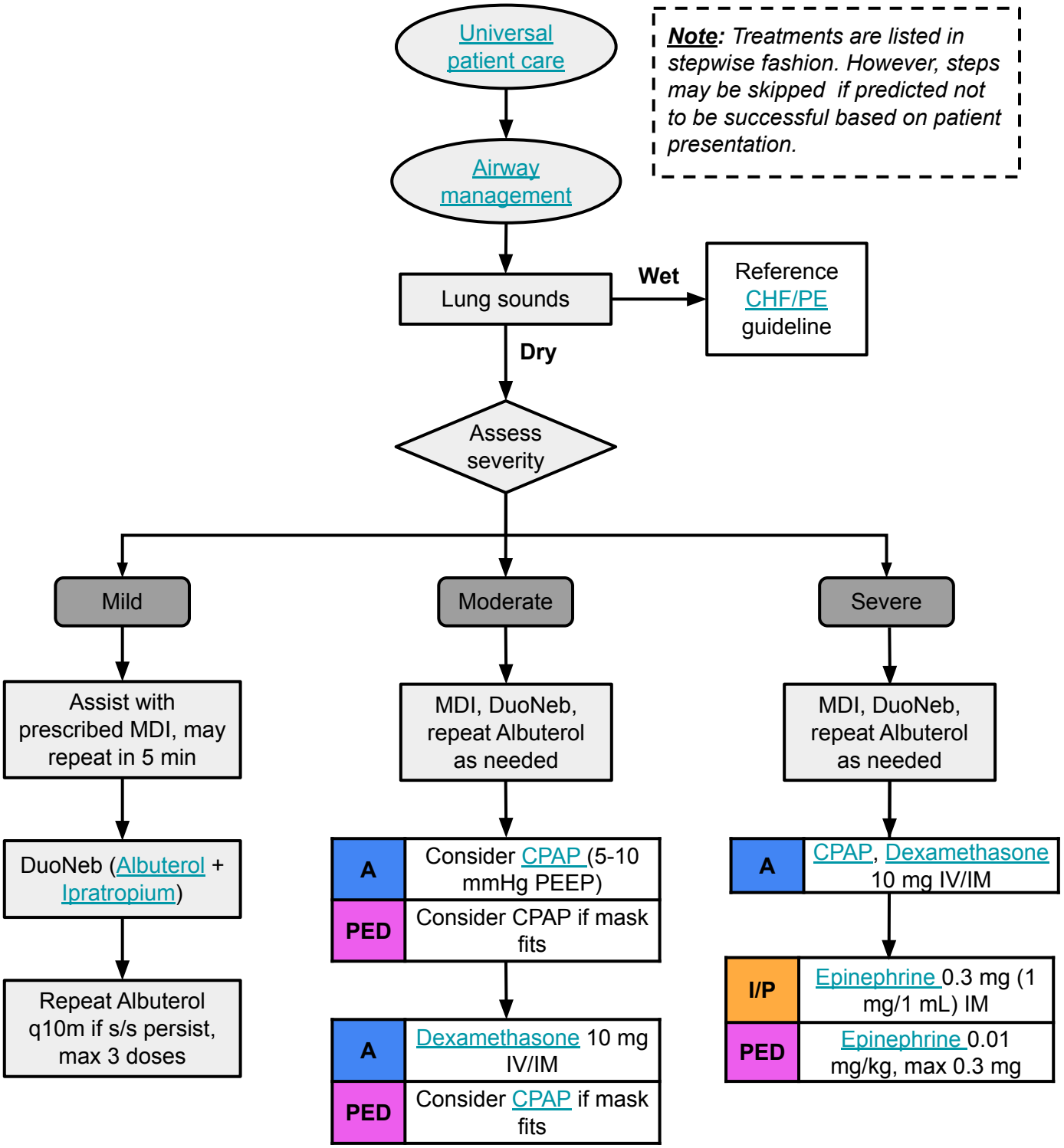
II.9 Chest Pain/AMI

PEARLS	
	• A normal 12-lead ECG is not a tool to rule out myocardial infarction, only to rule in STEMI. Many patients who are having acute myocardial infarctions may have normal or only mildly abnormal ECGs. • All patients with chest pain should be transported for further evaluation as the differential is wide-ranging and includes many dangerous conditions. Ensure you provide appropriate counseling on the risks of refusal for patients who wish to refuse. • Diagnostic findings for STEMI include ST-elevation > 1mm at the J-point in at least 2 contiguous leads in all leads except V2 and V3, where the cutoff elevation is 2 mm in men over age 40, 2.5 mm in men under age 40, and 1.5 mm in women. • In the presence of left bundle branch block or internal pacemaker, Smith-modified Sgarbossa criteria may be utilized to detect STEMI. • Obtaining initial vital signs, providing initial treatment (aspirin administration, oxygen as needed), and 12-lead ECG acquisition should occur simultaneously when possible. Do not delay taking vital signs for 12-lead ECG acquisition. • Many patients (particularly those assigned female at birth, diabetics, and elderly patients) present with atypical symptoms, which can include dyspnea, nausea/vomiting, epigastric pain, weakness, and jaw pain. Providers should have a low threshold for obtaining a 12-lead ECG if cardiac involvement is suspected. • Patients will occasionally report nausea or mild abdominal discomfort as an allergy to aspirin. In cases of chest pain, aspirin should still be administered in cases where these adverse events are reported, and should only be withheld in cases where the patient has a history of anaphylaxis (difficulty breathing, swelling).

SECTION III: RESPIRATORY

III.1 Asthma/COPD



III.1 Asthma/COPD

RATIONALE

Chronic Obstructive Pulmonary Disease (COPD) is a general term that is characterized by decreased airflow over time, inflammation of the airways, mucus production, and chronic destruction of lung tissue. It results in more permanent damage to the respiratory tissues. Emphysema and chronic bronchitis are major contributors to the diagnosis of COPD.

Asthma is an obstructive airway disease but is usually considered separate from COPD, due to its separate pathophysiology. It is a reactive, inflammatory airway disease characterized by significant bronchospasm.

Both asthma and COPD result in "air trapping," and for this reason, are treated similarly in the prehospital environment. Treatment is focused on bronchodilation and monitoring for respiratory fatigue.

TREATMENT

Grading scale:
Mild: Cough, chest tightness, speaking in full sentences, mild wheezing, may have low $EtCO_2$ values due to hyperventilation
Moderate: Anxiety, dyspnea, wheezing, diaphoresis, accessory muscle use, tachycardia, pallor and/or peripheral cyanosis, positional breathing, bronchoconstriction pattern on $EtCO_2$ ("shark fin")
Severe ("Status Asthmaticus" in Asthma): Altered mental status, hypotension, nearly silent/absent lung sounds, weak/ineffective respirations, bradycardia, 1-2 word dyspnea, central cyanosis, hypercapnia

- Administer oxygen to maintain SpO_2 > 90%.
- Place patient in position of comfort.
- Monitor $EtCO_2$.
- Assist with patient's prescribed MDI and repeat in 5 min as needed.
- Consider 2.5 mg albuterol and 0.5 mg ipratropium bromide via nebulizer. Only 1 dose of ipratropium should be given. 2.5 mg albuterol may be repeated as needed to a maximum of 7.5 mg total.

A

- For moderate cases, consider CPAP and 10 mg Dexamethasone IV/IM/PO along with nebulizer treatment. Albuterol & Ipratropium Bromide may be given via CPAP.

I

- For severe exacerbation, consider CPAP if patient is responsive and not altered.
- For severe status asthmaticus, give 0.3 mg Epinephrine IM.
- Place patient on cardiac monitor.

P

- Consider using point-of-care ultrasound to confirm diagnosis. In asthma/COPD expect to see an "A-line" profile.

(continued on next page)

III.1 Asthma/COPD

SPECIAL CONSIDERATIONS

- Peanuts and soy allergies are NOT contraindications to Ipratropium Bromide.
- When using CPAP, use the lowest effective pressure that provides symptomatic relief. Excessive pressure may result in pulmonary hyperinflation. Max PEEP is 10 cmH_2O.
- Consider verbal coaching prior to and during CPAP.
- Consider 0.1-0.2 mg/kg Ketamine IV if needed for anxiety with CPAP. May be repeated once in 5 minutes if insufficient anxiolysis is achieved.
- Consider an infectious cause (i.e., pneumonia) and sepsis.

III.2 Congestive Heart Failure/Pulmonary Edema

RATIONALE

Pulmonary Edema can have cardiogenic and noncardiogenic causes. Flash pulmonary edema is an acute accumulation of pulmonary edema that can result in a distinctive frothy, pink sputum.

Congestive heart failure (CHF) or heart failure is when the heart no longer functions effectively as a pump. CHF can be split into right and left-sided heart failure. Left-sided heart failure results in fluid backup to the lungs; right-sided heart failure results in a fluid backup to the rest of the body. Most patients have both left and right-sided heart failure.

Common signs and symptoms include:

- Orthopnea, shortness of breath
- Swelling (edema) in the ankles, legs, or feet
- Fatigue
- Crackles upon auscultation of lungs
- Reduced exercise tolerance

TREATMENT

- Administer oxygen to maintain SpO_2 > 90%.
- Apply $EtCO_2$ for complaint of difficulty breathing.
- Consider causes for dyspnea and determine severity of dyspnea.
- Obtain 12-lead ECG if indicated.

A

- Nitropaste - 1” to 2” TD
- Nitroglycerin PO - 0.4 mg SL - if SBP >180 mmHg utilize 3 tabs (1.2 mg) SL for initial dose
  - Repeat every 5 minutes for a max of 1.2 mg total provided SBP > 100 mmHg before administration
- Establish IV access
  - Strongly recommended before PO Nitro administration
- CPAP (reference CPAP protocol) if patient > 12 years old
  - Start at 5 cmH_20

P

- Consider use of point-of-care ultrasound to confirm diagnosis. Look for diffuse B-line pattern

SPECIAL CONSIDERATIONS

- Maintain proper positioning, aid in oxygenation and provide assisted ventilations as necessary. Sit patient as upright as possible.
- ALS providers can initiate medication therapy to reduce workload of the heart and potentially alleviate symptoms.
- Nitroglycerin is only effective, and should only be used, in cases of cardiogenic pulmonary edema - it will not be effective in noncardiogenic pulmonary edema (i.e. near-drowning, naloxone-induced pulmonary edema)
- Consider verbal coaching prior to and during CPAP. Refer to agitated patient guideline and consider 0.1-0.2 mg/kg Ketamine IV if needed for anxiety with CPAP. May be repeated once in 5 minutes if insufficient anxiolysis is achieved. Do not use in conjunction with pain management.

III.3 Pneumonia

RATIONALE

Pneumonia is an inflammatory condition that primarily affects the alveoli. It is a combination of pneumonitis (inflammation) and consolidation (liquid in spaces normally filled with air). Although not in the strictest sense, for the purpose of pre-hospital treatment, pneumonia is considered to be caused by an infectious agent. It commonly begins as an upper respiratory infection and is associated with a productive cough, fever/chills, shortness of breath, and sharp/stabbing chest pain with inhalation. Confusion/altered mental status is another common symptom in the elderly. Decreased mobility, chest expansion and air exchange also predispose the elderly to pneumonia.

TREATMENT

- Administer oxygen to maintain SpO_2 > 90%.
- Place patient in position of comfort.
- Place patient on $EtCO_2$ monitoring.
- If bronchospasm and/or wheezing is noted, consider DuoNeb. Only 1 dose of Atrovent should be given. Additional Albuterol doses may be repeated every 10 minutes if symptoms persist, up to a maximum of 3 doses.
  - Adult/Pediatric:
    - Albuterol - 2.5 mg nebulized
    - Ipratropium Bromide - 0.5 mg nebulized
- Obtain patient temperature.
- Assess for any SIRS and sepsis alert criteria.
- Obtain 12-lead ECG if indicated.

A

- If patient meets sepsis criteria, refer to Sepsis guideline.
- If capnograph is suggestive of bronchospasm/obstruction, consider DuoNeb.
  - If not relieved after one DuoNeb treatment, consider Dexamethasone.
    - Adult: 10 mg IV/IM/PO
    - Pediatric: 0.6 mg/kg IV/IM/PO, max 10 mg
- Consider CPAP or more aggressive airway control if necessary.
- If patient's respiratory status decreases and patient is unable to maintain their own airway, refer to the appropriate airway management guideline.

P

- Consider use of point-of-care ultrasound to confirm diagnosis. Look for isolated/unilateral "B-lines" or "C-sign" to indicate pneumonia.

PEARLS

Gather an accurate history and physical. Evaluate for adventitious lung sounds.

- Any adventitious (e.g. rhonchi, rales, wheezing) lung sounds can be present and may also be localized or diffuse.

Consider CPAP.

- Early intervention with CPAP reduces the need for intubation and improves mortality. (Pagnarith, 2011)
- In the early stages of pneumonia, inflammation and fluid collection decrease gaseous exchange in the alveoli of the affected area of the lung, resulting in atelectasis. CPAP promotes healthy alveolar expansion and increased gas exchange.

SECTION IV: MEDICAL

IV.1 Abdominal Pain

RATIONALE

Abdominal pain is a common but potentially serious complaint in the prehospital setting, with causes ranging from benign gastrointestinal discomfort to life-threatening surgical emergencies. In EMS care, the priority is early recognition of high-risk presentations such as gastrointestinal bleeding, perforation, bowel obstruction, ruptured aneurysm, or ectopic pregnancy. Providers should conduct a focused history and physical exam, monitor vital signs closely, manage pain appropriately, and be alert for signs of shock.

TREATMENT

- Universal Patient Care
- Place patient in position of comfort.
- Reference Pain Management guideline
  - Consider Acetaminophen (Tylenol)
- Reference Nausea/Vomiting guideline
  - Consider Ondansetron (Zofran) 4mg ODT q10 mins x2
- Obtain 12-lead ECG. Refer to Cardiac guidelines.
- Perform glucometry.
- Obtain patient temperature.
- Assess for any SIRS and sepsis alert criteria.

A

- Consider IV access.
- In adults, consider 500 mL bolus normal saline IV, repeated PRN up to 2 L.
- For hypotension reference Hypotension guideline.
- Reference Pain Management guideline.
  - Consider: Ketorolac (Toradol).
    - High efficacy for known/suspected kidney stone/renal colic.
    - Not recommended in trauma or possible surgical conditions[1].
  - Consider Fentanyl.

I

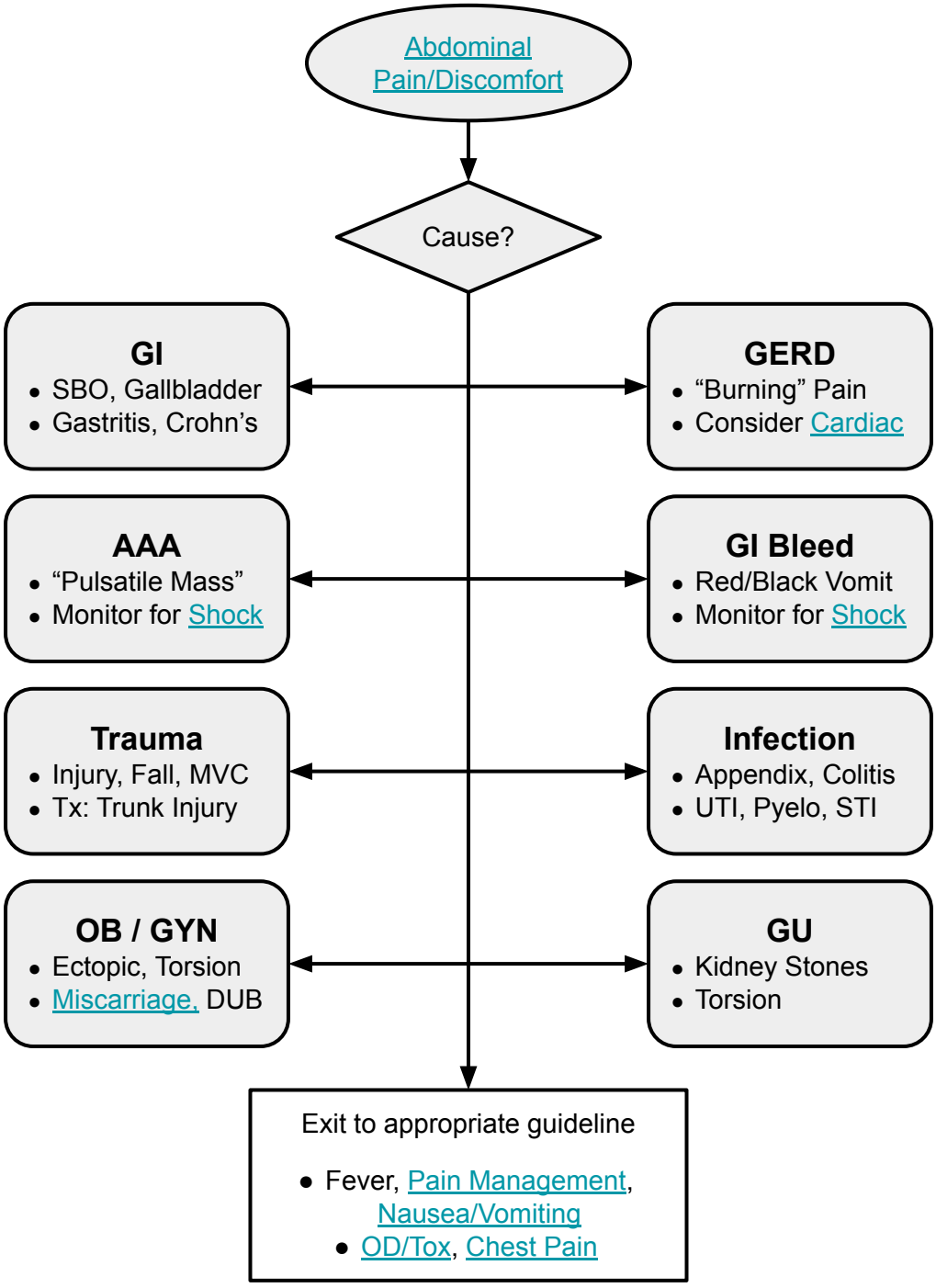
- Consider Ketamine.

PEARLS

- Gather an accurate history and physical. Assess for cardiac etiology, aortic aneurysm, ectopic or pregnancy complication, and GI bleeding.
  - Any upper abdominal pain or referred pain in certain populations (e.g. geriatric, female, and diabetic) should be cause for concern of a possible cardiac event.
- Patients with possible surgical needs should remain NPO e.g. small bowel obstruction, cholecystitis, appendicitis.

[1]Many surgical conditions (appendicitis, cholecystitis, etc.) manifest as abdominal tenderness. Use caution with administering toradol with significant tenderness on palpation of the abdomen

IV.1 Abdominal Pain



IV.2 Nausea/Vomiting (N/V)

RATIONALE

Nausea and vomiting are common symptoms in the prehospital setting that may result from a wide range of causes including gastrointestinal illness, medication side effects, pregnancy, head injury, motion sickness, or systemic disease. While often benign, persistent vomiting can lead to dehydration, electrolyte imbalances, or aspiration—especially in patients with altered mental status or impaired airway reflexes. EMS providers should focus on symptom relief, prevention of complications, and addressing underlying causes when identifiable.

TREATMENT

- Universal Patient Care & Airway Management
- Place patient in position of comfort.
- Alcohol Prep - Have patient sniff one fresh alcohol prep. (inhalation). *Only for transient relief*.
- Consider 4 mg Ondansetron ODT - may repeat once in 10 minutes..
- Obtain patient temperature, reference Hypothermia/Hyperthermia and Sepsis guidelines.
- Consider obtaining 12-lead ECG.
- Consider fever, Sepsis, OD/Tox, Hyperthermia.

A

- Consider IV access.
- In adults, consider 500 mL bolus normal saline, repeated prn up to 2 L.
- 4 mg Ondansetron IV/IM - may repeat once in 10 minutes.
- For hypotension reference Hypotension guideline.

PEARLS

- It is appropriate to pre-treat for nausea before symptoms start.
- Monitor airway closely, N/V patients are at a higher risk of aspiration and gastric contents are especially caustic to the pulmonary tissues.
- There is a vast array of possible causes of N/V including MI, CVA, migraine, hypo/hyperglycemia, pregnancy, allergic reactions, ect. N/V with diaphoresis is a sign of sympathetic nervous system activation and may be a symptom of AMI, PE or aneurysm.
- Evaluate for dehydration especially with advanced age and/or > 24 hours of N/V.
- Nasal inhalation of isopropyl alcohol wipes (alcohol prep.) are shown to provide transient relief of nausea. Consider use to bridge patient to other pharmacological treatments.

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IV.2 Nausea/Vomiting (N/V)

PEDIATRICS

- For infants, assess for fontanelle depression as a sign of dehydration.
- For Nausea/Vomiting consider Ondansetron
  - Age > 4 years: Adult dose (IV/IM/PO)

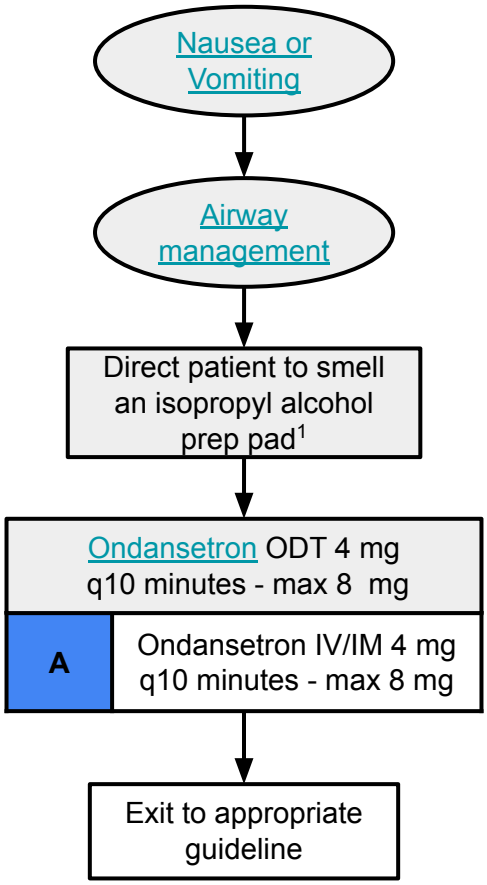
A

- Age 6 months - 4 years: 0.1 mg/kg IV, maximum single dose 4 mg
- Consider 10 mL/kg normal saline IV/IO if dehydration suspected

SPECIAL CONSIDERATIONS

- Caution with use of antiemetics (i.e., Ondansetron) with bradycardia, electrolyte deficiency, and clinical evidence or history of prolonged QT syndrome. (QTc > 500)
- Caution in patients that take SSRIs or other medications known to prolong the QT interval.

IV.2 Nausea/Vomiting (N/V)



[1]Isopropyl alcohol aromatherapy has been shown to be better than placebo in reducing nausea transiently with minimal adverse effects. It may be used adjunctively with ondansetron. See Lindblad et al for more information.

IV.3 Altered Mental Status

RATIONALE

Altered Mental Status (AMS) encompasses a broad range of presentations, from subtle confusion to complete unresponsiveness, and can result from medical, traumatic, toxicologic, metabolic, or psychiatric causes. EMS providers should focus on identifying and treating immediately reversible conditions while maintaining airway protection, adequate oxygenation, and hemodynamic stability. Thorough history-taking, collateral information from bystanders, and continuous monitoring help guide care and inform receiving facility staff for targeted evaluation and treatment.

TREATMENT

- UNIVERSAL PATIENT CARE & AIRWAY MANAGEMENT
- Place patient in position of comfort.
- Perform stroke assessment. Refer to STROKE guideline.
- Perform GLUCOMETRY.
  - Consider ORAL GLUCOSE, reference HYPOGLYCEMIA guidelines.
- Obtain patient temperature, reference HYPOTHERMIA/HYPERTHERMIA and SEPSIS guidelines.

A

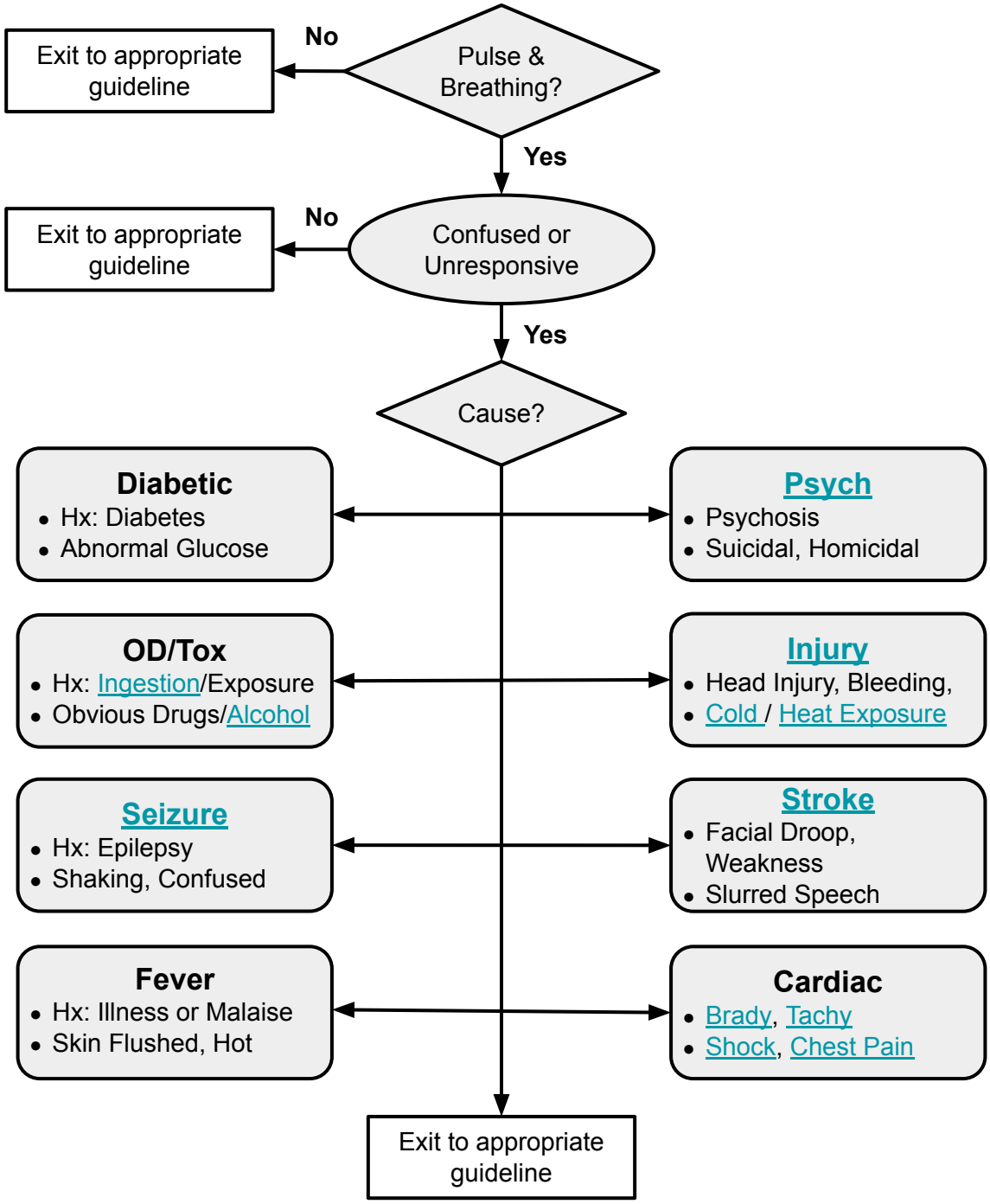
- Consider IV access.
- In adults, consider 500 mL normal saline, repeat PRN, max 2 L.
- Consider IV dextrose, reference HYPOGLYCEMIA guidelines.
- For hypotension reference HYPOTENSION guideline.

PEARLS

- Prioritize personnel safety.
- Obtain a detailed medical history and patients baseline from family/caretakers.

A: Alcohol - reference ETOH/OVERDOSE guidelines.
E: Epilepsy - reference SEIZURE guidelines.
I: Insulin - reference HYPERGLYCEMIA/HYPOGLYCEMIA guidelines.
O: Overdose - reference OVERDOSE guideline.
U: Uremia
T: Trauma - reference TRAUMA guidelines.
I: Infection - reference SEPSIS guidelines.
P: Psychosis - reference PSYCH guidelines.
S: Stroke - reference STROKE guidelines. - Do not assume a patient is postictal

IV.3 Altered Mental Status



IV.4 Seizure

RATIONALE	
	Seizures are sudden, uncontrolled electrical disturbances in the brain that can result in changes in behavior, movement, sensation, or consciousness. In the prehospital setting, rapid recognition and management are critical to protect the airway, prevent injury, and address underlying or reversible causes. EMS providers should prioritize scene safety, support ventilation and oxygenation, monitor for prolonged or recurrent seizure activity, and be prepared to administer appropriate medications when indicated.

TREATMENT	
	● UNIVERSAL PATIENT CARE & AIRWAY MANAGEMENT ○ Consider NPA. Do not use oral adjuncts. ○ Do not put anything in or near the patient's mouth during an active seizure. ■ Consider NRB/blowby if necessary. ○ Roll the patient into a lateral position to allow for airway secretions to drain. ○ Consider End Tidal Capnography. ● Place patient in position of comfort. ○ Provide a pillow or towel to pad the patient's head to maintain airway patency and prevent injury. ● Perform stroke assessment. Refer to STROKE guideline. ● Perform glucometry. Refer to HYPOGLYCEMIA guideline. ○ Seizure may still require anti-epileptic intervention to administer dextrose
A	● Obtain IV access.(refrain from patient restraint during seizure for IV access). ● In adults, consider 500 ml bolus normal saline, repeated prn up to 2 L. ○ Refer to HYPOTENSION guideline as needed
I	● If status epilepticus: seizure persists more than 5 minutes or patient experiences more than one seizure without regaining consciousness ● Consider 10 mg Midazolam IM (no repeat) or 5 mg Midazolam IV/IN Q5 min x2. Max Dose: 10 mg. i. Consider 5mg IM in geriatric/frail populations or patients < 50kg. If 5mg used, may repeat once to 10mg if seizures refractory. ● Pediatric: 0.1 mg/kg, max 5 mg. i. Administer oxygen and utilize $EtCO_2$ monitoring in all patients receiving benzodiazepines for seizures until patient is awake with reliable pulse oximetry. ● IO access is rarely necessary, consider IM route.
P	● Contact medical command for seizures refractory to benzodiazepines. Consider requesting orders for ketamine use at 1 mg/kg IV to a max of 100 mg.

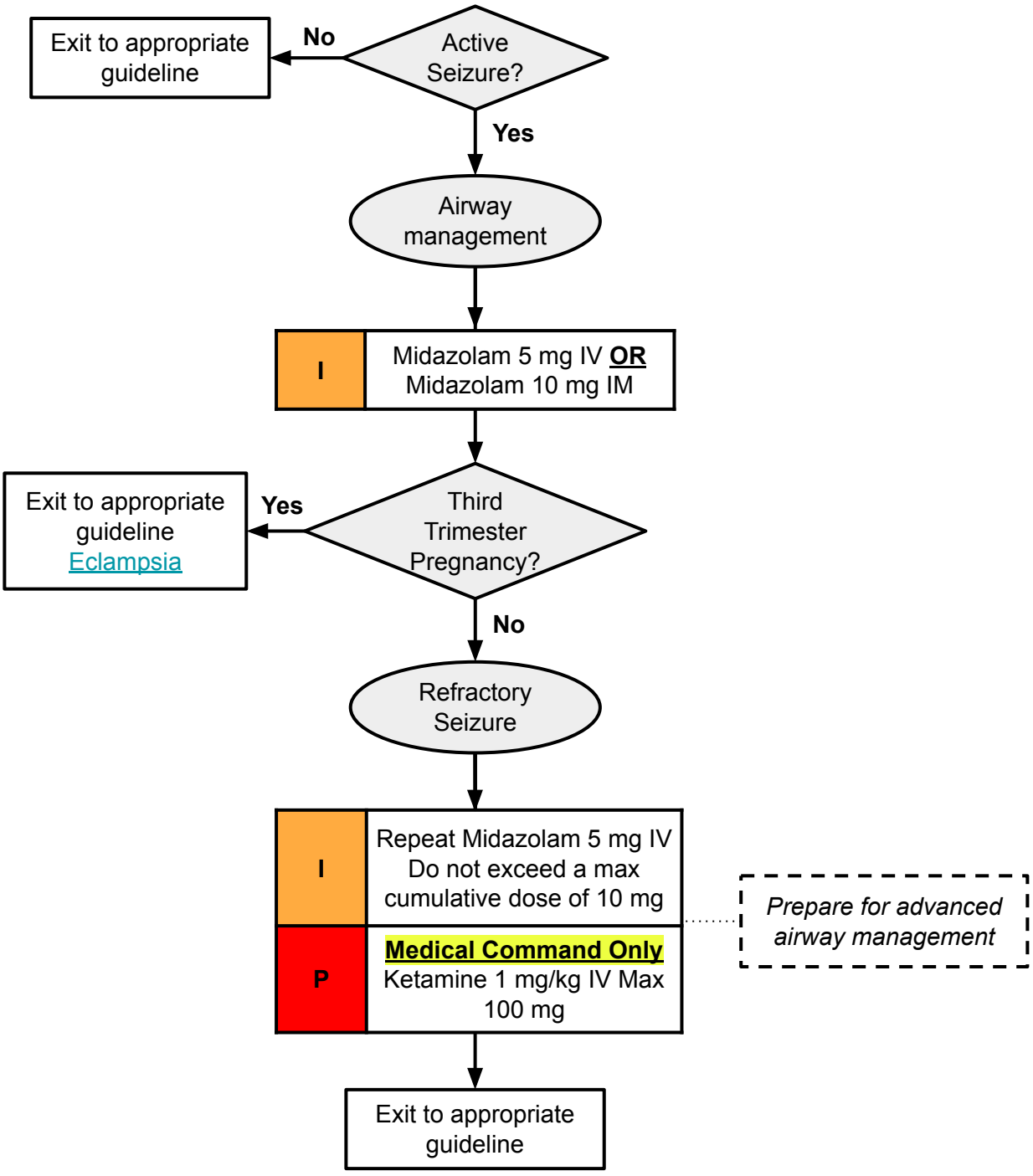
(continued on next page)

IV.4 Seizure

PEARLS

- Status epilepticus is defined as two or more successive seizures without a period of consciousness or recovery between them. 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 affect only a part of the body and are not usually associated with a loss of consciousness, but can propagate to generalized seizures with loss of consciousness.
- Many patients with seizures develop transient airway obstruction during the seizure.
- Consider causes of seizure:
    - CARDIAC ARREST: New onset cardiac arrest can initially present as seizure like activity.
    - HYPOGLYCEMIA: Obtain blood glucose. Refer to HYPOGLYCEMIA guideline
    - TRAUMATIC INJURY (Head Injury)
    - OPIOID OVERDOSE
    - SYMPATHOMIMETIC OVERDOSE
    - BETA BLOCKER OVERDOSE
    - ALCOHOL WITHDRAWAL
    - Refractory seizures may be common in patients with long term benzodiazepine and alcohol abuse.
    - PREGNANCY: Eclampsia can occur if patient is > 20 weeks pregnant or < 4 weeks postpartum. See ECLAMPSIA guideline.
    - FEVER: Febrile seizures are seen often in young children, toddlers, and infants. Consider passive external cooling if patient is febrile, remove clothing, move patient to cool environment (i.e. outside) - *do not allow patient to shiver*
- Benzodiazepine use may decrease respiratory effort and mental status during postictal and recovery phase.
- Be alert for violent postictal behavior.
- Some patients will have a neurological deficit following a seizure. This deficit may last up to two hours.
- A small number of patients actually suffer injury to the head or spine during the seizure. If spinal tenderness or neurological deficit is present, assume that spinal injury has occurred and immobilize the patient.
- Some patients fail to take antiseizure medication regularly. Some are compliant with medications but need to have the dosage adjusted.

IV.4 Seizure


Exit to appropriate guideline
No
Active Seizure?
Yes
Airway management
I
Midazolam 5 mg IV OR Midazolam 10 mg IM
Exit to appropriate guideline Eclampsia
Yes
Third Trimester Pregnancy?
No
Refractory Seizure
I
Repeat Midazolam 5 mg IV Do not exceed a max cumulative dose of 10 mg
P
Medical Command Only
Ketamine 1 mg/kg IV Max 100 mg
Prepare for advanced airway management
Exit to appropriate guideline

IV.5 Hyperglycemia

RATIONALE

Hyperglycemia, or elevated blood glucose, can develop gradually or acutely and may progress to life-threatening conditions such as diabetic ketoacidosis (DKA) or hyperosmolar hyperglycemic state (HHS). These emergencies can cause severe dehydration, electrolyte imbalances, and altered mental status, and often occur in patients with underlying diabetes or undiagnosed metabolic disorders. Prehospital recognition relies on a thorough history, assessment for signs such as polyuria, polydipsia, or Kussmaul respirations (fast, deep breathing).

TREATMENT

- UNIVERSAL PATIENT CARE & AIRWAY MANAGEMENT
- Encourage clear fluid rehydration
  - Prohibit flavored and colored liquid rehydration as they may be misleadingly high in carbohydrates or simple sugars.
- Consider Ondansetron ODT for Nausea/Vomiting.
- Consider end-tidal capnography.
- Assess for Abdominal Pain. Reference Abdominal Pain.
- Obtain patient temperature, reference HYPOTHERMIA/HYPERTHERMIA and SEPSIS guidelines.

A

- Consider IV access.
- Consider Ondansetron IV/IM for N/V. Reference Nausea/Vomiting.
- In adults, consider 500 ml bolus normal saline, repeated prn up to 2 L.
  - Hyperglycemic patients are often profoundly dehydrated, however use caution rapidly infusing fluid replacement as this may cause more severe metabolic & electrolyte abnormalities

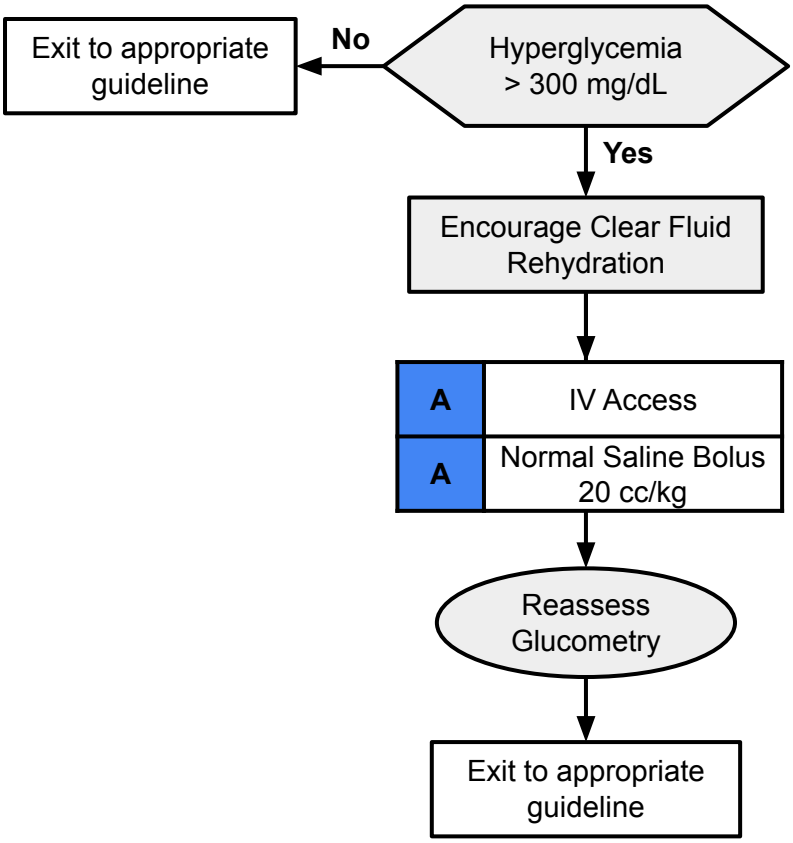
PED

- Consider 20 ml/kg normal saline IV/IO

PEARLS

- Kussmaul respirations (deep and fast) seen in Diabetic Ketoacidosis
  - $ETCO_2$ may be low, to compensate for relative acidosis
- History Taking
  - Inquire about known diabetic history, use of hyperglycemic agents (e.g. insulin and metformin), document recent changes in use/dosage.
  - Inquire about patient's last In's and Out's
    - Polydipsia (increased thirst)
    - Polyuria (frequent urination)
    - Ketonic/"Fruity"/Sweet smelling urine
  - Inquire about recent use of steroids such as Dexamethasone or new Beta Blocker use; may cause increased glucose-serum levels.
  - Inquire about recent infection including URI and UTI symptoms; may cause increased glucose-serum levels.

IV.5 Hyperglycemia



IV.6 Hypoglycemia

RATIONALE

Hypoglycemia, defined as an abnormally low blood glucose level, can rapidly lead to altered mental status, seizures, or coma if not promptly treated. Causes range from insulin or oral diabetes medication use to sepsis, alcohol intoxication, or other metabolic disturbances. Because symptoms can mimic stroke, intoxication, or other neurologic emergencies, early assessment of blood glucose in any patient with altered consciousness is critical. Prehospital management focuses on timely administration of oral or parenteral glucose to restore normal levels and prevent further deterioration.

TREATMENT

- UNIVERSAL PATIENT CARE & AIRWAY MANAGEMENT
- Obtain Blood Glucose
  - < 60 mg/dL
    - If **alert, able to protect airway, able to swallow and follow basic commands**
      1. Administer 15g oral glucose PO, may repeat once in 10 minutes if BGL remains < 60.
      2. Encourage PO consumption, however may consider supplemental buccal administration, assisted with tongue depressor.
    - If altered, unable to protect airway, unable to swallow and follow basic commands?
      1. Airway management and transport.

A

- Obtain IV/IO Access
- Administer 25 g dextrose 10% (D10) IV/IO. May repeat once in 10 minutes if needed. IO administration should only be utilized if BGL ≤ 40 mg/dL.
- If no venous access available, administer glucagon 1 mg IM

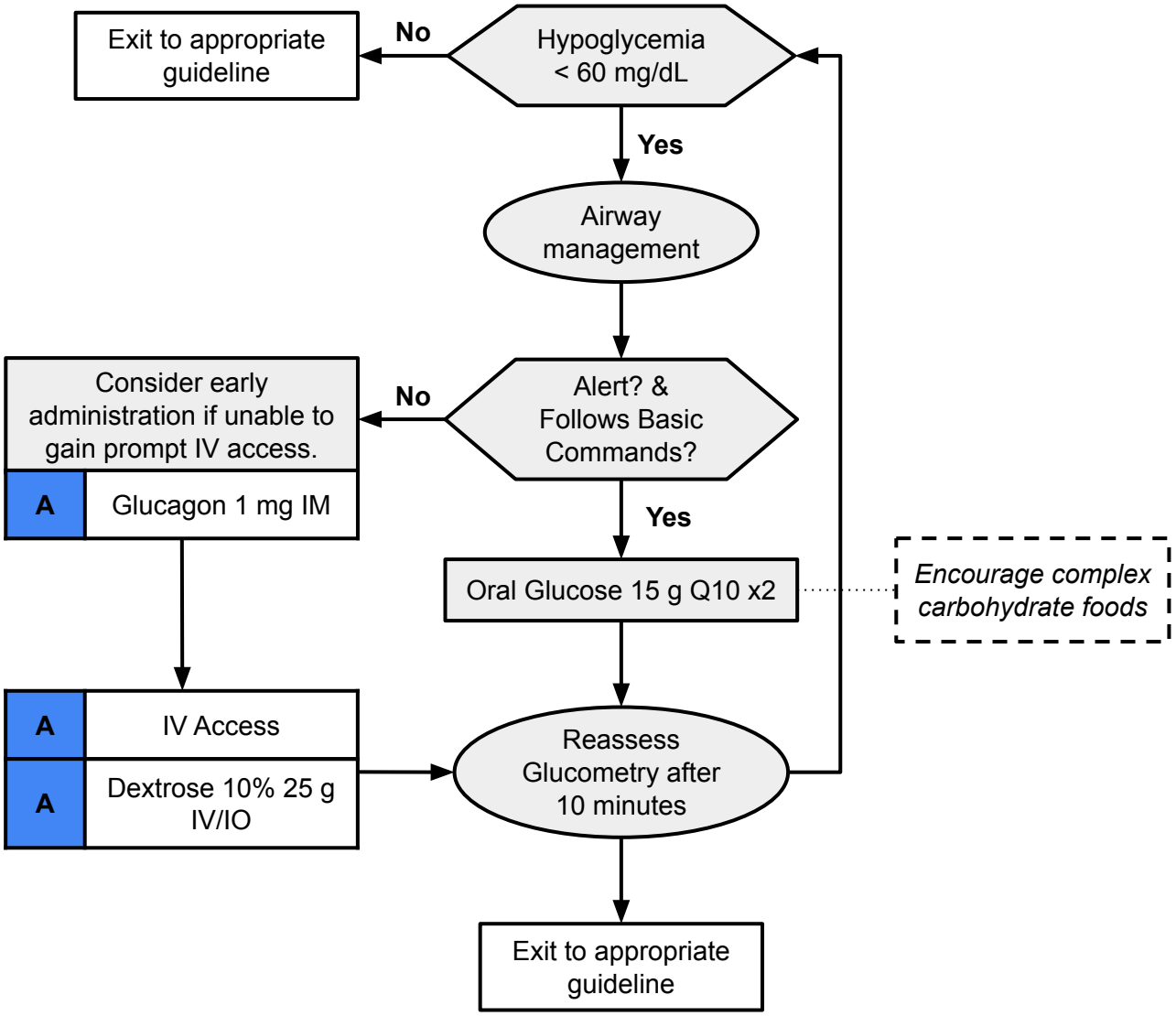
PED

- Administer 0.5 g/kg dextrose 10% (D10) IV/IO. May repeat once in 10 minutes if needed. IO administration should only be utilized if BGL ≤ 40 mg/dL.
- If no venous access available, administer glucagon: 0.5 mg if pt < 20 kg, 1 mg if pt > 20 kg

PEARLS

- D10 by IO as last resort, only if BGL ≤ 40 mg/dL.
- Following Glucagon administration, depending on liver function/health the patient may not have adequate glycogen stores to see clinical improvement.
- Diabetic patients who receive glucose often request to refuse transport. This may be reasonable after improved mental status after coaching to ensure adequate dietary intake. Patient who are hypoglycemic after taking oral medications should be transported to the hospital.

IV.6 Hypoglycemia



IV.7 Pain Management

RATIONALE

As an important part of patient care, **pain management** is often required to provide relief and comfort to those with traumatic injuries or painful medical conditions. The expectation is that providers will use a patient's pain description, a numerical pain scale, relevant history and subjective / objective assessment methods in deciding between non-opioid, opioid and alternative methods of pain relief. A combination of these methods may also be considered.

TREATMENT

- UNIVERSAL PATIENT CARE & AIRWAY MANAGEMENT
- Position of comfort
- Hot/Cold Pack as appropriate
- Consider ACETAMINOPHEN 975 mg PO.
  - May allow small volume of water to swallow medication.

A

- Ketorolac (Toradol)[1]
  - Adults: 15 mg IV/IM (Do not repeat)
- Fentanyl
  - 25-50 mcg IV/IM/IN repeated q5 prn (Max total dose 200 mcg)
  - Utilize a half or quarter dose for geriatric populations (> 65)
  - May administer concurrently to ketorolac.
- Capnography and SPO_2 monitoring is required following any opioid, benzodiazepine, or ketamine administration.

I

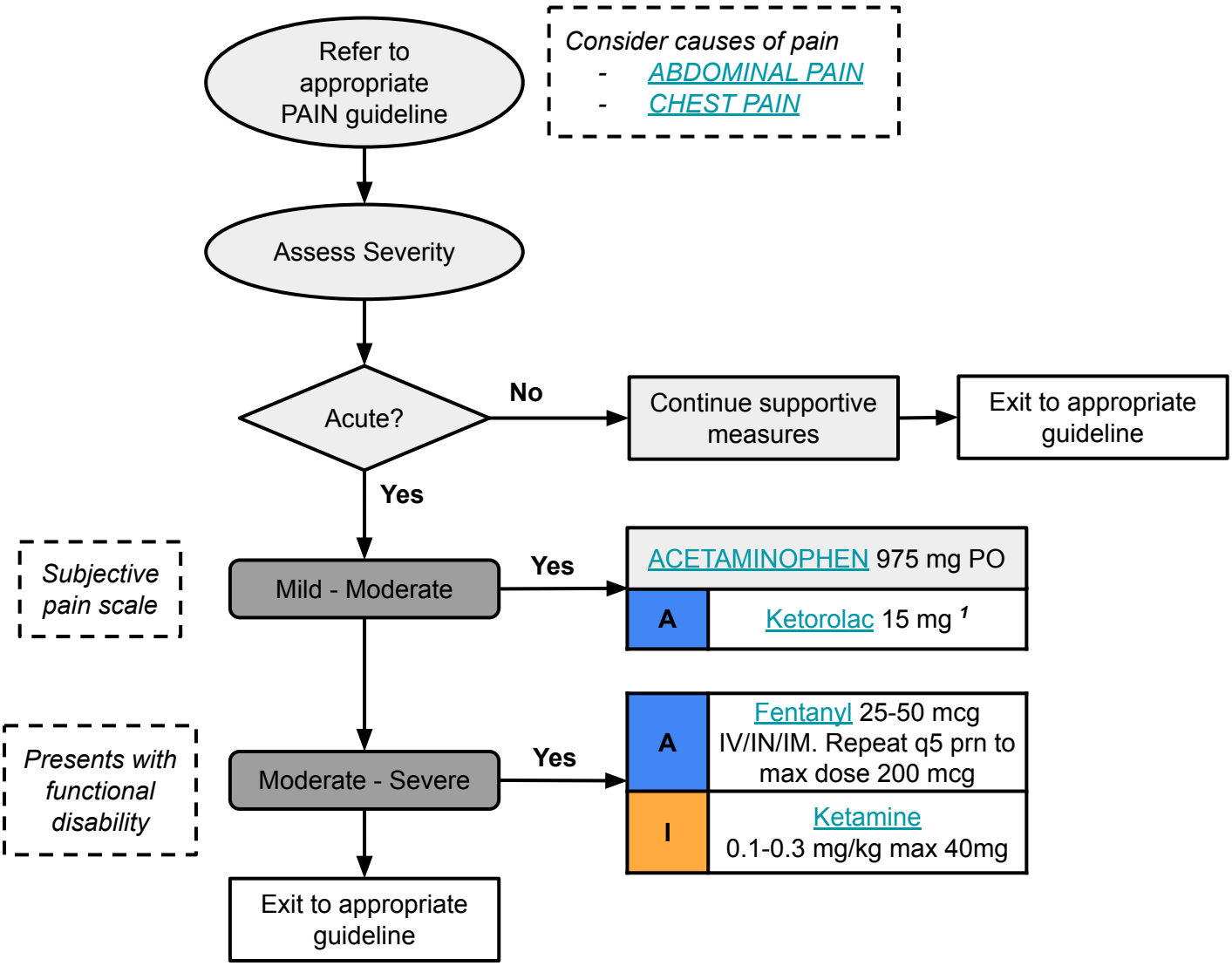
- Ketamine (Ideal Body Weight for Pain Dosing)
  - 0.1-0.3 mg/kg slow IV push (target 5 minutes); consider dilution with normal saline to allow for slow administration. Maximum single dose 20 mg, maximum total dose 40 mg.
  - Use caution using higher doses, caution for symptoms of delirium and dissociation
- Capnography, SPO_2 and 4-lead EKG monitoring is required following any opioid, benzodiazepine, or ketamine administration.

PEARLS

- Assessment of pain severity should use subjective verbal reporting of pain on a 0-10 scale with evaluation of functional disability and other physical and vital signs present.
- Fentanyl - Use caution in substance use disorder and hx of opioid abuse, consider direct use of pain dosing of Ketamine.
- Ketamine - Recreational dose for dissociative use begins at 0.2 mg/kg to > 1 mg/kg.
- Consider adding fentanyl administration with either acetaminophen or ketorolac for multimodal pain management, especially in orthopedic trauma.
- Functional Disability - May include but not limited to a patient unable to ambulate or transfer due to pain or unable to secure safely for transport due to pain.

[1]*Ketorolac (Toradol) should not be administered when there is moderate-severe trauma, risk of bleeding, suspected traumatic brain injury, or suspected need for surgical intervention*

IV.7 Pain Management



[1] Ketorolac (Toradol) should not be administered when there is moderate-severe trauma, risk of bleeding, suspected traumatic brain injury, or suspected need for surgical intervention

IV.8 Allergic Reaction/Anaphylaxis

RATIONALE

The term allergic reaction encompasses a large range of clinical signs, ranging from mild symptoms such as localized itching/urticaria to severe hypotension and respiratory distress. **Anaphylaxis is a severe allergic reaction that encompasses two (2) or more body systems.** With some exceptions, allergic reactions and/or anaphylaxis typically begins within minutes of exposure to an allergen and can involve any body system to include cardiovascular, respiratory, and gastrointestinal. Treatment is focused on reducing or stopping the exaggerated immune response while providing vigilant respiratory and cardiovascular support.

TREATMENT

- UNIVERSAL PATIENT CARE & AIRWAY MANAGEMENT
- For Anaphylaxis
  - Epinephrine (1 mg/mL) 0.3 mg IM via EpiRite syringe (0.15 mg in pediatric patients)
  - Consider Albuterol 2.5 mg for wheezing/respiratory involvement, may give continuous as needed (Max total dose 7.5 mg).

A

- For Anaphylaxis:
  - Epinephrine 1 mg/mL 0.3 mg IM (may repeat q5 mins up to 3 total doses)
- Vascular access (IV/IO)
- Albuterol 2.5 mg for wheezing/respiratory involvement, may give continuous as needed (Max total dose 7.5 mg).
- Diphenhydramine 50 mg IV/IM
- Dexamethasone 10 mg IV/IM/PO
- Consider 500 ml bolus normal saline, repeated prn up to 2 L.
  - Caution: IV fluids do not correct vasodilation and may contribute to third-spacing and edema.

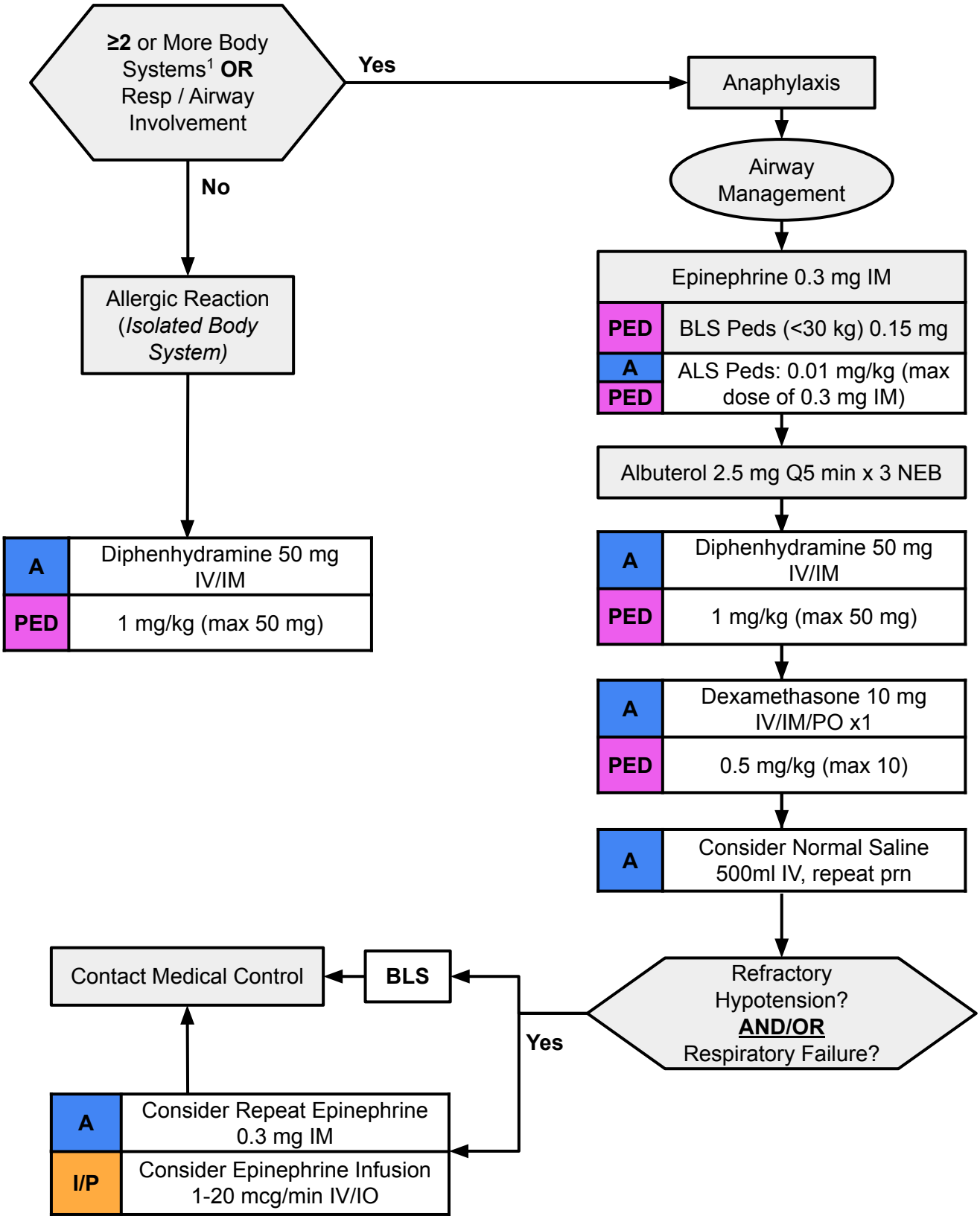
I

- For anaphylaxis refractory to 2 doses of IM epinephrine, or if patient in hemodynamic extremis (significantly hypotensive, altered mental status, etc.), consider 1-20 mcg/min Epinephrine Infusion
- ECG should be monitored for any patient that receives epinephrine

PEARLS

- Some allergic reactions may take up to 12 hours to manifest symptoms (especially Alpha-gal). Careful history-taking is essential
- Use caution with epinephrine in patient with a cardiac history (CAD/ prior MI), the elderly, and those with elevated systolic blood pressure or HR
- ACE inhibitors may induce severe angioedema which mirrors an allergic reaction. ACE inhibitor induced angioedema is unlikely to resolve with traditional treatments for anaphylaxis, however these treatments should still be attempted.

IV.8 Allergic Reaction



[1]e.g. hives/urticaria and shock; nausea/vomiting/diarrhea and shock

IV.9 Sepsis

RATIONALE

Sepsis is a systemic immune response to an infection. This systemic immune response can cause significant vasodilation, hypotension, coagulopathy, and acidosis. Patients with Sepsis have high morbidity and mortality without early identification and intervention. Fluid resuscitation replaces volume and may be preventative of end-organ damage from hemostasis and coagulopathy. The blood's ability to carry waste products, CO_2, and O_2 can be significantly reduced.

TREATMENT

- UNIVERSAL PATIENT CARE & AIRWAY MANAGEMENT
- Obtain a core temperature.
- Consider $EtCO_2$ monitoring.
- Early hospital notification of sepsis alert.
  - Suspect OR Known Source of Infection
  - AND 2 or more of:
    - *Temp > 100.4 F (38C) OR Temp < 96.8 F (36C)*
    - *HR > 90*
    - *RR > 20*
    - *$etCO_2$ < 32*
    - *WBC > 12,000/mm3 or <4000/mm3*

A

- IV/IO access
- If 2 or more SIRS criteria are met and infection suspected, administer large volume fluid resuscitation (up to 2L) wide open regardless of blood pressure
  - Continuously assess lung sounds for signs of pulmonary edema.
- If hypotensive, reference hypotension/shock guideline.

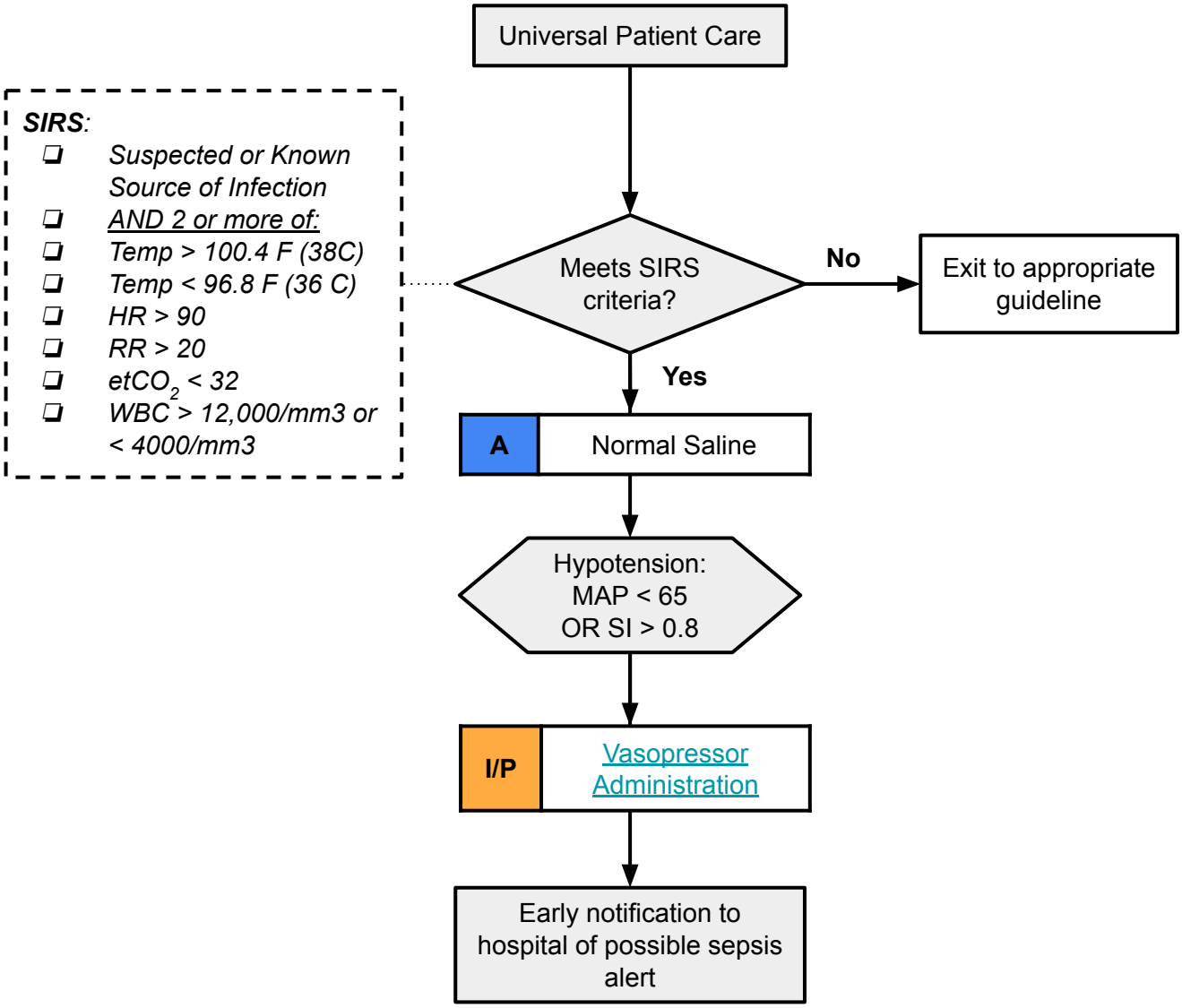
I

- 4-Lead ECG Monitoring

PEARLS

- Consider volume replacement and vasopressor use concurrently to meet MAP goals in moderate to severe hypotension. Reference Hypotension guideline.
  - Do not wait for fluid resuscitation to meet MAP goals.
  - Titrate down or discontinue vasopressor treatment after sufficient fluid replacement.

IV.9 Sepsis


Universal Patient Care
SIRS:
❑ Suspected or Known Source of Infection
❑ AND 2 or more of:
❑ Temp > 100.4 F (38C)
❑ Temp < 96.8 F (36 C)
❑ HR > 90
❑ RR > 20
❑ etCO2 < 32
❑ WBC > 12,000/mm3 or < 4000/mm3
Meets SIRS criteria?
No
Exit to appropriate guideline
Yes
A
Normal Saline
Hypotension:
MAP < 65
OR SI > 0.8
I/P
Vasopressor Administration
Early notification to hospital of possible sepsis alert

IV.10 Shock and Hypotension

RATIONALE

In the emergency setting, **hypotension** (low blood pressure) is generally regarded as a symptom of an underlying pathology. Near-syncope, dizziness, and lightheadedness may be presentations of hypotension, and often other symptoms are related to the cause of the hypotension. Careful assessment of associated symptoms can assist with goal-directed therapies. Generally, hypotension and shock is caused by:

- Reduced blood or serum fluid volume (hypovolemic shock)
- Excessive vasodilation (distributive shock)
- Physical obstruction (obstructive shock)
- Decreased cardiac output (cardiogenic shock)

TREATMENT

- UNIVERSAL PATIENT CARE & AIRWAY MANAGEMENT
- Supine positioning as tolerated.
- Consider cause of shock/hypotension. Refer to appropriate guideline.

A

- IV access, preferred large bore/gauge and proximal or central placement of access. Consider IV/IO.
- Consider 500 ml bolus normal saline, repeated prn up to 2 L.
  - Caution for hemorrhage, relative anemia, CHF, hypoglycemia, CKD
- Consider EJ access if no appropriate peripheral IV available.

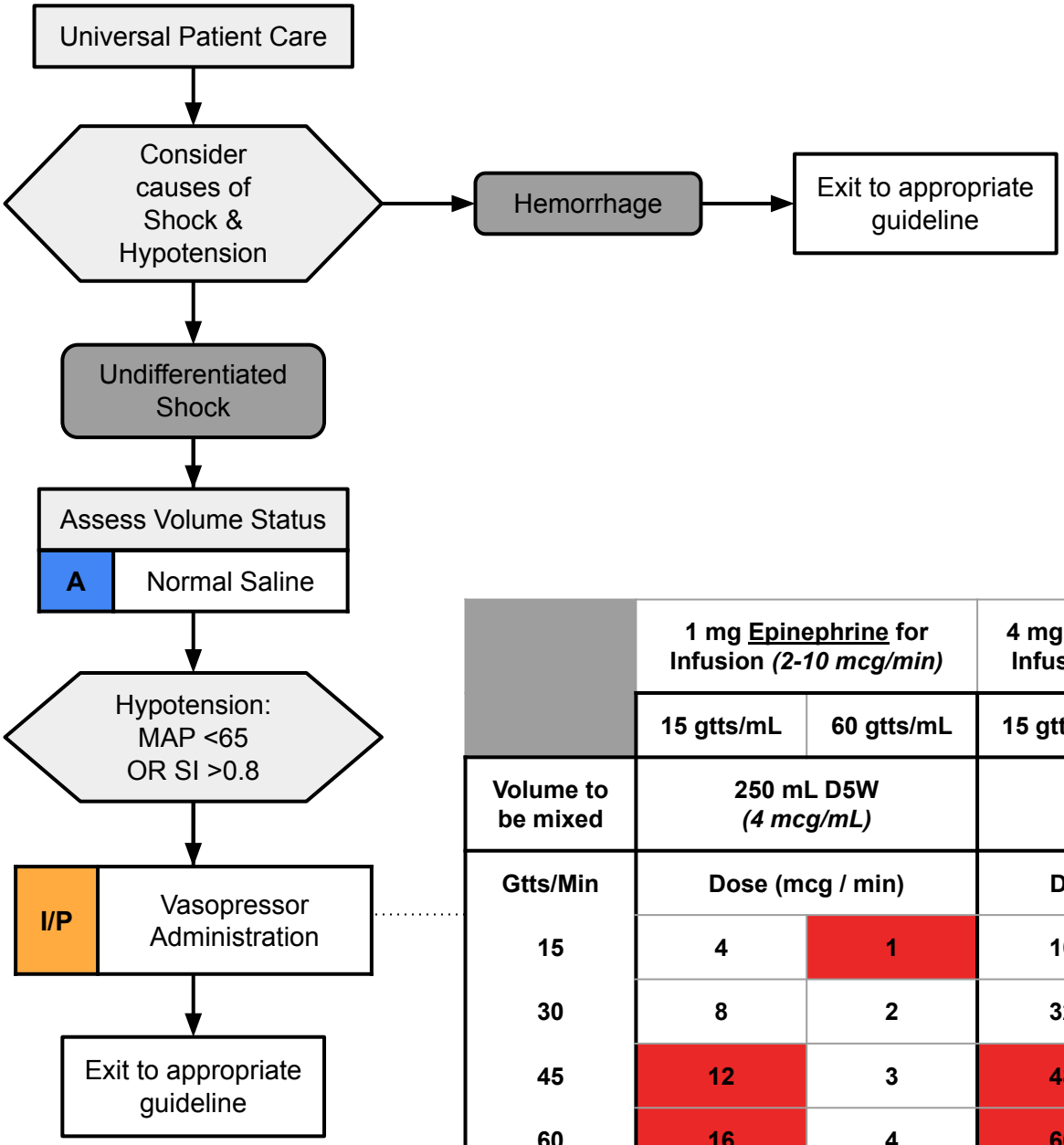
I

- For suspected moderate-severe hypotension (MAP < 65 or SI > 0.8) consider vasopressor use following adequate fluid resuscitation:
  - For bradycardia or anaphylaxis:
    - Push Dose Epi: 10-20 mcg slow IVP epinephrine (10 mcg/mL) repeated PRN.
    - Epinephrine Infusion 2-10 mcg/min. Mix 1 mg/250 mL D5W or NS (4 mcg/mL) (IV pump required)
  - For any other cause of shock:
    - Push-dose norepinephrine: 16-32 mcg norepinephrine slow IVP repeated PRN. Mix 4mg/250 mL D5W (16 mcg/mL)
    - Norepinephrine Infusion 5-30 mcg/min. Mix 4 mg/250 mL D5W (16 mcg/mL) (IV pump required)

PEARLS

- Caution with pressor use in tachydysrhythmias and cardiogenic shock.
- In cardiogenic shock consider 250 mL bolus at a time and reassess for pulmonary edema.
- Consider push dose pressors to bridge to pressor infusion.
- Never give pressors wide open or start at the highest dose. Start low and work up.
- Vasopressors should be administered using IV pump through large bore proximal IV/IO access and be piggybacked into NS or D5W drips, at minimum KVO.
- Vasopressors should never be administered via lower extremity IVs.
- Monitor IVs closely for extravasation - extravasation of vasopressors can cause severe tissue damage and compartment syndrome

IV.10 Shock and Hypotension



	1 mg Epinephrine for Infusion *(2-10 mcg/min)*		4 mg Norepinephrine for Infusion *(5-30 mcg/min)*	
	15 gtts/mL	**60 gtts/mL**	**15 gtts/mL**	**60 gtts/mL**
Volume to be mixed	**250 mL D5W *(4 mcg/mL)***		**250 mL D5W (16 mcg/mL)**	
Gtts/Min	**Dose (mcg / min)**		**Dose (mcg / min)**	
15	**4**	**1**	**16**	**4**
30	**8**	**2**	**32**	**8**
45	**12**	**3**	**48**	**12**
60	**16**	**4**	**60**	**16**

An IV pump should be utilized with vasopressor infusion; table provided only in case pump is unavailable

*Doses shown in red are outside the approved dosing range

IV.11 Stroke

RATIONALE

Stroke is a time-critical medical emergency caused by disruption of blood flow to the brain, leading to rapid loss of neurologic function. Early recognition and intervention are essential, as brain tissue can be permanently damaged within minutes. Prehospital providers play a vital role in identifying stroke symptoms, determining last known well time, and activating the appropriate stroke alert pathway. Speed is of the essence, thus the common stroke care adage: time is brain.

TREATMENT

- UNIVERSAL PATIENT CARE & AIRWAY MANAGEMENT
- Obtain a Blood Glucose. Refer to HYPOGLYCEMIA guideline.
- Perform Cincinnati Stroke Scale
- Determine the last known well time and time of onset of symptoms (be as specific as possible)
  - If patient woke up with symptoms, the time they were last awake is the last known well time
- If Cincinnati Stroke Scale is positive AND unilateral weakness in upper or lower extremities, perform a VAN Assessment
  - If the VAN Assessment is positive for any criteria:
    - For onset time within 4 hours, take patient to the closest hospital.
    - For onset time greater than 4 hours, take the patient to UVA.
- For onset of < 24 hours (positive Cincinnati Stroke Scale with or without positive VAN), notify receiving facility of Stroke Alert as soon as possible.
- Minimize scene time and expedite transport to hospital.
- Record neurological deficits and monitor for changes.
- Obtain 12-lead ECG (do not delay transport).

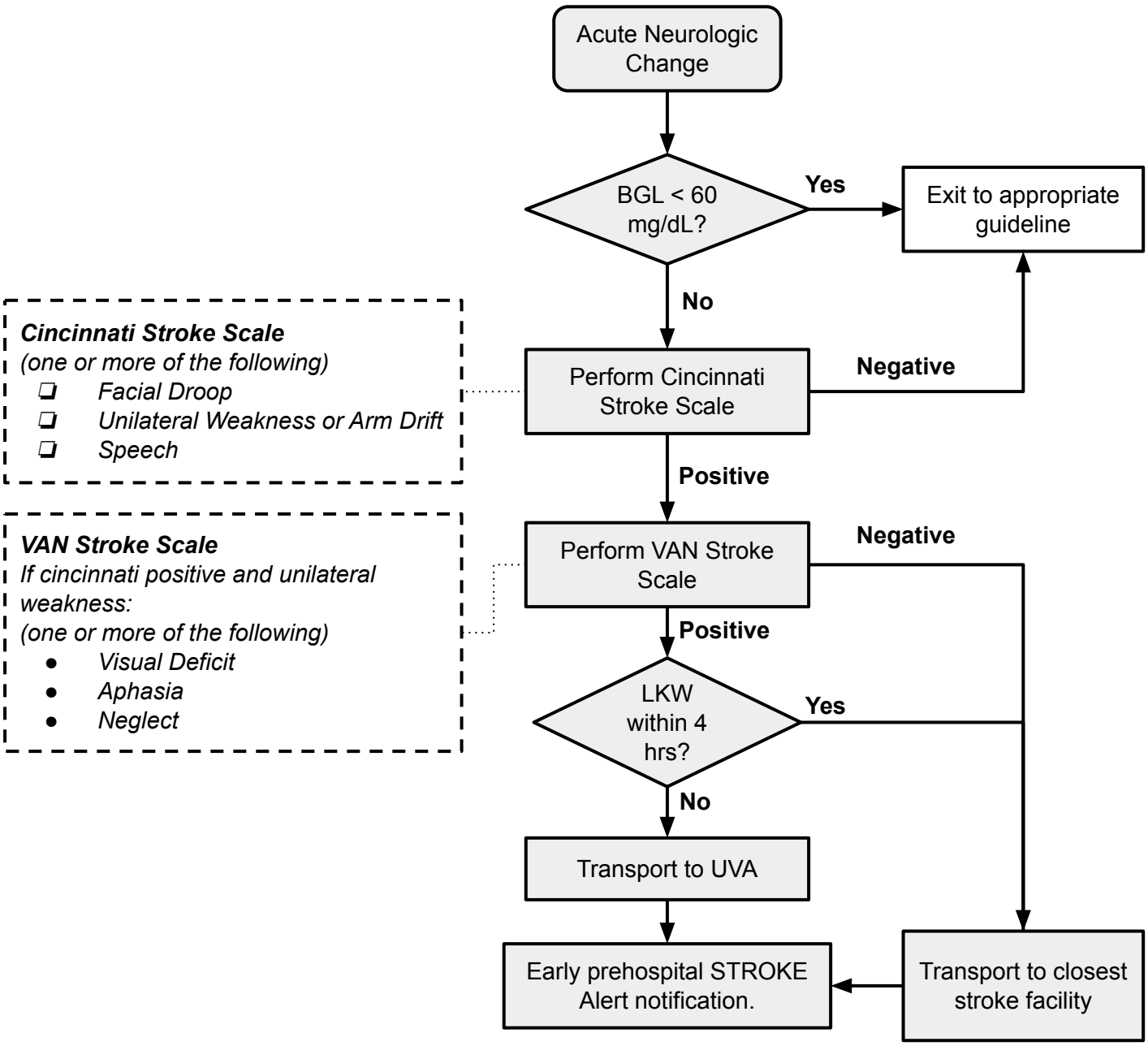
A

- IV access as appropriate (do not delay transport)
  - If possible, obtain 18G access in the AC for CTA imaging.
  - If possible, bilateral access preferred.

PEARLS

- It is important to establish a baseline of any neurological or cognitive deficits.
- Cincinnati Criteria: Facial Droop, Arm Drift, Speech (slurred, wrong words, mute/unable to speak)
- VAN Criteria: V (double vision, blindness), A (inability to speak, dysarthria, expressive aphasia, receptive aphasia), N (forced gaze, pupils do not track to one side, unilateral loss or decreased sensation, ignoring one side)
- Destination Triage:
  - UVA - Comprehensive Stroke Center + “Wake Up Stroke” + “Up to 24 hrs”
  - SMJH - Primary Stroke Center (Does not include interventional neurology)
- Acute altered mental status or unresponsiveness, unable to complete a stroke scale, may disguise a spontaneous and catastrophic hemorrhagic stroke.

IV.11 Stroke


Acute Neurologic Change
BGL < 60 mg/dL?
Yes
Exit to appropriate guideline
No
Cincinnati Stroke Scale
(one or more of the following)
❑ Facial Droop
❑ Unilateral Weakness or Arm Drift
❑ Speech
Perform Cincinnati Stroke Scale
Negative
Positive
VAN Stroke Scale
If cincinnati positive and unilateral weakness:
(one or more of the following)
• Visual Deficit
• Aphasia
• Neglect
Perform VAN Stroke Scale
Negative
Positive
LKW within 4 hrs?
Yes
No
Transport to UVA
Early prehospital STROKE Alert notification.
Transport to closest stroke facility

IV.12 Behavioral Emergencies

RATIONALE	**Behavioral emergencies** encompass a wide range of situations in which a patient's thoughts, emotions, or actions pose a risk to themselves or others, or significantly impair their ability to function. Causes may include psychiatric illness, substance use, medical conditions, or acute stress reactions. EMS providers play a key role in ensuring scene safety, de-escalating potentially volatile situations, and addressing any underlying medical issues. Care should be compassionate, patient-centered, and grounded in clear communication, respect, and the preservation of dignity.

TREATMENT	• Ensure scene safety, consider adding law enforcement, advanced life support, and/or supervisor (e.g. EMS2, BC, R107, Chief 101). • UNIVERSAL PATIENT CARE & AIRWAY MANAGEMENT • Verbal de-escalation, utilize an empathetic approach. Ensure patient safety • and comfort. AVOID CONFRONTATION. • Consider adding ANCHOR (City) team or HART (County) team for assistance with de-escalation. • Perform GLUCOMETRY, when patient can be safely assessed. Reference HYPOGLYCEMIA / HYPERGLYCEMIA. • Obtain TEMPERATURE. • If neurological symptoms, consider STROKE assessment. • Consider OVERDOSE, TRAUMA, other appropriate reference/protocol.
A	• Consider IV access
I	• For extreme psychomotor agitation consider CHEMICAL RESTRAINT *(red dot skill for I/P)*

(continued on next page)

IV.12 Behavioral Emergencies

PEARLS

- Patients with Acute Psychological Agitation are very difficult to manage. High risk patients with risk management concerns can often lead to injury of EMS personnel if patients are not managed properly. Signs and symptoms include anxiety, agitation, confusion, affect change, no response to police presence, hallucinations, constant physical activity, keening (unintelligible animal noises), excessive strength, delusional thoughts, bizarre/combative/violent behavior, and expression of suicidal/homicidal thoughts.
- Not all patients presenting with acute behavioral disturbance are experiencing psychotic episodes (i.e. dementia and Alzheimer's disease patients).
- Consider the SAVE mnemonic for de-escalation:
  - Support - "Let's work together…"
  - Acknowledge - "I see this has been hard for you…"
  - Validate - "I would probably be upset too if I were in your shoes…"
  - Emotion naming - "You seem upset…"
- Patient assessment, especially painful or invasive skills, pose additional risk for agitated or reactive patients.
- If patient is alert, with a patent airway, breathing effectively, with good skin appearance and capillary refill, a patient may be visually monitored if assessment provokes severe agitation, document appropriately.
- Use of all seatbelts is required for all patients, unless restricting patient's airway/breathing.
- Agitation and physical intervention by EMS and/or LE can cause rhabdomyolysis and subsequent cardiac arrhythmias regardless of sedation.
- Nothing restrictive should be placed on the patient's head, neck, face, or chest.
- A surgical mask or oxygen mask may be placed to prevent spitting. LE utilizes spit hoods.
- If a patient is in police custody, **LE must be present** during transport to the hospital. Document name or badge #.
- Refer to Broset Violence Checklist as a guide for risk of violent behavior.

IV.13 Chemical Restraint

RATIONALE

This protocol is for behavioral emergencies in which **medication restraint** is deemed necessary for the safety of the patient, bystanders, and EMS crew. The appropriate use of de-escalation techniques should take precedence over chemical restraint. Chemical restraint is indicated for:

- If deescalation unsuccessful and moderate-severe agitation or violent behavior persists:
- AND patient poses a threat to themself, bystanders, or EMS providers;
- AND patient has capacity and consents to sedation OR patient lacks capacity;
    - If unknown contact MEDICAL COMMAND.

TREATMENT

- Reference BEHAVIORAL EMERGENCIES.
- Ensure the method of restraint does not affect breathing or circulation.
- Agitation secondary to non-alcohol SUBSTANCE USE
    - Age ≥ 18: Midazolam 2.5-5 mg IM
    - If behavior continues to escalate:
        - Haloperidol
            - Moderate agitation: Haloperidol 5 mg IM
            - Severe agitation: Haloperidol 10 mg IM
- If BEHAVIORAL agitation or alcohol-related agitation is suspected:
    - Age ≥ 18: Administer HALOPERIDOL 5-10 mg IM.
        - After 5 minutes, If behavior continues to escalate:
            - VERSED 2.5 mg - 5 mg IM
        - ≥ 65 years, utilize the lowest dose of Midazolam or Haloperidol to minimize risk of adverse effects.
        - Pediatric: Contact [MEDICAL COMMAND]
    - Following Haloperidol administration monitor for extrapyramidal signs: dystonia, involuntary or uncontrollable movements, tremors.
        - Administer DIPHENHYDRAMINE 50 mg slow IV/IM.
- Manage UNIVERSAL PATIENT CARE & AIRWAY MANAGEMENT & HYPOTENSION.
- Obtain complete set of vitals promptly.
    - BVM, NRB, or Hi-Flow NC should be administered until reliable pulse oximetry can be established.
    - CARDIAC Monitoring Required.
    - CAPNOGRAPHY Required.
- Consider external cooling in hyperthermic patients.
- MEDICAL COMMAND must be contacted for repeat orders.
- If a patient refuses transport and lacks capacity, consider an EMERGENCY CUSTODY ORDER.

(continued on next page)

IV.13 Chemical Restraint

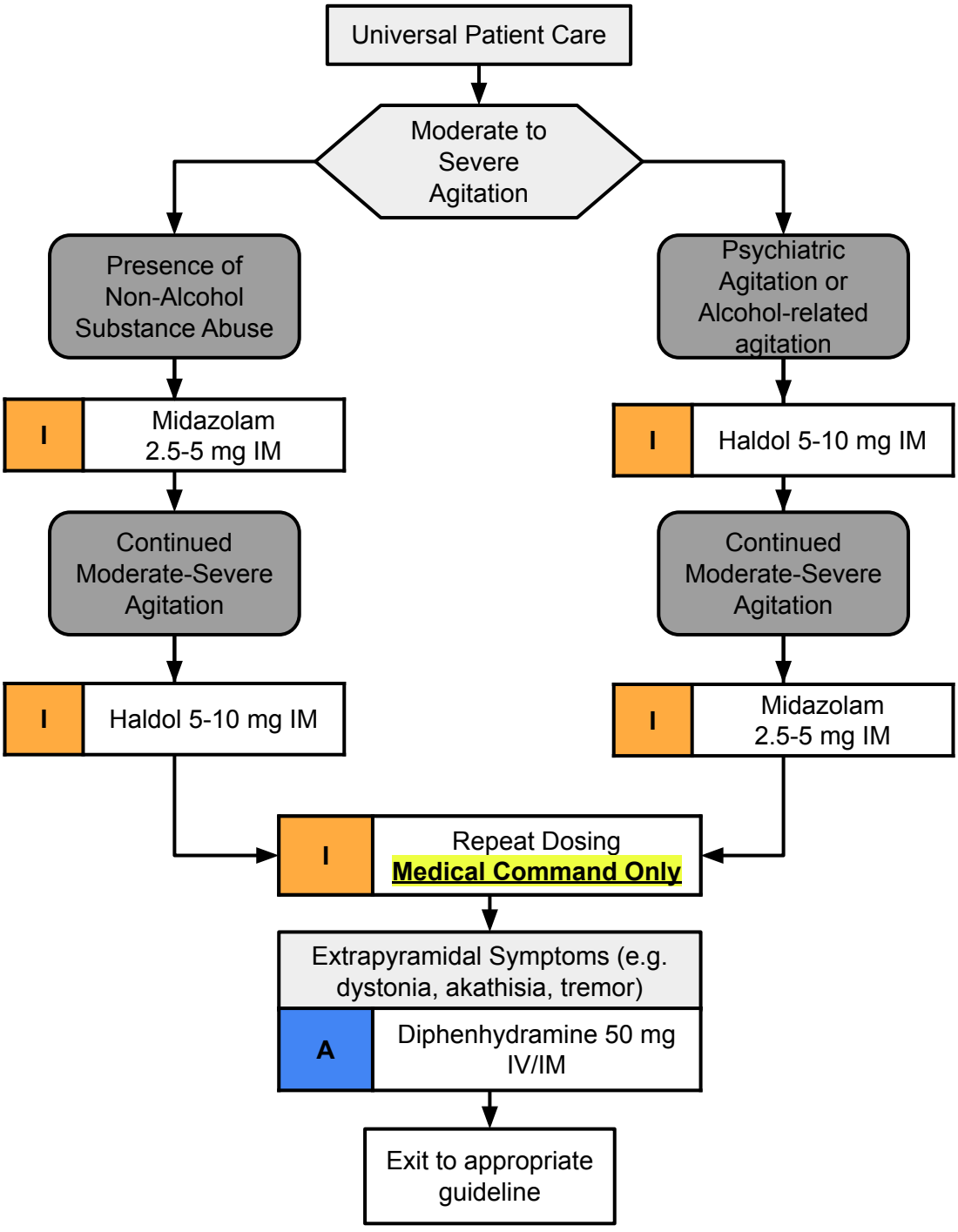
TREATMENT | **I**

- Anxiolysis for CPAP/BL (Reference CHF/PULMONARY EDEMA guideline)
  - Significant coaching should be attempted prior to use of pharmacological anxiolysis.
  - 0.1-0.2 mg/kg Ketamine IV - goal to tolerate mask CPAP/BL (anxiolysis), not sedation.
  - CAUTION - Concurrent use of CPAP/BL with Nitroglycerin may cause significant HYPOTENSION.

PEARLS

- Chemical Restraint/Sedation can lead to significant
  - Airway Compromise.
  - Respiratory Depression.
  - Circulatory Compromise.
  - Up to and including CARDIAC / RESPIRATORY ARREST.
- **Two Intermediate/Paramedic Providers** should be present, confer, and agree on sedation; if disagreement occurs, contact MEDICAL COMMAND.
  - Both providers should continue to attend to the patient during transport. (Can utilize other agency providers for this requirement)
  - Do not delay transport to obtain a second ALS provider
- Prone positioning is **prohibited**. Nothing restrictive shall be placed on the patient's head, neck, or face. Restrain in the supine or left lateral recumbent position.
- If physical restraint required, contact law enforcement. Promote physical safety of EMS and the public first.
- A surgical mask or oxygen mask may be placed to prevent spitting. LE utilizes spit hoods.
- Agitation and physical intervention by EMS and/or LE can cause rhabdomyolysis and subsequent cardiac arrhythmias regardless of sedation.
- If a patient is in police custody, **LE must be present** during transport to the hospital. Document name or badge #.

IV.13 Chemical Restraint



P	Pediatric Sedation **Medical Command Only**

SECTION V:
TOXICOLOGY AND ENVIRONMENTAL

V.1: Hypothermia

RATIONALE

Patients with confirmed body temperature below 95℉ or with other suspicion of **hypothermia** should be treated under this protocol. Hypothermia may be a symptom of other conditions including intoxication, hypoglycemia, or trauma. Early recognition and aggressive rewarming are essential to improving outcomes.

TREATMENT

- Obtain temperature orally if possible
- Prevent further heat loss by removing wet clothing and gently drying patient if applicable, and/or removing patient from cold environment
- If patient is suspected to be in cardiac arrest, perform pulse check for 30 seconds as severe bradycardia may develop with hypothermia
- Evaluate for possible causes of impaired thermoregulation: hypoglycemia, stroke, toxicological causes

PEARLS

- Handle hypothermic patients gently - abrupt bumps or movements can trigger dysrhythmias including ventricular fibrillation
- ECGs may show bradycardia and J-waves (osborne waves) which are indicative of severe hypothermia
- Hypothermia in trauma patients substantially worsens outcomes due to increasing coagulopathy - aggressively warm ALL trauma patients
- If warmed IV fluids are available consider using these for active warming

V.2: Environmental Hyperthermia

RATIONALE

Indication: Adult patients with elevated body temperature related to exercise, toxicological causes, or **heat exposure**, rather than illness

Signs/symptoms include: nausea/vomiting, headache, fatigue, weakness, tachycardia, sweating.

As heat illness progresses to **heat stroke**, patients develop altered mental status, seizures, hypotension, and often stop sweating.

TREATMENT

- Perform universal patient care.
- Obtain oral temperature if possible, otherwise obtain axillary temperature
- Remove patient from hot environment and remove any excess clothing.
- If patient is alert and able to follow commands, provide/encourage oral rehydration if available (electrolyte drinks preferred over plain water)
- If heat stroke is suspected (altered mental status w/ temperature > 104℉), utilize rapid active cooling techniques (cold packs, gently douse patient with cool water/irrigation solution) to a target of 102 ℉/39 ℃

A

- Establish IV access.
- For heat exposure/heat exhaustion, consider 500 mL normal saline IV.
- For heat stroke/hypotension, administer 1L normal saline IV bolus, may repeat once. Monitor for signs/symptoms of fluid overload and stop infusion if any appear.

I

- Monitor ECG; for heat stroke, consider 12-lead ECG.

PEARLS

- For active cooling, place cold packs in areas where large arteries run close to skin (axilla, groin, neck)
- If cold water immersion equipment is available - utilize this as a cooling technique
- If seizures occur, treat per seizure guidelines while continuing to utilize active cooling
- Electrolyte derangements are common in heat stroke, be prepared for dysrhythmias to occur

V.3: Opioid Overdose

RATIONALE

Opioid analgesic overdoses (OAOD) are proportional with the number of opioid prescriptions; between 1997 and 2007 the number of prescriptions for opioids rose 700%. Another contributing factor to the increase in OAOD deaths is the development of highly potent synthetics, extended release versions, and transdermal patches.
Pre-hospital treatment is focused on maintaining airway control and administration of naloxone (opioid receptor antagonist) as an antidote.

- It is widely known that naloxone elimination half-life is less than most of the commonly used opioids, resulting in potentially recurrent respiratory depression.

Signs/symptoms include:

- Respiratory Depression/Arrest (Slow, shallow, or absent breathing), Cyanosis (blue lips/nails),
- Unconsciousness/AMS, Pinpoint pupils, Gurgling/Choking sounds

TREATMENT

- Perform universal patient care, emphasizing early airway management and oxygenation
- If airway is not patent and / or respirations are not appropriate, refer to appropriate airway management guideline
- If patient is unresponsive or has respiratory depression, administer naloxone 4 mg IN. May repeat every 3 minutes as needed until strong spontaneous respiratory effort is obtained.
- Attempt to identify medication / substance and document for hospital (may take photo of pill as long as patient not identifiable in photo)
- If needed, consider contacting Poison Control (434) 442-9700 and ask for 'physician medical control' for further instructions and information and to assist with medication identification
- Obtain blood glucose measurement
- Utilize Capnography

A

- Administer naloxone 0.1-0.4 mg IV / IM for respiratory depression
- May repeat q1 minute at escalating doses if suspected High-Dose Opioid Toxicity and no response from initial Naloxone administration up to 4 mg IV / IO

PED

- Administer naloxone 0.1 mg / kg IV (Max dose 2 mg) -OR- 4 mg IN if 1 year or older for respiratory depression
- May repeat q 3-5 minutes up to a max cumulative dose of 4 mg if respirations do not improve
- Administration may be titrated to respiratory improvement

I

- Monitor ECG

V.3: Opioid Overdose

PEARLS	
	● Transport ALL children – no matter how stable they appear. Opioid overdose in children is often characterized by delayed onset of toxicity, unexpectedly severe poisoning and prolonged toxic effects. ● Consider hypothermia. ○ Hypothermia may arise from an unresponsive state in a cool environment or bystanders misguided attempts to treat the overdose, by immersion in cold water. ● Evaluate for compartment syndrome. ○ Persistently unresponsive patients or in an opioid induced stupor, often lie on a muscle group for an extended period. Evaluate for swelling, color, cool to touch and excessive firmness. ● Evaluate for a seizure. ○ Seizures are often associated with Tramadol, meperidine and propoxyphene overdoses. ● Remember that patients with a tolerance have a higher chance of isolated opioid overdoses. ○ Perceptual tolerance develops more rapidly than respiratory tolerance. As a result, the effectual tolerance range narrows in the chronic user and increases their susceptibility to respiratory depression.

V.4: Beta Blocker Overdose

RATIONALE

Beta blockers are medications that are used for a variety of indications, including hypertension, arrhythmias including atrial fibrillation, migraines, and others. They work by blocking β-adrenergic receptors of the sympathetic nervous system, thus decreasing the body's ability to upregulate heart rate and force of contraction in times of stress.

Beta blockers include medications such as metoprolol, atenolol, carvedilol, propranolol (nearly all end in -olol or -ilol).

The primary symptoms that may present with a severe beta-blocker overdose include bradycardia, hypotension, altered mental status, and hypoglycemia.

TREATMENT

- Perform universal patient care
- Attempt to identify medication / substance
- Consider contacting Poison Control (434) 442-9700 and ask for 'physician medical control' for further instructions and information and to assist with medication identification
- Obtain blood glucose measurement
- Obtain 12-lead ECG if symptomatic (bradycardia, hypotension, AMS)

A

- Obtain IV/IO access.
- If patient is symptomatic (bradycardic, hypotensive, altered mental status), administer 500 mL normal saline IV/IO. May repeat PRN if patient remains unstable. Monitor for signs of fluid overload including respiratory distress/crackles, stop infusion if these become present.
- Hypoglycemia commonly presents as a symptom - treat using hypoglycemia guideline if present

I

- Treat bradycardia according to bradycardia guideline
- If severely symptomatic of overdose, administer 20 mg/kg calcium gluconate in 100 mL D5W IV/IO over 10 minutes and 1-2 mg Glucagon IV/IO.

PEARLS

- Beta blockers inhibit sympathetic activation of glycogenolysis, which can precipitate hypoglycemia
- Beta blockers often cause neurological symptoms to include seizures, which can be treated as normal using benzodiazepines
- Treat symptoms first with appropriate arrhythmia/hypotension guidelines, then move to treatment with glucagon/calcium

V.5: Calcium Channel Blocker Overdose

RATIONALE

Calcium channel blockers are medications that are used for a variety of indications, including hypertension, arrhythmias including supraventricular tachycardia, migraines, and others. Includes medications such as verapamil, diltiazem, amlodipine, nifedipine, nicardipine, and others (-dipine suffix on many). They work by blocking calcium channels which are normally used to induce muscular contraction and conduct cardiac action potentials, thus an overdose causes a decrease in vascular tone and a decrease in heart rate and contractile force. The primary symptoms that may present with a severe calcium-channel blocker overdose include bradycardia, hypotension, and altered mental status.

TREATMENT

- Perform universal patient care
- Attempt to identify medication / substance
- Consider contacting Poison Control (434) 442-9700 and ask for 'physician medical control' for further instructions and information and to assist with medication identification
- Obtain blood glucose measurement
- Obtain 12-lead ECG if symptomatic (bradycardia, hypotension, AMS)

A

- Obtain IV/IO access.
- If patient is symptomatic (bradycardic, hypotensive, altered mental status), administer 500 ml normal saline IV/IO. May repeat prn if patient remains unstable. Monitor for signs of fluid overload including respiratory distress/crackles, stop infusion if these become present.

I

- Treat bradycardia according to bradycardia guideline
- If severely symptomatic of overdose, administer 20 mg/kg calcium gluconate IV/IO.

PEARLS

- Overdoses of calcium channel blockers are extremely dangerous and can lead to profound cardiogenic shock. Have a high index of suspicion for hemodynamic decompensation
- Supportive care with vasopressors, fluids, and appropriate airway management are essential to good outcomes and should be prioritized over calcium administration.

V.6: Tricyclic Antidepressant Overdose

RATIONALE

Tricyclic antidepressants include medications such as: amitriptyline (Elavil), nortriptyline (Aventyl), Desipramine (Norpramin), Maprotiline (Ludiomil), Clomipramine (Anafranil) and Doxepin (Adapin), as well as many others.

Signs and symptoms of overdose include: altered mental status, seizures, anticholinergic toxicity (dry mouth, dilated pupils), widened QRS complex, arrhythmias, hypotension

TREATMENT

- Perform universal patient care.
- Obtain 12-lead ECG if symptomatic (tachycardia, hypotension, AMS)
- If possible, determine dosage of patient's exposure. Count pills remaining in container and compare to the number expected based on date container was filled and dose regimen.
- Contact poison control who can provide medical command for further treatment.
- If seizures present, refer to seizure guideline

A

- Establish IV access.
- For hypotension, administer 500 mL normal saline IV and repeat PRN. Monitor for signs/symptoms of fluid overload and stop infusion if any appear.

I

- If QRS >100ms, administer 1-2 mEq/kg sodium bicarbonate IV.
- For hypotension refractory to fluid administration and sodium bicarbonate, refer to Shock guideline
- [**Medical Command]:** If arrhythmias are refractory to sodium bicarbonate administration, contact medical command before utilizing amiodarone.

PEARLS

- Symptomatic treatment should be used in addition to sodium bicarbonate: benzodiazepines should be given for seizures, dextrose for hypoglycemia, and appropriate vasopressors for hypotension.

V.7: Sympathomimetic Overdose

RATIONALE

Sympathomimetics are chemicals that mimic, promote release of, or inhibit reuptake of sympathetic nervous system neurotransmitters like norepinephrine. Common illicit sympathomimetics include cocaine, methamphetamine, and MDMA (molly/ecstasy). Common prescription sympathomimetics include amphetamine (Adderall), methylphenidate (Ritalin/Concerta), and lisdexamfetamine (Vyvanse).

Signs and symptoms of overdose include: Mydriasis (dilated pupils), tachycardia, hypertension, hyperthermia, arrhythmia, chest pain, agitation, psychosis, and diaphoresis

TREATMENT

- Perform universal patient care.
- Obtain 12-lead ECG if symptomatic (tachycardia, chest pain, AMS)
- If possible, determine dosage of patient's exposure. Count pills remaining in container and compare to the number expected based on date container was filled and dose regimen.
- Contact poison control who can provide medical command for further treatment.
- If seizures present, refer to seizure guideline
- Obtain oral temperature if possible, if elevated, refer to Environmental Hyperthermia guideline

A

- Establish IV access.
- For hypotension, administer 500 mL normal saline IV and repeat PRN. Monitor for signs/symptoms of fluid overload and stop infusion if any appear.

I

- If severely symptomatic (tachycardia >150 bpm, significant hypertension [SBP > 180 mmHg]), administer 2.5-5 mg midazolam IV or 5 mg midazolam IM.

PEARLS

- As in environmental hyperthermia, patients with sympathomimetic toxicity who are hyperthermic should be cooled rapidly to a core temperature of 102℉
- Physical restraint should be avoided as much as possible in patients with sympathomimetic toxicity - muscle contractions against restraints have been implicated in lactic acidosis and electrolyte abnormalities that can lead to death
- Cocaine may induce coronary vasospasm and thrombus formation that can cause acute coronary syndrome - remain highly suspicious for ACS in patients with a history of cocaine use
- Sympathomimetic toxicity can cause flash pulmonary edema, for hypoxia/dyspnea, consider referencing cardiogenic pulmonary edema guideline and assess for B-lines on lung ultrasound

V.8: Alcohol Overdose

RATIONALE

Alcohol is an agonist at inhibitory GABA receptors within the CNS. First, this triggers a strong compensatory reaction resulting in the “buzz”/euphoria phase of alcohol intoxication. After that initial reaction, the receptors are still being blocked resulting in the “drunk” phase/CNS depression. Additionally, nerve-endings in the stomach recognize alcohol as a toxin and trigger vomiting.

Signs and symptoms of overdose include: AMS, Respiratory depression/arrest, Motor impairment, Nausea/vomiting, Smell of alcohol, Hypoglycemia

TREATMENT

- Perform universal patient care.
- Airway Control (Clearing secretions, Adjuncts)
- Monitor Respirations and intervene accordingly
- Oxygenation as indicated
- Glucose
- Pupils
- Consider Zofran (Ondansetron) 4 mg ODT, may be repeated once in 10 minutes if symptoms persist
- Supportive Care
  1. Emesis bag
  2. Positioning for airway maintenance

A

- Consider IV access.
- Consider 500 mL normal saline IV, repeated PRN to maximum of 2 L
  - Refer to Hypotension guideline as needed
- Consider ondansetron 4 mg IV/IM. May be repeated once in 10 mins if needed.

I

- Consider advanced airway management if indicated (e.g. with absent gag reflex and vomiting)

PEARLS

- Holding the patient’s airway open also makes it more likely for them to aspirate vomit. Position sitting upright or side-lying and suction aggressively.
- Patients fall frequently. Check for trauma, particularly head trauma, and check pupils.
- Patients can fluctuate rapidly between hyper-awake and unresponsive states. Monitor breathing closely using $EtCO_2$.
- Unconscious, wet patients lying on the ground are prone to hypothermia.
- Alcohol affects how patients process blood sugar. Check for hypoglycemia.
- Alcohol overdoses are so common that they tend to get down-triaged. If you have a patient that is sick, heavily emphasize concerning issues and consider not mentioning alcohol at all in the prehospital report.

V.9: Alcohol Withdrawal Syndrome

RATIONALE

Alcohol withdrawal syndrome is a common and potentially life-threatening illness encountered in the emergency setting. It can begin as early as 6 hours after the last drink and peaks around 48-72 hours after the last drink. Symptoms are related to increased activity of the CNS and include agitation, tremors, nausea, hallucinations, tachycardia, diaphoresis, which can progress to seizures and Delirium Tremens (DT), a life-threatening manifestation of this condition.

TREATMENT

- Perform universal patient care
- Obtain a thorough history if possible, emphasizing time since last drink, normal amount of alcohol consumption, duration of past alcohol consumption, and prior history of alcohol withdrawal syndrome
- Refer to Nausea/Vomiting or Seizure protocol if either are present
- Obtain blood glucose level
- Consider ANCHOR referral for patient as appropriate

A

- Consider IV access.
- Consider 500 mL normal saline IV, repeat PRN up to 2 L maximum.

I

- For agitation, severe tremors, or tachycardia (> 130 bpm), consider administering 2.5 mg midazolam IV or 5 mg midazolam IM. May repeat once after 5 minutes if symptoms persist.

PEARLS

- The CIWA score can be utilized to estimate severity of alcohol withdrawal symptoms. At minimum, it should be obtained prior to benzodiazepine administration as it will be useful for the ED to determine patient disposition

V.10: Envenomation

RATIONALE

Envenomation in the Charlottesville-Albemarle area is likely to be the result of either a bite from the *Crotalinae* (pit viper) family of snakes or from either *Latrodectus* (black widow) or, less commonly, *Loxosceles* (brown recluse) spiders.

- Pit viper venom is hemotoxic, and frequently causes severe tissue destruction around the site of the bite which can progress to compartment syndrome, followed by coagulopathy that may lead to shock.
- Widow spider venom is neurotoxic. Tissue damage around the site is usually mild, and signs/symptoms usually include muscle pain, spasms, and cramps.

TREATMENT

- Perform universal patient care
- Obtain a thorough history, emphasizing time of exposure, image of snake/spider if available, and symptoms.
- Encourage patient to remain calm
- Do not bring the suspected venomous organism to the emergency department or handle it, even if it is dead, as the bite reflex can remain intact and result in additional envenomation
- Contact poison control who can provide medical command for further treatment.
- Remove any rings, watches, and constricting clothing from affected area.

A

- Obtain IV access.
- If hypotensive, refer to shock guideline.

PEARLS

- Antivenoms exist for *Crotalidae* snakes and for *Latrodectus* spiders.
- Identification of venomous snakes may be difficult even for the trained eye. Strongly encourage any snakebite patient to be transported for evaluation
- “Pressure immobilization” or attempts to reduce venom spread by applying compression dressings to affected extremities are not recommended for crotalidae snake bites as these strategies may worsen local tissue damage caused by the venom

V.11: Near Drowning

RATIONALE

Drowning is asphyxiation resulting from submersion in a liquid that results in death. Near drowning describes the incident of potentially fatal submersion of liquid, which did not result in death within 24 hours of the incident.

TREATMENT

- Consider c-spine immobilization (prior to removal from water if possible - coordinate with water rescue if applicable)
- Administer oxygen to maintain SpO_2 > 90%.
- Assess breath sounds
- Place patient in position of comfort.
- Obtain patient temperature.
- Refer to hypothermia guideline if applicable

–

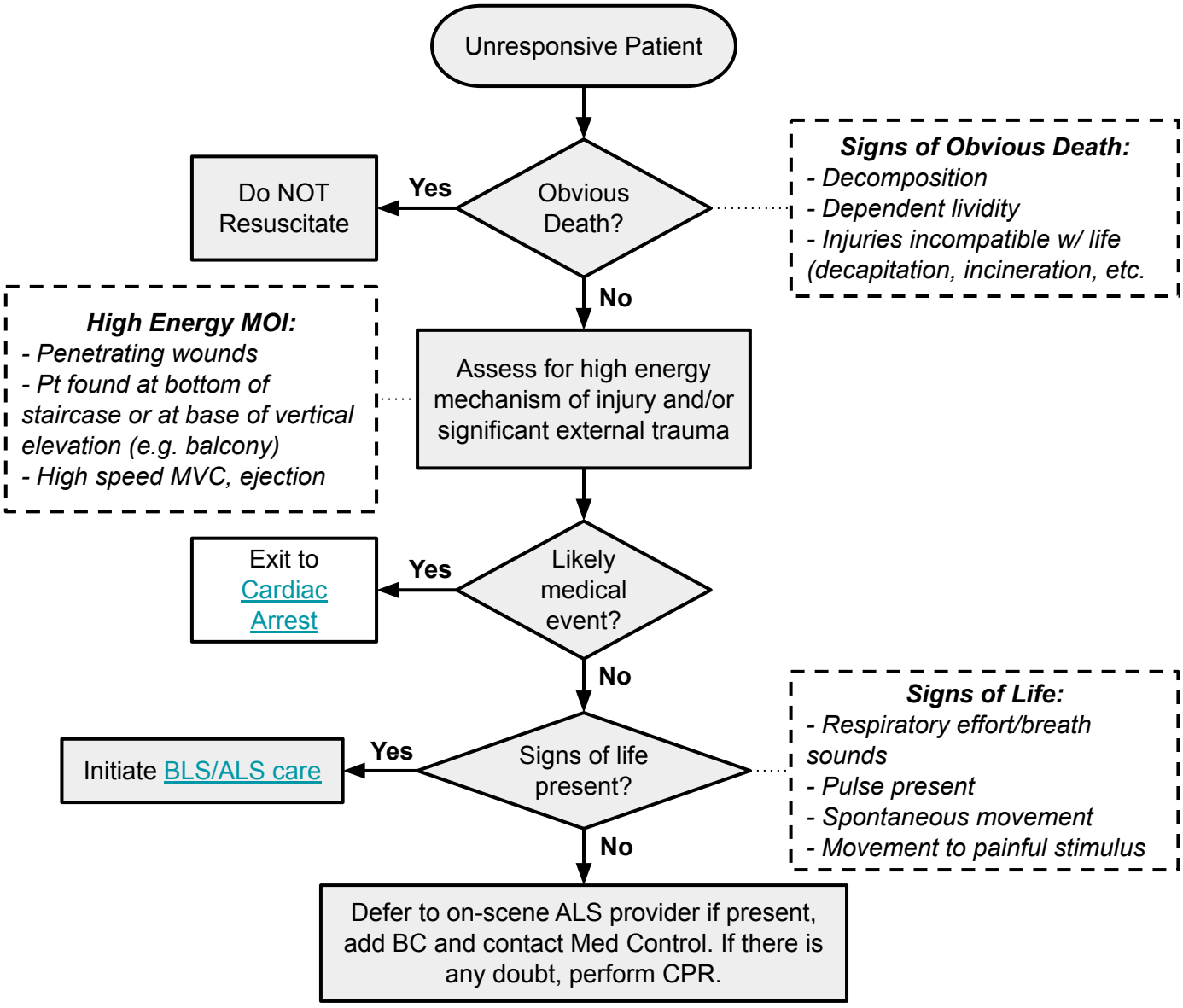
- Consider CPAP or more aggressive airway control if necessary, refer to CPAP guideline

PEARLS

- Submersion in water at any depth can result in drowning or near drowning.
- Do not attempt to rescue a victim who is still in water if conditions are hazardous and/or you are not equipped or trained to handle such events.
- Transport all near drowning patients to the hospital.
    - The aspiration of water compromises the integrity of pulmonary surfactant which can lead to atelectasis, alveolar collapse and pulmonary edema. Monitor for signs of cough, shortness of breath, tachypnea and adventitious breath sounds.

SECTION VI: TRAUMA

VI.1: Traumatic Cardiac Arrest: BLS

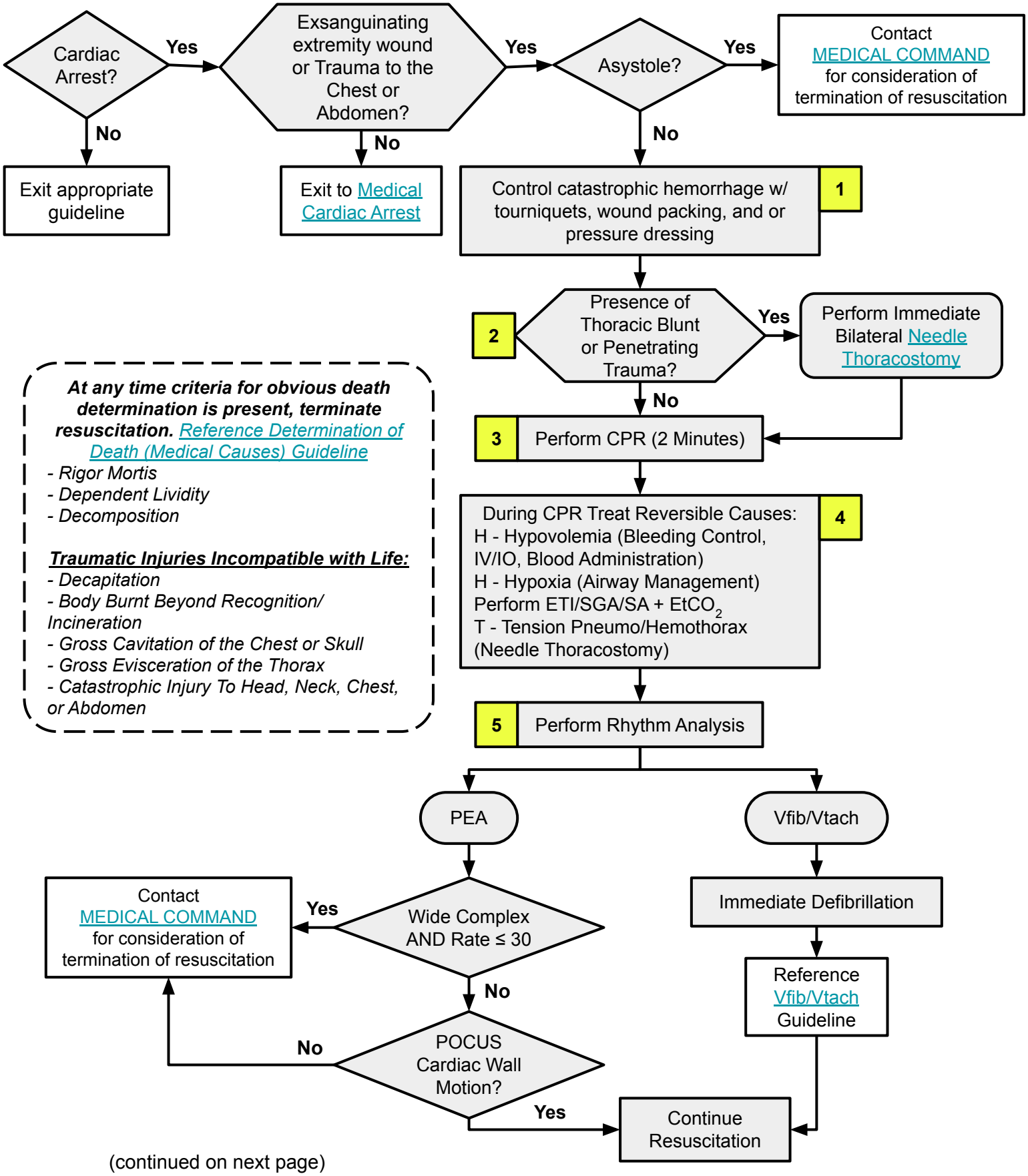


SPECIAL CONSIDERATIONS

- If blunt mechanism, consider spinal motion restriction.
- Secure simple airway (OPA or King).
- Control hemorrhage with tourniquet or pelvic binder.
- Apply direct pressure to bleeding wounds using pressure bandages.
- Consider need decompression.
- Initiate transport within 10 mins.

VI.1: Traumatic Cardiac Arrest : ALS

Rapid Transport is of utmost importance once you start working a traumatic arrest. If logistically feasible, initiate immediately following hemorrhage control. Nothing in the field will save these patients other than rapid transport.



At any time criteria for obvious death determination is present, terminate resuscitation. *Reference Determination of Death (Medical Causes) Guideline*

- *Rigor Mortis*
- *Dependent Lividity*
- *Decomposition*

Traumatic Injuries Incompatible with Life:

- *Decapitation*
- *Body Burnt Beyond Recognition/ Incineration*
- *Gross Cavitation of the Chest or Skull*
- *Gross Evisceration of the Thorax*
- *Catastrophic Injury To Head, Neck, Chest, or Abdomen*

(continued on next page)

VI.1: Traumatic Cardiac Arrest

6	Transport: Intra Resuscitative transport should be performed if trauma center available within 15 minutes. - Report Alpha Alert to receiving facility ASAP - Consider placement of mechanical CPR device at this time.

PEARLS	● Reassess Continuously ● Consider Spinal Immobilization (C-Collar) ● Repeat Needle Thoracostomy May Be Required ● If ROSC Achieved at any time reference Multisystem Trauma, Shock & Hypotension, and ROSC Guidelines ● Transport to a trauma center is the priority and is definitive care for ongoing and post resuscitation of traumatic arrest. ● Cardiac Arrest Dose Epinephrine is not recommended in Traumatic Arrest ● Trauma Patients who are witnessed to arrest while in EMS care are most likely to benefit from timely surgical intervention, consider rapid transport. ● IV/IO access should generally be obtained above the diaphragm for traumatic arrests.

VI.2: Amputation

RATIONALE

Traumatic amputations can be partial or complete. Common causes of a traumatic amputation are: machinery, hand-powered tools, household appliances, lawnmowers, crush injury, MVCs, blast injuries, gunshot wounds, knives, degloving injuries and animal bites.

TREATMENT

- For excessive bleeding, refer to Hemorrhage guideline
- As soon as possible, initiate rapid transport to UVA.
- If bleeding is minimal, gently irrigate site with normal saline to remove gross contaminants and apply appropriate dressing
- If it is a partial amputation, consider splinting limb or digit in anatomical position
- If complete amputation, wrap amputated body part in damp gauze and place in plastic bag. Place plastic bag on ice or in cooler with ice packs/cold packs if ice unavailable. Mark bag to indicate that it contains “BODY PARTS”
- Do not clean body part unless very grossly contaminated

A

- Normal saline
  - Adult - infuse crystalloid to maintain systolic BP > 90 mmHg
  - Pediatric - 20 mL/kg in the setting of hypoperfusion
- Ancef (Adult)
  - > 80 kg - 2 g in 100 mL D5W IV over 10 minutes
  - < 80 kg - 1 g in 100 mL D5W IV over 10 minutes
- For pain management, refer to pain management guideline

PEARLS

- Partial and complete amputations are generally treated the same from an EMS perspective.
  - Avoid ischemia time
  - After bleeding control and patient stabilization, cooling of the amputated part should be a priority
- Collect all body parts possible including bone, tissue and skin
- Partial amputations bleed more due to lack of retraction and spasm of blood vessels
- Avoid repeated exams of stump or amputated apart
  - Risk of dislodging clot

VI.3: Bleeding/Hemorrhage Control

RATIONALE

Uncontrolled hemorrhage is a leading cause of preventable death in trauma patients. Rapid identification and aggressive control of bleeding in the prehospital setting are critical to survival. EMS providers should prioritize early hemorrhage control using direct pressure, tourniquets, hemostatic dressings, and pressure bandages, along with rapid recognition of internal bleeding through mechanism of injury and patient presentation.

TREATMENT

- Attempt to control hemorrhage by direct pressure or wound packing with sterile gauze dressing, may use Celox for larger wounds or heavy bleeding
- If hemorrhage is not controlled after 2-5 minutes of direct pressure, or if a life-threatening hemorrhage is apparent, apply a Tourniquet
- If hemorrhage is not controlled by tourniquet, consider a second tourniquet proximal to the first tourniquet
- If bleeding not controlled on extremity wound or wound is not amenable to tourniquet placement (junctional, etc.), perform wound packing with Celox gauze
    - Hold pressure for minimum 3 minutes after Celox gauze is applied
    - If bleeding continues, attempt to further pack wound without removing Celox already in wound, then attempt a pressure wrap around the wound and continue applying direct pressure

A

- Consider establishing IV access
- Normal Saline
    - 20 mL/kg IV bolus; titrated to SBP > 90 mmHg
- TXA
    - Adult - 2 g TXA slow IV/IO push (too fast may cause hypotension)

PEARLS

- BLS hemorrhage control measures take extreme precedence over IV access or TXA administration - if bleeding is not controlled do not proceed to TXA administration until all feasible steps have been taken
- For internally packing wounds, ensure that a radiopaque stripe is present in the gauze used (currently only our Celox/hemostatic gauze has this)

VI.4: Burns

RATIONALE

Burns are tissue injuries caused by heat, chemicals, electricity, or radiation, classified by depth (superficial, partial-thickness, full-thickness).

- Superficial: Appears red and without blisters
- Partial-thickness: Painful and blisters are present
- Full-thickness: Burn extends to all layers and is not painful, skin can appear eschar or white
- Patients with 3rd degree burns will often have 1st/2nd degree burns around it.

TREATMENT

- Scene safety
- Remove clothing and jewelry unless fabric is melted and stuck to injured area
- Hypothermia prevention
- Cover in clean, dry sheets/blankets or mylar blanket.
- Cover head if possible especially with small children
- No ice or wet dressings as they can promote hypothermia
- Consider trauma mechanism
- **Chemical Burns**
  - Don appropriate PPE, brush away dry chemical, remove contaminated clothing
  - Eyes should be irrigated with copious fluids
  - Do not try to neutralize acids
  - Decontaminate before transport if possible
- **Electrical burns**
  - EKG
  - Take note of voltage if possible

A

- Fluid Resuscitation – If TBSA is > 20% with second or third degree burns, fluid should be administered as follows:
  - > 13 years - 500 mL NS an hour
  - 6 - 12 years - 250 mL NS an hour
  - Birth to 5 years - 125 mL NS an hour

(continued on next page)

VI.4: Burns

PEARLS	
	● Carbon monoxide is the most commonly inhaled poison with an affinity for hemoglobin 200x than Oxygen. Patients with suspected carbon monoxide poisoning should receive oxygen. ● Careful Airway assessment and monitoring ○ Monitor for stridor and changes in voice ○ Exposure to high ambient temperature, nasal hair singing and/or carbonaceous sputum, and exposure to elevated CO levels should increase index of suspicion for airway burns ○ Exposure to flame within an enclosed space is much more likely to result in airway burns ● Burn patients are at a great risk for hypothermia. Hypothermia puts these patients at risk for increased acidosis and coagulopathy. ● Early burn injuries alone do not cause shock, consider other life-threatening conditions or traumatic injuries ● Fluid Resuscitation: Over resuscitation of burns is common in the pre-hospital and early phases of care. This can lead to respiratory complications and increase capillary permeability which contributes to further fluid loss. ● Patient Care Goals: Expedient transport is the most important treatment for burn patients ○ Thermal - stop the burning process, maintain body temperature and protect the airway ○ Chemical - Avoid additional exposure and cross contamination ○ Electrical - Focus on ABCs, obtain EKG and beware of associated trauma ● **Evaluate children with burn injuries for suspected situations of abuse or neglect.**

VI.5: Chest Trauma

RATIONALE

Chest trauma can rapidly become life-threatening due to its potential impact on the airway, breathing, and circulation. Injuries may include rib fractures, flail chest, pneumothorax, hemothorax, cardiac tamponade, and great vessel injury, resulting from both blunt and penetrating mechanisms. Early recognition is critical, as patients may deteriorate quickly from respiratory compromise or hemorrhagic shock. Prehospital priorities include airway and oxygenation support, rapid identification of life-threatening injuries, appropriate decompression or sealing of open wounds, and prompt transport to a trauma-capable facility.

TREATMENT

- Consider Spinal Motion Restriction
- Control obvious external hemorrhage
- Assess for hypoxia and administer oxygen if hypoxic - maintain SpO_2 ≥ 92%
- Open chest wound - Apply three sided occlusive dressing or commercial chest seal if available
- Flail chest - Supportive measures
- Penetrating object/impalement - stabilize object - DO NOT REMOVE
- If patient meets trauma alert criteria, call in report as soon as possible

A

- If hypotensive, consider normal saline IV/IO up to 1 L maximum, titrating to MAP of 65 mmHg
- Consider TXA if significant traumatic hemorrhage is suspected
  - Adult: 2 g TXA slow IV/IO push (too fast may cause hypotension)
- Refer to pain management protocol

I

- Tension Pneumothorax
  - If a chest seal is in place, attempt “burping” the chest seal to relieve a pneumothorax if suspected.
  - If the patient is in respiratory distress with diminished breath sounds and hemodynamic instability, contact medical command for needle decompression
  - If a patient is in cardiac arrest and a tension pneumothorax is suspected, needle decompression can be performed via Standing Order

PEARLS

- Removal of an impaled object by Medical Command AND only for situations where a patient’s airway is otherwise unable to be managed.
- **Palpate during assessments.** Early presentations are subtle. Palpation of chest should occur with trauma examination. Tracheal deviation is often felt before it is seen. Subcutaneous emphysema (rice krispie feeling) is indicative of occult injury
- **Permissive hypotension.** Aggressive fluid administration can dilute blood and clotting factors which can interfere with clot formation, bleeding control and hemostasis
- Think about other pathologies in the setting of hypotension (obstructive shock)

VI.6: Crush Syndrome

RATIONALE

Rhabdomyolysis is the death of skeletal muscle and release the components of damaged muscle in circulation. In the setting of trauma, a crush injury/entrapment or prolonged immobility can result in the sudden release of these components. Upon re-perfusion, these products are potentially toxic and can cause hypotension, dysrhythmias and acute renal failure.

TREATMENT

- Ensure scene safety
- Consider Spinal Restriction of Motion
- Control obvious external hemorrhage
- Focused exam
  - Mechanism of Injury
  - Length of entrapment/time of injury
  - Estimation of length of extrication
- Keep patient warm
- 12-Lead ECG if practical

A

- Establish bilateral IVs and begin fluid administration
- Entrapment from 1-2 hours
  - Give NS bolus 20 ml/kg
- Entrapment from > 2 hours, immediately prior to release
  - NS 20 ml/kg
- For pain management - refer guideline
- For nausea/vomiting - refer guideline

I

- Entrapment from > 2 hours, immediately prior to release
  - Sodium Bicarbonate 8.4% - 1 mEq/kg IV over 5 minutes
  - Calcium gluconate 20 mg/kg in 100 ml D5W over 10 minutes
- Albuterol 7.5 mg nebulized (EMT can administer at I/P direction)

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VI.6: Crush Syndrome

PEARLS

- Be vigilant for hypotension
- Apply cardiac monitoring prior to restoring circulation to affected area
    - Life-threatening dysrhythmias develop as toxin load increases. Hyperkalemia and hypocalcemia associated with crush injuries can result in dysrhythmias. Be vigilant for tall-peaked T waves and a lengthened PR interval. As hyperkalemia progresses, a loss of P waves and widening of QRS can occur which is a precursor for asystole.
- Fluids
    - Entrapped patients need significant amounts of fluid, administer 20 mL/kg as a bolus. Fluids help flush out toxins, improves hypotension and corrects acidosis.
- Hyperkalemia treatment - Albuterol, Sodium Bicarbonate, Calcium Chloride
    - **Albuterol** promotes the movement of potassium into the cell
    - **Sodium bicarbonate** decreases acidemia by alkalinizing the urine
    - **Calcium gluconate** aids in correcting hypocalcemia, administer if a wide QRS is noted, no P waves or V-tach or V-fib is noted.
- Flush the IV line between Sodium Bicarbonate and Calcium Chloride (minimum 20 ml normal saline flush)

VI.7: Evisceration

RATIONALE

An **abdominal evisceration** is when the organs protrude out of a wound. The intestines, liver, spleen and stomach are commonly involved in eviscerations. These injuries carry a high risk of infection, hemorrhage, and further organ damage. EMS priorities include protecting organs from contamination and desiccation with expedited transport to a trauma center.

TREATMENT

- Control life-threatening hemorrhage
- Consider spinal restriction of motion
- Focused exam to include:
  - Mechanism of Injury
  - Visualization of injury site
  - Onset of injury
- Do not attempt to place organs back in abdominal cavity
- Cover exposed organs with moist sterile dressing and cover with dry occlusive dressing

A

- Suspected significant internal hemorrhage
  - Adult:
    - 2 g TXA slow IV/IO push (too fast may cause hypotension)
- Consider cefazolin:
  - Adult: > 80kg - 2 g IV/IM, < 80 kg - 1 g IV/IM
- Refer to pain management guideline
- Refer to nausea/vomiting guideline

PEARLS

- Avoid tunnel vision
  - Eviscerations have the potential to be distracting and emotionally challenging to bystanders and providers. Do not let the finding of an evisceration distract one from performing a rapid trauma examination.
- Ensure the dressing is a moist, sterile dressing (4x4 or trauma dressing).
  - In addition to bleeding, infection and sepsis are complications that can result in high mortality.
- Ensure the dressing is occlusive over the abdominal organs
  - An occlusive dressing helps maintain a moist environment for visceral contents.
  - Saran wrap, a ziploc bag or the plastic portion of the trauma dressing can be used
- Do not let the patient exert themselves
- Transport ASAP
  - Abdominal eviscerations require surgical intervention.

VI.8: Extremity Injury

RATIONALE

Fractures to the bone can occur because of impact forces or from a repetitive stressor. Less commonly, medical conditions such as bone cancer, osteoporosis and osteogenesis imperfecta can weaken bone structure to the point that minimal forces can cause a fracture. Along with the activation of pain receptors surrounding the bone, edema of surrounding tissues and muscle spasms contribute to a patient's pain level.

Pre-hospital focus should be on classification of the fracture as open/closed and displaced/non- displaced, appropriate stabilization, fracture specific interventions and pain control. Fracture reduction should only be attempted when vascular compromise is suspected.

TREATMENT

- Focused exam to include:
  - Mechanism of Injury
  - PMS of affected extremity & compare to unaffected extremity
  - Expose area if needed and assess for bleeding
- Immobilize/splint injured extremity
  - If fracture or dislocation is open - do not attempt to reduce and cover with sterile moist dressing prior to immobilization
  - If fracture or dislocation is closed and distally pulseless, attempt to place extremity in anatomical position one time prior to immobilization
  - If fracture or dislocation is angulated and pulse is present, immobilize in position found

A

- If fracture or dislocation is open, or extensive soft tissue injury:
  - Ancef
    - Adult: > 80kg - 2 g IV/IM, < 80 kg - 1 g IV/IM
- For pain management - refer to pain management guideline

PEARLS

- Splint joints in position of comfort. Injuries near a joint carry a high incidence of blood vessel and nerve damage. As long as distal perfusion is present, splint in the position of comfort on both sides of the joint.
- Monitor for hemorrhagic shock. Femoral fractures can bleed up to one liter of blood into the area of the thigh before being noticeable to a providers exam. Additionally, if the mechanism of injury is present, a fracture can be considered a distracting injury.
- Notify Emergency Department staff of probable Clostridial Exposure, if present.
  - Found in soil, animal excrement etc. Clostridium is a bacterium class that causes tetanus, botulism, C-Diff as well as infections that cause gas gangrene. For example, it would be especially important notify providers that the injury involved farm equipment.

VI.9: Multi-System Trauma

RATIONALE	**Multi-system trauma** involves injuries to two or more major body systems and is a leading cause of preventable death in trauma patients. These patients often present with complex, rapidly evolving conditions where timely recognition and intervention are critical. In the prehospital setting, care priorities include rapid assessment, aggressive airway and hemorrhage management, early recognition of shock, and swift transport to an appropriate trauma center.

TREATMENT		• Notify UVA of a patient meeting Trauma Alert Criteria as soon as possible
		• Multi-system trauma patients should be treated with the following goals in mind outlined below:
		  ○ Control hemorrhage
		  ○ Management of Airway and Breathing
		  ○ Management of shock
		  ○ Treatment of specific traumatic injuries
		• If blunt trauma to pelvic region with tenderness to palpation and hypotension, place pelvic binder if commercial device available
		• Adequate spinal restriction of motion
		• Keep patient warm

	A	• Establish IV access
		• Normal Saline up to 1 L; titrated to maintain MAP of 65 mmHg
		• Permissive hypotension is acceptable
		• Suspected significant traumatic hemorrhage:
		  ○ Adult - 2g TXA slow IV/IO push (too fast may cause hypotension)
		• If patient has a suspected open extremity fracture, extensive soft tissue injuries, or penetrating abdominal trauma:
		  ○ Ancef (Adult)
		  ■ ≥ 80 kg (175 lb): 2 g IV piggyback in 100 mL D5W
		  ■ ≤ 80 kg (175 lb): 1 g IV piggyback in 100 mL D5W
		• Refer to pain management

	I	• Consider needle decompression IF patient shows signs/symptoms of tension physiology (contact Medical Control)

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VI.9: Multi-System Trauma

PEARLS	
	● Keep scene time to a minimum and notify UVA ED early ○ Limit on-scene measures to initial and rapid trauma assessment, correcting immediate life threats and appropriate immobilization ○ Early notification to the ER, even brief is beneficial and can be supplemented with a more thorough report during transport ○ UVA recommends a trauma alert notification time of 15 minutes ● Hypothermia worsens coagulopathy and should be avoided by utilizing passive and active warming techniques. ● Exercise caution with permissive hypotension ○ Consider factors such as baseline BP, age, medical history and possible head injury. The goal is to avoid hypoxia and shock. ● In the beta alert criteria, shock index is part of the criteria. Shock index is a way to evaluate the severity of shock a patient is in by utilizing heart rate and systolic blood pressure (HR/Systolic BP) ○ A shock index > 1 is associated with significant hypovolemia and increased mortality

VI.10: Pelvic/Hip Injury

RATIONALE

Pelvic and hip injuries can be life-threatening due to the potential for massive internal hemorrhage and associated organ damage. They often result from high-energy mechanisms such as motor vehicle collisions, falls from height, or crush injuries, but can also occur in elderly patients from low-energy falls. Early recognition, gentle handling, and rapid stabilization are critical to reduce pain, prevent further injury, and minimize hemorrhage.

TREATMENT

- If patient meets trauma alert criteria, notify UVA as soon as practical
- Focused exam to include:
  - Mechanism of Injury
  - Assess pelvic area for stability
  - Pulse/movement/sensation of extremity distal to injury
  - Rotation or shortening of extremity distal to injury
- Immobilize/Splint
  - Suspected hip dislocation - position of comfort with padding under hip and affected leg

A

- For pain management - refer to guideline
- For management of nausea/vomiting - refer to guideline

PEARLS

- The pelvis is anatomically associated with a number of vascular structures. A pelvic fracture can disrupt an artery or vein that can result in significant hemorrhage.
- A pelvic binder, either commercial or sheet should be utilized for suspected pelvic fractures that manifest as tenderness to palpation of pelvis with hypotension

VI.11: Sexual Assault

RATIONALE

Sexual assault is a medical emergency and a traumatic event that can have profound physical, emotional, and psychological impacts. EMS providers play a critical role in ensuring the patient's immediate safety, addressing urgent medical needs, and preserving potential forensic evidence. Care should be compassionate, nonjudgmental, and patient-centered, with a focus on providing emotional support, respecting privacy, and minimizing further trauma. Prompt transport to an appropriate facility with sexual assault nurse examiner (SANE) resources is essential for comprehensive medical and forensic care.

TREATMENT

- Confirm scene safety
- Do not examine genitalia unless a hemorrhage requires bleeding control
- Save any clothing in a paper bag
- Advise patient to not urinate, defecate, douche or wash before evaluation at the Emergency Department
- Transport to a facility with SANE capabilities (Sexual Assault Nurse Examiner)
    - UVA has a SANE on call 24/7
    - Ask for one in the radio report so UVA ED can page the on-call SANE

PEARLS

- The EMS report can be subpoenaed in court, accurate documentation is paramount. Utilize the patient's language and put quotes in narrative.
- Ask only pertinent questions to not overload them when sharing their story.
- Encourage transport to the hospital although patients may not wish to be evaluated immediately.
    - Even if patients do not have acute injuries, explain to them the importance of having medical evidence for their case. Law enforcement can be a tool to better explain to patients why transport can be used to support their case.
- Ask questions in a non-judgmental, non-threatening way.
- Talk the patient through assessments and interventions. Allow the patient to have as much decision making in care as possible (ask which arm for BP cuff, etc)

SECTION VII:
OB-GYN

VII.1: Complicated Childbirth

Breech birth	● Position the mother with hips elevated ● Contact medical control and consider requesting NETS assistance ● Initiate rapid transport upon recognition of breech presentation. ● Notes: ○ Never pull hard.If the delivery is not progressing just do your best to keep any body part elevated off the cord. ○ Only do maneuvers while the mother is pushing with contractions. If she is not contracting, she does not need to push, just hold position and wait for the next contraction. Do not try to pull on the baby while she is not contracting/pushing.
Limb presentation	● Place mother in knee-chest position ● Do not touch the presenting extremity, pull limb or place back into birth canal ● Do not place gloved hand into vagina unless there is an associated prolapsed cord
Prolapsed cord	● Place mother in either a knee-chest position or in a supine position with hips elevated on a pillow ● Use a gloved hand, gently raise the presenting part off of the cord to restore blood flow ● Do not push cord back and do not attempt delivery ● Cover exposed cord with a moist gauze ● Gently palpate cord for pulse without compressing it
Nuchal cord	● Gently work finger under the cord ● Pull with a slow, steady pressure on maternal end if visible ● Unwrap from the neck when enough slack obtained ○ If unable to lift over the infant's head, clamp and CAREFULLY cut cord ○ Proceed with normal delivery
Gross meconium	● Wipe face clear ● Carefully suction mouth then nose prior to stimulation

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VII.1: Complicated Childbirth

Shoulder Dystocia	• Once the head delivers, assess for presence of nuchal cord • If the anterior shoulder does not deliver, apply GENTLE downward traction on the infant's head • Place mother in the McRoberts position (Figure 1) • If the McRoberts position fails, have an assistant apply downward suprapubic pressure to drive the fetal shoulder under the pubic bone. • If this doesn't work, have the mother roll over onto all fours. Apply gentle traction downard in an attempt to deliver the posterior shoulder. • If the delivery does not progress, transport immediately with the mother in the left lateral recumbent position

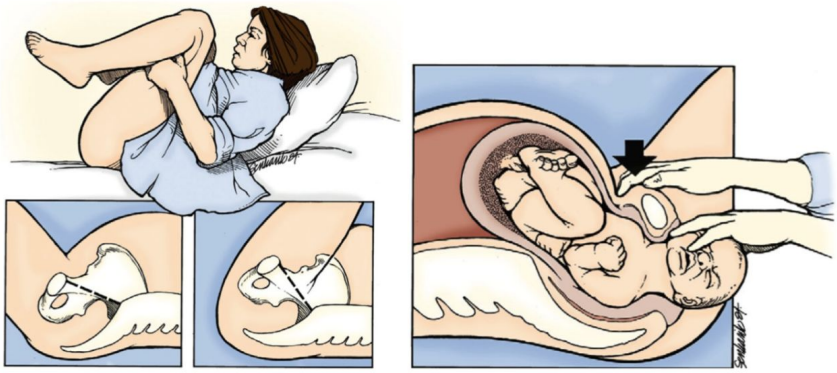

Figure 1. The McRoberts maneuver and suprapubic pressure. (A) The McRoberts maneuver causes cephalic rotation of the pubic symphysis, reduces lumbar lordosis, and may facilitate disimpaction of the anterior fetal shoulder. (B) Suprapubic pressure in the posterior direction may allow the anterior shoulder to move under the pubic symphysis. Reprinted with permission from Lew GH, Pulia MS. Emergency Childbirth. In: Roberts J, editor. Roberts Hedges Clinical Procedures in Emergency Medicine. Philadelphia: Elsevier; 2013:1170.

PEARLS	• Consider additional resources ○ When treating a complicated childbirth, you can potentially have two sick patients. Having additional resources is important, locally we have the Newborn Emergency Transport System (NETS) that can be added.

VII.2: Uncomplicated Childbirth

RATIONALE

Most **childbirths** are uncomplicated and when progressing normally, can require little pre-hospital intervention. During the birthing process, the major role of pre-hospital personnel is to monitor the birth, assist using basic techniques, evaluate for possible complications, perform newborn/maternal assessments and interventions as necessary. Of vital importance is the ability of the provider to recognize complications and intervene accordingly.

TREATMENT

1. Wear sterile gloves
2. Tell patient to push only when contractions come and tell her to relax between contractions
3. Use towel to pinch very bottom of vagina shut to prevent the perineum from tearing
4. Use palm of other hand to apply gentle downward pressure on baby's head to prevent explosive delivery
5. When a lot of baby's head is clear (up to ear-ish, whenever you have some wiggle room) use two fingers to feel around baby's neck to see if the umbilical cord is wrapped around. If it is, pull it over baby's head. If it is difficult, then leave it and unwrap it after delivery.
6. When baby's head is clear and shoulders are not visible (Don't suction until after delivery). Baby's head will rotate and should face sideways at this point.
7. Put palms on either side of baby's head (over the ears) and put a little bit downward pressure in order to deliver the anterior shoulder, then as baby starts to come out, gently pull up to deliver posterior shoulder. Baby should rapidly deliver at this point. Do not drop the baby, it will be slippery.
8. Once baby is out, assess airway, use bulb suction only if necessary to clear mouth, then nose.
9. Rub baby's chest and back vigorously between your hands in a towel (like starting a fire)
10. Assess ABCs and initiate resuscitation if needed (be ready for this eventuality)
11. Place baby skin to skin on mom and continue to dry (must keep warm)
    a. Use the baby hat in PALS kit
12. Use both clamps to clamp the umbilical cord about a foot away from the baby (there is no immediate rush, it often takes 1-3 minutes for cord to stop pulsing)
13. Cut cord with scissors in OB kit
14. Don't worry about placenta unless it delivers spontaneously or there is heavy vaginal bleeding.
15. Assess APGAR (Table 1) at 1 and 5 minutes
16. Continue to assess mother and newborn
    a. Assess blood glucose for the newborn using heel-stick, hypoglycemia is defined as <40g/dL for a newborn
    b. Monitor vitals on the mother and watch for postpartum hemorrhage

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VII.2: Uncomplicated Childbirth

PEARLS

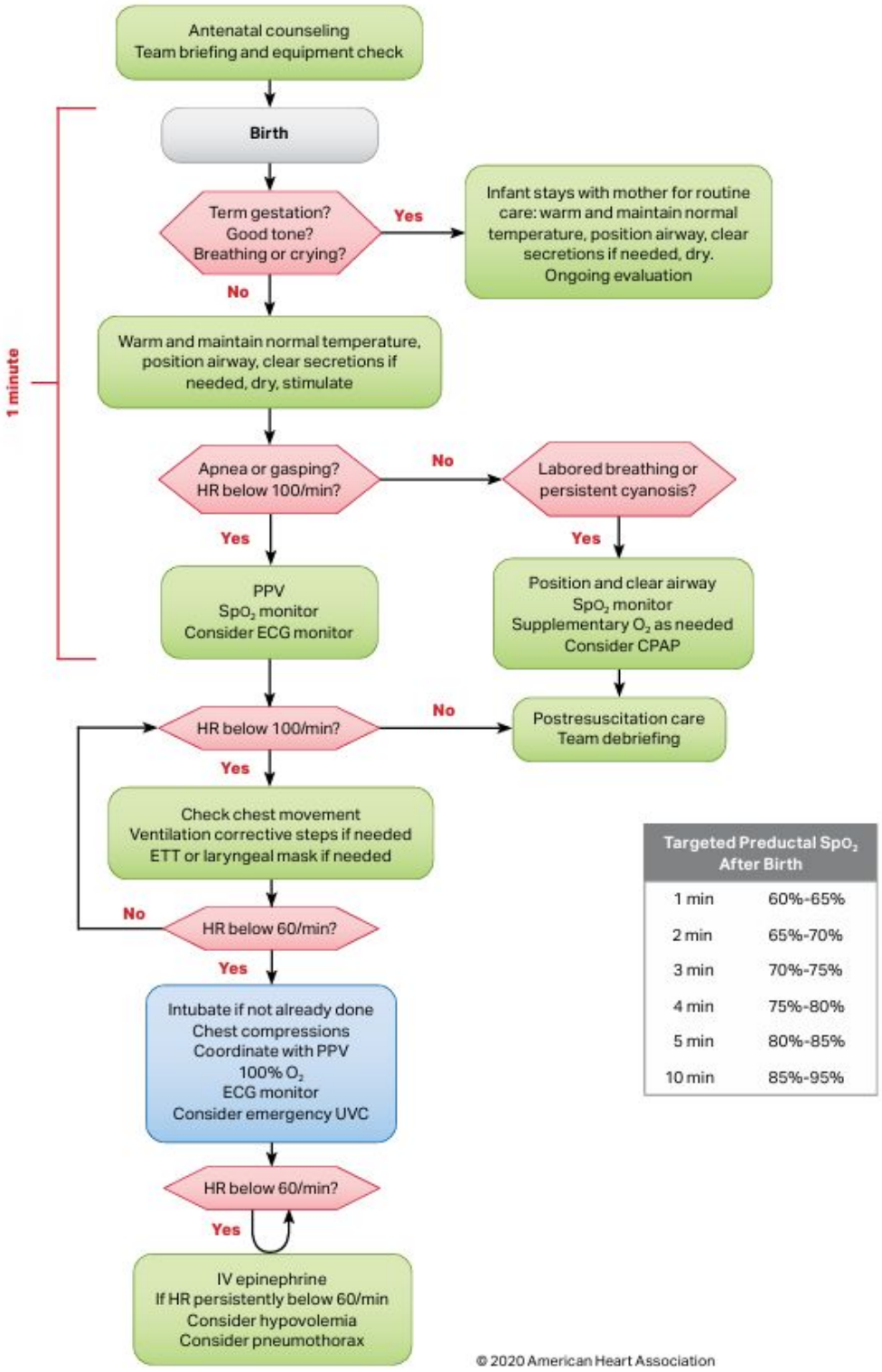
- Prevent heat loss
  - The most common complication of pre-hospital deliveries is neonatal hypothermia. It is important for providers to prevent heat loss which can cause the following:
    - Bradycardia, hypoxia, respiratory distress/apnea, hypoglycemia, seizures and acidosis
  - Always place a hat on the newborn
  - Skin to skin is ideal but Transwarmer can also be utilized to maintain normothermia.
  - The ambulance should be HOT to mimic the mother's normal body temperature.

Table 1. APGAR Chart

Sign	Score		
	0	1	2
Heart rate	Absent	< 100	> 100
Respiratory effort	Absent	Irregular or gasping	Good crying
Muscle tone	Flaccid	Partial flexion of extremities	Complete flexion or Active movements
Reflex response	No response	Grimace	Cry
Color	Blue (central cyanosis) or Pale	Body pink but extremities blue (peripheral cyanosis)	Completely pink

VII.3: Neonatal Resuscitation

Neonatal Resuscitation Algorithm



Targeted Preductal SpO_2 After Birth	
1 min	60%-65%
2 min	65%-70%
3 min	70%-75%
4 min	75%-80%
5 min	80%-85%
10 min	85%-95%

VII.3: Neonatal Resuscitation

RATIONALE

Neonatal resuscitation is critical because newborns can rapidly deteriorate due to airway obstruction, ineffective breathing, or poor circulation at birth. For EMS providers, timely interventions, such as warming, airway positioning, stimulation, assisted ventilation, and chest compressions when indicated, are essential to support transition to extrauterine life and improve survival outcomes.

TREATMENT

- Prehospital guidelines should be to identify high-risk situations, maintain respiratory/circulatory status, and prevent heat loss and follow the NRP guidelines
- Thermoregulation
  - Transwarmer, saran wrap or ziploc bag for preemies, hat on head
  - Skin to skin

A

- Consider T-piece resuscitator use for CPAP or ventilation as needed
- Hypoglycemia
  - D10 - 2 mL/kg IV, administer 1 mL a minute
- Hypotension
  - 10 mL/kg normal saline, gradually administer over 5-10 minutes
- Epinephrine 0.1 mg/mL
  - 0.02 mg/kg IV rapid IVP (0.2 mL/kg)

PEARLS

- EZ-IO driver is only permitted for use in patients > 5kg
- Transport to UVA
  - MJH does not have NICU capabilities, these patients should be transported to UVA.

VII.4: Postpartum Hemorrhage

RATIONALE

Postpartum hemorrhage (PPH) is excessive bleeding after birth that occurs usually within the first 24 hours. A blood loss of greater than 1000 mL constitutes as postpartum hemorrhage.

Four Ts of postpartum hemorrhage:

- Uterine atony - soft or weak uterus after delivery
- Uterine trauma - can result from trauma to vagina, cervis, perineum or uterus.
- Retained placental tissue - this can happen when the placenta doesn't fully evacuate from the uterus
- Blood clotting condition - coagulation disorders of the mother can increase this risk

TREATMENT

- Apply direct pressure to visible hemorrhaging lacerations
- Perform fundal massage
- Encourage nursing of the newborn if newborn is stable
- Focused assessment:
  - Obtain estimated blood loss through numerics or pad count

A

- Establish IV access
- Refer to hypotension protocol (if applicable)
- Consider administration within three hours of birth if PPH is present:
  - Adult - 1g TXA **slow** IV/IO push (too fast may cause hypotension)

PEARLS

- Breastfeeding stimulates the release of Oxytocin which can help increase uterine tone.

VII.5 Eclampsia

RATIONALE

Pre-eclampsia is defined by hypertension (SBP > 140 or DBP > 90 mmHg), proteinuria, and edema of extremities and face after the 20th week of pregnancy. Other signs and symptoms include visual disturbances, epigastric pain, and headaches.The risk of pre-eclampsia/eclampsia can occur up to 6 weeks postpartum.

Eclampsia is a severe complication of pre-eclampsia that manifests as seizures.

TREATMENT

- Ensure the safety of the patient regarding seizure care & address ABC concerns
- Position the patient on the left side to optimize blood flow and reduce risk of aspiration
- Assess blood glucose
- Transport promptly to the hospital

A

- Establish IV access

I

- Administer Magnesium Sulfate
  - 4 g IV/IO in 100 mL D5W (wide open)
- If seizures continue following magnesium sulfate administration, or if IV/IO access cannot be obtained for magnesium sulfate administration, refer to Adult Seizure guideline and treat with benzodiazepines.

PEARLS

- HELLP
  - A rare syndrome that can occur during late pregnancy and postpartum. HELLP manifests as **H**emolysis, **E**levated **l**iver enzymes, **l**ow **p**latelet count.
  - Symptoms of HELLP include right upper quadrant/epigastric pain, nausea/vomiting, and severe malaise
- Be mindful of magnesium toxicity. Monitor for arrhythmias, flushed skin, double vision, and respiratory depression. If toxicity is suspected, contact medical command for possible calcium administration

VII.6 Spontaneous Abortion/Miscarriage

RATIONALE

Unintentional pregnancy loss prior to 20 weeks of gestational age is termed a '**spontaneous abortion' or miscarriage.** In these cases, the fetus is incapable of surviving outside of utero even with resuscitation procedures. These cases are often incredibly emotionally difficult for the mother and require compassionate care in addition to thorough assessment.

TREATMENT

- Emotional support and care
- Collect fetal tissue if possible for examination at the hospital
- Encourage transport to the hospital

A

- Establish IV access
- Follow hypotension guidelines

PEARLS

- For the patient, this is considered an emergency. Provide reassurance and transport to the hospital
- Utilize language preferred by the patient, if the patient refers to pregnancy as a "baby," use that language.
- Try not to minimize the loss.
- Consider allowing the mother to hold the baby - this has been shown to improve grief outcomes

SECTION VIII:
PEDIATRIC CARDIAC

VIII.1 Pediatric Cardiac Arrest: BLS/General Management

RATIONALE

This protocol should be applied to patients older than 1 month (before then use Neonatal Resuscitation guideline). Patients who demonstrate secondary sex characteristics (breast development in females, armpit hair in males) should be treated under the adult guidelines.

Rapid recognition and immediate initiation of high-quality CPR are critical to improving survival in **pediatric cardiac arrest**. Unlike adults, most pediatric arrests are secondary to respiratory failure; therefore, emphasis is placed on effective ventilations in addition to chest compressions.

TREATMENT

- Initiate high-quality chest compressions and ventilation w/ 15 lpm oxygen flow; utilize a 15:2 compression-ventilation ratio.
- Refer to airway management guideline
- Apply pediatric AED pads. Ensure pads do not touch, and consider anterior-posterior placement.
- Analyze rhythm every 2 minutes, deliver shocks as recommended by AED.
- Maintain patient warmth using blankets and drying patient as necessary
- Request ALS promptly for assistance

A

- Obtain IV/IO access (distal femur is preferred site for pediatric IO placement)
- Administer 0.01 mg/kg epinephrine 0.1mg/mL IV/IO every 3-5 minutes.
- Consider supraglottic airway placement.
- Consider 20 ml/kg normal saline IV/IO for suspected hypovolemia.

I

- Analyze rhythm. Refer to Pediatric VF/pulseless VT or Pediatric PEA/Asystole guideline.

PEARLS

- Family presence during resuscitation has been shown to improve outcomes in grief and coping with loss and should be permitted when safe and logistically feasible. If resources allow, attempt to dedicate one provider to speaking with family and answering questions.
- Early intra-arrest transport (“scoop-and-run”) is associated with worse outcomes in both pediatric and adult out-of-hospital cardiac arrest. In non-traumatic arrests, in the absence of ROSC, initiate transport after performing several rounds of high-quality CPR.

VIII.2 ALS: Pediatric VF/Pulseless Ventricular Tachycardia

RATIONALE

This protocol should be applied to patients older than 1 month (before then use Neonatal Resuscitation guideline). Patients who demonstrate secondary sex characteristics (breast development in females, armpit hair in males) should be treated under the adult guidelines.

Rapid recognition and immediate initiation of high-quality CPR are critical to improving survival in pediatric cardiac arrest. Unlike adults, most pediatric arrests are secondary to respiratory failure; therefore, emphasis is placed on effective ventilations in addition to chest compressions.

TREATMENT

- Ensure steps in Pediatric Cardiac Arrest: BLS/General management protocol are ongoing, including IV/IO access and epinephrine administration
- Every 2 minutes, perform a rhythm check, if rhythm is VF/pulseless VT, defibrillate at escalating energy: 2 J/kg → 4 J/kg → 6 J/kg → 8 J/kg → 10 J/kg
- If patient is refractory to 3 or more defibrillation attempts, administer 5 mg/kg amiodarone by IV/IO push.

PEARLS

- In children, as in adults, in shockable rhythms minimizing time to defibrillation is the most important intervention
- Utilize length-based resuscitation tape to estimate weight for height if patient weight is unknown

VIII.3 ALS: Pediatric PEA/Asystole

RATIONALE

This protocol should be applied to patients older than 1 month (before then use Neonatal Resuscitation guideline). Patients who demonstrate secondary sex characteristics (breast development in females, armpit hair in males) should be treated under the adult guidelines.

Rapid recognition and immediate initiation of high-quality CPR are critical to improving survival in pediatric cardiac arrest. Unlike adults, most pediatric arrests are secondary to respiratory failure; therefore, emphasis is placed on effective ventilations in addition to chest compressions.

TREATMENT – I

- Ensure steps in Pediatric Cardiac Arrest: BLS/General management protocol are ongoing, including IV/IO access and epinephrine administration
- Every 2 minutes, perform a rhythm check; if shockable, defibrillate and refer to ALS: Pediatric VF/pulseless ventricular tachycardia guideline
- If arrest unwitnessed and patient is in persistent asystole after minimum of 20 minutes of resuscitation, consider contacting medical command for termination of resuscitation.

PEARLS

- Search for and treat reversible causes. If pharmaceutical treatment required for suspected reversible cause, contact medical command.
- Utilize length-based resuscitation tape to estimate weight for height if patient weight is unknown
- In traumatic cardiac arrest, rapid transport to a level 1 trauma center should be performed during resuscitation.

VIII.4 Pediatric Bradycardia

RATIONALE

This protocol should be applied to patients older than 1 month (before then use Neonatal Resuscitation guideline). Patients who demonstrate secondary sex characteristics (breast development in females, armpit hair in males) should be treated under the adult guidelines.

Bradycardia in children is most often secondary to hypoxia, acidosis, or other reversible causes rather than primary conduction disease. Because cardiac output in pediatrics is highly rate-dependent, clinically significant bradycardia can rapidly progress to cardiac arrest if not promptly addressed. Early recognition, ensuring airway patency, providing effective oxygenation and ventilation, and identifying underlying causes are the cornerstones of management.

TREATMENT

- Carefully assess and manage patient's airway and oxygenation - hypoxia is the leading cause of pediatric bradycardia
- If heart rate is less than 60, perform CPR and refer to Pediatric Cardiac Arrest: BLS/General Management guideline

A

- Obtain IV/IO access (distal femur is preferred site for pediatric IO placement)

–

- Administer 0.01 mg/kg epinephrine 0.1 mg/mL IV/IO. Repeat every 3-5 minutes as needed.
- If bradycardia is refractory to epinephrine or suspected to be due to vagal tone, administer 0.02 mg/kg atropine IV/IO.

PEARLS

- Transcutaneous pacing is a last resort measure in pediatric bradycardia - contact medical control if patient is refractory to all above interventions.
- Obtain a thorough history to assess for possible toxicological causes
- Utilize length-based resuscitation tape to estimate weight for height if patient weight is unknown

VIII.5 Pediatric Supraventricular Tachycardia

RATIONALE

This protocol should be applied to patients under age 14 who do not exhibit secondary sex characteristics. Patients who demonstrate secondary sex characteristics (breast development in females, armpit hair in males) should be treated under the adult guidelines.

Narrow-complex tachycardias in children are most often supraventricular in origin and can present with a wide spectrum of symptoms, from palpitations and irritability to shock. Unlike sinus tachycardia, **SVT** is typically characterized by an abrupt onset and very high rates that are not physiologic for the child's age. Because sustained SVT can impair cardiac output and lead to decompensation, rapid recognition and differentiation from sinus tachycardia are critical.

TREATMENT

- Universal patient care
- Consider requesting ALS for heart rates inappropriately elevated for age

A

- Obtain IV/IO access (distal femur is preferred site for pediatric IO placement)
- Consider 20 ml/kg normal saline IV/IO for tachycardia

I

- Obtain 12-lead ECG
- Consider vagal maneuvers if patient is able to cooperate
- **For stable patients with suspected AVNRT or AVRT (narrow QRS, no P-waves, regular, HR > 180 in children or > 220 in infants):** Administer 0.1 mg/kg adenosine via rapid IV/IO push. If repeat required, contact medical command.
- **For unstable patients with suspected SVT, contact medical command for synchronized cardioversion. Dosing:** 1 J/kg → 2 J/kg → 3 J/kg → 4 J/kg

PEARLS

- Pediatric sinus tachycardia can be at rates much faster than adults. Sinus tachycardia is managed by treating underlying causes (hypovolemia, hypoxia, sepsis, toxicological) rather than with adenosine/cardioversion.

VIII.6 Pediatric Wide-Complex Tachycardia

RATIONALE

This protocol should be applied to patients under age 14 who do not exhibit secondary sex characteristics. Patients who demonstrate secondary sex characteristics (breast development in females, armpit hair in males) should be treated under the adult guidelines.

Wide-complex tachycardias in children are rare and can be caused by VT, SVT with aberrant conduction, electrolyte abnormalities, or toxicological causes. As with any cause of hemodynamic instability in pediatric patients, decompensation can occur very rapidly, thus patients must be closely monitored with appropriate intervention.

TREATMENT

- Universal patient care
- Consider requesting ALS for heart rates inappropriately elevated for age

A

- Obtain IV/IO access (distal femur is preferred site for pediatric IO placement)
- Consider 20 ml/kg normal saline IV/IO for tachycardia

I

- Obtain 12-lead ECG
- If stable but symptomatic, administer 5 mg/kg amiodarone IV (max 150mg) over 10 minutes. If repeat is required, contact medical command.
- If unstable, contact medical command for synchronized cardioversion. Dose: 1 J/kg -> 2 J/kg -> 3 J/kg -> 4 J/kg

PEARLS

- Obtain a thorough history - particularly determine if there is a history of congenital heart disease, any possibility of toxicological causes, or a recent illness consistent with possible myocarditis.

SECTION IX:
PEDIATRIC MEDICAL

IX.1 Pediatric Respiratory Distress

RATIONALE

Children are more vulnerable to **respiratory distress** due to smaller airways, higher oxygen consumption, and limited respiratory reserve. Early recognition and intervention are critical because pediatric patients can deteriorate rapidly, progressing from distress to failure and arrest in a short period of time. Common causes include upper airway obstruction (croup, anaphylaxis, foreign body), lower airway disease (asthma, bronchiolitis), and lung pathology (pneumonia, trauma). Rapid transport with ongoing reassessment is essential, as pediatric respiratory failure is a leading cause of pediatric cardiac arrest in the prehospital setting.

TREATMENT

- General Impression (Appearance, Work of Breathing, Circulation)
- Rapid Pediatric Assessment
  - Airway: Patent or obstructed?
  - Breathing: Effort, rate, sounds?
  - Circulation: Color, cap refill, pulse quality?
- Vital Signs
- Categorize severity (refer to table at the end of this protocol)
- Identify and treat underlying causes
  - Foreign Body:
    - Encourage coughing if effective.
    - BLS maneuvers (back blows, abdominal thrusts if < 1 or > 1 year).
  - Epiglottitis:
    - Do NOT agitate.
    - Position of comfort, high-flow O_2.
    - Transport rapidly to hospital with airway capabilities.
  - Asthma/Bronchospasm:
    - Albuterol 2.5 - 5 mg via nebulizer repeated PRN, consider continuous nebulizer therapy if severe/refractory.
    - Ipratropium 0.5 mg via nebulizer with first albuterol.
    - BVM support if tiring or altered LOC (no PEEP).
    - In cases requiring BVM support, consider bi-manual exhalation maneuvers to relieve severe gas trapping.
  - Bronchiolitis:
    - Supportive care, suction, O_2
    - Monitor closely for apnea in infants
    - Albuterol trial (2.5 mg x1 for moderate/severe increase in work of breathing)
  - Parenchymal Disease:
    - Supportive care, suction, O_2 delivery
    - Minimize exertion
    - Screen for sepsis criteria
    - Transport to definitive care

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IX.1 Pediatric Respiratory Distress

TREATMENT

- Inadequate Respiratory Drive:
  - Support airway & ventilation
  - BVM with 100% O_2
  - Consider naloxone if opioid exposure suspected
  - If other exposure, contact Blue Ridge Poison Control Center

A

- Croup:
  - Nebulized sterile water
  - Dexamethasone 0.6 mg/kg IV/IM/PO
- Asthma/Bronchospasm:
  - Consider IM epinephrine 1 mg/mL 0.01 mg/kg (max 0.3 mg) if life-threatening
- Bronchiolitis:
  - Nebulized sterile water
- Consider naloxone if opioid exposure suspected (0.1 mg/kg IV/IN, max 2 mg)

I

- Croup:
  - Administer 0.5 mL 2.25% racemic epinephrine (1 bullet) mixed with 2.5 mL normal saline via nebulizer
- Foreign Body:
  - Direct laryngoscopy - attempt to clear with Magill forceps if visualized
- Asthma/Bronchospasm:
  - Consider Magnesium Sulfate (50 mg/kg, max of 2 g over 20 min) if life-threatening

PEARLS

- Transport to UVA ER, SMJH does not have pediatric staff. If a patient's parents/guardians insist on SMJH, contact the medical command and obtain a transport refusal to UVA ER.
- Infants are obligate nose breathers.
- Use blow-by oxygen in very young or agitated children.
- Involve caregivers for calming & positioning.
- Paramedic: If a patient has a G-tube, consider aspirating gastric contents to minimize aspiration risk. Vent G-tube if providing PPV.

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IX.1 Pediatric Respiratory Distress

Mild	Moderate	Severe
Normal Mentation	Irritable, Anxious	Lethargic, poor tone
Mild retractions	Moderate retractions, nasal flaring	Severe retractions, grunting, head bobbing, tripoding
Mild/Comfortable tachypnea	Increased WOB with marked tachypnea	Ineffective tachypnea, bradypnea, apnea
Good air entry, mild rhonchi	Wheezing, crackles, rales	Poor air movement, silent chest
Normal SpO_2	90-94% on RA	< 90% despite non-invasive O_2

Underlying Cause	Characteristics and Causes
Upper Airway Obstruction	- Characteristics: Stridor, hoarseness, barking cough - Likely causes: Croup, epiglottitis, foreign body
Lower Airway Obstruction	- Characteristics: Wheezing, prolonged expiratory phase, retractions - Likely causes: Asthma, bronchiolitis - Bronchiolitis: Usually <2 y/o, often viral, may not respond to bronchodilators
Parenchymal Disease	- Characteristics: Fever, crackles, grunting, hypoxia - Likely causes: Pneumonia
Inadequate Respiratory Drive	- Causes: CNS depression, seizures, overdose, fatigue

IX.2 Pediatric Pain Management

RATIONALE

Children experience and express pain differently than adults, and untreated pain can worsen physiologic stress, delay recovery, and increase anxiety. Prompt recognition and age-appropriate **pediatric pain management**, including both pharmacologic and non-pharmacologic strategies, improve comfort and patient outcomes while supporting accurate ongoing assessment. This protocol is designed to provide safe and effective assessment and management of pain in pediatric patients in the prehospital environment.

Pediatric patients (age 0 - signs of puberty) experiencing acute pain due to:

- Trauma (fractures, burns, soft tissue injury, etc.)
- Medical conditions (sickle cell crisis, abdominal pain, etc.)
- Procedures (Splinting, extrication, etc.)

TREATMENT

- Universal patient care guidelines
- Pain Assessment utilizing age-appropriate pain scale:
  - 0-3 yrs: FLACC Scale (Face, Legs, Activity, Cry, Consolability)
  - 3-7 yrs: Wong-Baker FACES Scale
  - > 7 yrs: Numeric Rating Scale (0-10)
- Mild Pain (Pain score 1-3):
  - Repositioning, immobilization, splinting, ice/heat as appropriate
  - Distraction techniques (toys, music, caregiver presence)
  - Calm, reassuring communication
- Document baseline pain score and reassess after interventions.

A

- Moderate to Severe Pain (Pain score ≥ 4, with respect to overall assessment findings)
  - First-Line: Fentanyl 1 mcg/kg IN/IV/IO max single dose 50 mcg
- Further doses require medical command consultation

I

- May repeat fentanyl q5min to a max of 2 total doses
- Consider ketamine (for severe pain refractory to opioids, or hemodynamic instability)
  - 0.3 mg/kg IV/IO over 2 min (max 20 mg)

PEARLS

- Children may under-report pain due to fear, developmental stage, or communication barriers).
- Involve caregivers whenever possible. They provide comfort, reduce anxiety, and assist with assessment.
- Patients receiving fentanyl or ketamine must have continuous SpO_2 monitoring, $EtCO_2$ monitoring, and (if medic-level) ECG monitoring, along with q5 vital signs.

IX.3 Pediatric Shock/Hypotension

RATIONALE

Shock in children is a life-threatening condition where inadequate tissue perfusion leads to cellular dysfunction and organ failure. Because children often maintain blood pressure until late in decompensation, **hypotension is a *late and ominous sign* of shock**. Recognition of clinical signs, including altered mental status, tachycardia, weak pulses, delayed capillary refill, signs of poor perfusion.

Utilize pediatric adjusted shock index (SIPA) to help identify compensated shock:
Shock Index, Pediatric Adjusted (SIPA)

- 4-6 years = 1.2
- 6-12 years = 1
- > 12 years = 0.9

TREATMENT

- Universal patient care guidelines.
- Assess, stabilize airway and breathing.
- Treat for shock. Warm pt aggressively unless febrile. Lay supine.
- Rapid transport to UVA Children's Hospital ER.

A

- Obtain vascular access. If hypotension is critical or if obtaining IV access will take longer than 2-3 minutes, consider placement of intraosseous device for resuscitation with placement of IV at later time.
- Distributive and hypovolemic shock: volume resuscitation
  - In the absence of signs of fluid overload, administer 20 mL/kg of normal saline.
- If cardiogenic shock is the presumed cause of shock/hypotension, administer 5-10 mL/kg bolus. Administer over 5-10 minutes, consider utilization of a syringe and stop-cock or buretrol.

I

- In the presence of life threatening hypotension (peri-arrest), consider push-dose epinephrine (10 mcg/mL) at 1 mcg/kg (or 0.1 mL/kg) NTE 20 mcg (2 mL).
- Obstructive shock: Consider performing needle decompression. (Medical Control)
- If volume resuscitation is ineffective, consider inotropic/vasoactive medications. Determine if patient is present "Warm Shock" or "Cold Shock" (refer to table on next page)
  - Warm Shock: Norepinephrine at 0.05-0.1 mcg/kg/min; titrate by 0.01 mcg/kg/min every 3-5 min to a max of 2 mcg/kg/min.
  - Cold Shock: Epinephrine at 0.05-1 mcg/kg/min; titrate by 0.1 mcg/kg/min every 3-5 min to a max of 1 mcg/kg/min.
- Consider push-dose epinephrine (10 mcg/mL) as an adjunctive therapy while medication infusion begins infusing. Push 1 mcg/kg (or 0.1 mL/kg) NTE 20 mcg (2 mL) every 3-5 min.
- Address potential underlying causes such as dehydration, electrolyte imbalance, acidosis, hypothermia, and toxic ingestion/exposure.

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IX.3 Pediatric Shock/Hypotension

Warm Shock (compensated)	● Normal or decreased cardiac output ● Warm skin with flushed appearance ● Peripheral perfusion appears normal or mildly diminished ● Wide pulse pressure (> 40mmHg), normotensive or mild hypotension ● Tachycardia w/ positive SIPA, bounding pulses ● Normal or delayed capillary refill ● Alert mentation
Cold Shock	● Decreased cardiac output ● Cool, pale, mottled skin ● Peripheral perfusion compromised ● Narrowed or diminished pulse pressure (< 25 mmHg) ● Weak or absent peripheral pulses ● Prolonged capillary refill ● Lethargy, altered mental status

PEARLS	● In presence of shock/hypotension refractory to fluid resuscitation initiate medication infusion for vasoactive/inotropic agents, titrate to clinical end-points such as SBP, MAP, and signs of perfusion improving.

IX.4 BRUE/ALTE

RATIONALE

BRUE (Brief Resolved Unexplained Event) — A sudden, brief (<1 minute), resolved episode in an infant <1 year old, with one or more of the following:

- Cyanosis or pallor
- Absent, decreased, or irregular breathing
- Marked change in tone (hyper- or hypotonia)
- Altered responsiveness
- …and no explanation is found after thorough history & physical exam.

(Term "**ALTE" — Apparent Life-Threatening Event** — is older; BRUE replaces it in current guidelines.)

TREATMENT

- Perform standardized patient assessment, initiate management of any life threats pe protocol.
- Obtain thorough history:
  - Event description (by witnesses) — onset, duration, color change, breathing effort, tone, responsiveness
  - Circumstances — position, activity, feeding, recent illness
  - Past medical history, medications, birth history, recent trauma, prior similar events
  - Any CPR performed by caregivers
- Assess for possible causes:
  - Choking/aspiration
  - Seizures
  - Infection
  - Cardiac abnormality
  - Gastroesophageal reflux
  - Non-accidental trauma
- Transport
- All suspected BRUE cases should be transported for ED evaluation, regardless of resolution, especially if:
  - Age < 60 days
  - Premature birth (< 32 weeks gestation) or corrected age < 45 weeks
  - Event lasted > 1 minute
  - Required CPR
  - Abnormal physical exam or persistent abnormal vitals
  - Concerning history (feeding issues, trauma, caregiver report inconsistent with findings)

PEARLS

- Low-risk BRUE (AAP criteria) is determined after thorough ED evaluation — EMS should not "clear" at scene.
- Avoid labeling as "SIDS" — event is unexplained, not fatal.
- Be alert for possible child abuse if history is inconsistent or injuries are present.
- Encourage caregivers to bring any recording devices (home monitors, video) that captured the event.

SECTION X: PROCEDURES

X.1 12-Lead ECG

EMT | AEMT | INT | PM

INDICATIONS
All patients with: - Non-traumatic Chest pain, discomfort, pressure, or tightness - Complaints of “heart racing” or “heart beating too slowly” - HR >140 or >120 and irregular - HR <50 - ALS provider discretion **Patients >30 years old experiencing the following:** - “Heartburn” or epigastric pain - Syncopal episode - Acute onset weakness - New onset stroke symptoms (<24h old) - Difficulty breathing (without obvious non-cardiac cause) - Nausea/vomiting - Hypotension (unless traumatic mechanism) **Patient (regardless of age) with any of the above symptoms and a history of:** - Recent illicit drug use - Diabetes Mellitus - Family history of early heart attack - Prior history of cardiac disease or heart attack - Obesity

Procedure:

1. Explain to patient what you’re doing and that you’re going to place electrodes on their chest.
2. Help patient remove obstructive clothing. Position patient.
    a. Lying patient supine to < 45° prevents artifact from movement and makes electrode placement more accurate.
3. Shave, dry, and clean skin using skin prep pads. *The monitor is so sensitive that the slightest bit of hair, moisture, or dirt will affect the legibility!*
4. Place electrodes. Limb leads on forearms and calves. Precordial leads (“V” leads) between ribs.
    a. Make sure the precordial leads are actually between the ribs, not on the stomach. Move breast tissue aggressively if needed.
5. Ask patient to stay still.
6. Watch monitor screen until green line is even and regular.
7. Press “12-Lead” then put in the patient’s age and gender.
8. Continue holding still until the monitor switches from “Acquiring ECG” to “Analyzing ECG”.
    a. Avoid touching the patient, moving the ambulance, slamming doors, etc. It’s that sensitive.
9. Check printout for ***MEETS ST ELEVATION MI CRITERIA***.
    a. If says ***MEETS ST ELEVATION MI CRITERIA*** refer to STEMI Alert. Save ECG printout.

X.2 15-Lead ECG

EMT | AEMT | INT | PM

RATIONALE

15-lead ECG can assist the prehospital provider in identifying right ventricular involvement in the setting of an inferior MI as well as isolated posterior MIs which will be negative for ordinary STEMI criteria on 12-lead ECG.

INDICATIONS

- Inferior MI
- Anterior ST-depression

Procedure:

1. Do not delay transport to obtain 15-lead ECG. Ensure appropriate alert has been activated if STEMI identified before obtaining 15-lead ECG.
2. Relocate electrodes V4, V5, and V6 to positions V4R, V8, and V9 respectively.
3. Obtain 12-lead ECG with monitor as normal. Immediately after printing, relabel leads V4, V5, V6 to V4R, V8, V9. If this ECG is transmitted, be sure to clearly communicate which leads are switched to the interpreting physician.
4. Signs of right ventricular infarction include ST-elevation in lead III > lead II, elevation in V1 > V2, and 1mm or more of ST-elevation in V4R.
5. Posterior MI should be suspected when there is anterior ST-depression combined with ST-elevation of 0.5mm or more in lead V8 or V9.

PEARLS

- Patients with right ventricular infarctions are preload-sensitive. Utilize fluid boluses judiciously to resolve hypotension and avoid nitrates.

X.3 STEMI Alert

EMT | AEMT | INT | PM

INDICATIONS

EMT/AEMT:
- Any patient with a 12-lead ECG monitor interpretation reading indicating an acute MI is suspected.
EMT-I/Paramedic:
- Any patient with a 12-lead ECG meeting occlusion myocardial infarction criteria as below:
  - ST-segment elevation at the J-point exceeding 1 mm in 2 or more contiguous leads in the absence of left bundle branch block or paced rhythms, with the exception of leads V2 and V3, where the ST-elevation cutoff is: 1.5mm in female patients, 2mm in men over 40, and 2.5mm in men under 40.
  - In the presence of LBBB or paced rhythms, modified Sgarbossa criteria, one or more of the following:
  - ≥1mm concordant ST-elevation in any lead(s)
  - Excessive proportional discordant ST-elevation in any lead(s) (>25% height of preceding S-wave)
  - ≥1mm concordant ST-depression in lead V1, V2, or V3.

Procedure:

1. While pre-alerting is critical for these patients, moving toward transport should be happening simultaneously whenever possible.
2. Make sure you have vitals and basic HPI information available
3. Initiate transmission of 12-lead ECG to desired facility by using Lifepak transmit menu.
4. Call desired facility as per usual procedure, in initial greeting identify your unit, the fact that you are calling for a possible STEMI alert, and request to speak with a physician. At UVA, ask specifically for an attending physician as residents are unable to activate a STEMI alert.
5. MedComm or the answering staff member at MJH will usually remain on the phone while you speak with the physician, so you can deliver your pre-arrival report to both individuals at the same time. Use a standard pre-arrival report format.
6. Upon arrival, if not already assigned to a high-acuity room, ensure that you notify ED staff that patient is a STEMI alert and bring printouts of ECGs to show to the attending physician.

X.4 T-Piece Resuscitator

EMT | AEMT | INT | PM

Provider Level:
- **AEMT, Intermediate, Paramedic:** May initiate use and titrate pressures
- **EMT:** May provide ventilations and use device once initiated by ALS provider

INDICATIONS

- The Neo-Tee T-piece resuscitator can be used in all circumstances of respiratory failure and respiratory distress in neonatal/infant populations (≤1yr age and ≤10kg) as an alternative to bag-valve-mask ventilation or to apply CPAP therapy.

CONTRAINDICATIONS

- Do not delay ventilation for the T-piece resuscitator. If the device or an adequate oxygen supply is not immediately available, start ventilation with an infant BVM and switch when equipment becomes available. Use caution with all positive-pressure devices if pneumothorax suspected.

Procedure:

1. Connect Neo-Tee device to oxygen flowmeter and set flow rate to 10-15lpm (lower flow rates will achieve lower pressures)
2. Test and configure pressures:
   a. Occlude output port (can use included red cap for this)
   b. Start by turning PEEP valve until manometer reads desired PEEP value (start with 5 cm H_2O).
   c. Occlude control port (on top of PEEP valve) and turn PIP valve until manometer reads desired PIP value (start with 20 cmH_2O)
3. Connect device to appropriately sized mask or advanced airway device
4. For CPAP application, simply hold an appropriate mask seal. CPAP is being applied at the designated PEEP, and can be monitored with the manometer.
5. To ventilate the patient, occlude the control port (on top of PEEP valve) for inhalation then release it to allow exhalation. Perform this repeatedly at desired breath rate (30-40 bpm).
6. You should be occluding the port on top of the device for roughly ½ second for each breath.
7. Continue to monitor patient for adequate chest rise and fall, $EtCO_2$ waveforms, and signs of oxygenation/perfusion. Monitor pressures on the manometer throughout care.
8. PEEP should be maintained at 5 cmH_2O. Titrate PIP prn between 15-25 cm H_2O.

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X.4 T-Piece Resuscitator

EMT | AEMT | INT | PM

SIDE EFFECTS/COMPLICATIONS
- Hypotension - Gastric distention

PEARLS

- Secondary/backup oxygen supply should be secured as soon as possible. Unlike a BVM, this is a flow-powered device, so running out of oxygen will cause complete inability to ventilate. Have a BVM on standby in case of sudden oxygen failure.
- To troubleshoot ventilation problems, use the MRSOPA algorithm:
  - M: Mask seal
  - R: Repositioning
  - S: Suction
  - O: Open mouth
  - P: Pressure adjustment
  - A: Alternative airway/ventilation strategy
- Only the specified neonatal $EtCO_2$ devices should be used with the T-piece resuscitator (and with neonates generally). Adult/pediatric devices have a substantial amount of dead space that will impact ventilation with infant-sized tidal volumes.

Additional Reading

- Infant Respiratory Distress Syndrome StatPearls
- Neo-Tee Manufacturer Instructions

X.5 Sapphire IV Pump

EMT | AEMT | INT | PM

INDICATIONS
Adults: - If available, the pump must be used for any vasopressor infusions, magnesium sulfate infusions, and amiodarone infusions. It may be used if desired for TXA, cefazolin, and fluid boluses. **Pediatrics:** - If available, the pump must be used for any vasopressor infusions, magnesium sulfate infusions, amiodarone infusions, **along with any fluid boluses**.

Procedure:

1. Properly mix and label your infusion according to the protocol-indicated concentration.
2. Prime the infusion set by gravity.
3. Close slide clamp on tubing above pump connection site.
4. Utilize cradle connector to mount pump on stretcher IV pole.
5. Follow pump directions to connect IV tubing to pump. Once connected with door closed, reopen clamps.
6. Connect tubing to patient IV port.
7. Select ‘CARS’ care area and appropriate medication. Confirm appropriate concentration and flow rate as indicated on pump and appropriate protocol.
8. If alternate concentration is being used for any reason, utilize ‘generic’ programming at bottom right.
9. If a second ALS provider is available, cross-check pump programming with them.
10. Press ‘start infusion’ to initiate infusion.

X.6 Push-Dose Epinephrine

EMT | AEMT | INT | PM

RATIONALE

Push-dose epinephrine can be used as a temporizing measure or “bridge” to a drip or other intervention in patients with hypotension.

INDICATIONS

- Refractory hypotension (MAP < 65 mmHg or SBP < 90 mmHg) following adequate fluid resuscitation

Procedure:

1. Obtain a 10 mL saline flush syringe and discard 1mL to make 9 mL normal saline.
2. Connect a 1 mg/10 mL epinephrine (code epi) syringe to a 3-way stopcock, and connect the saline flush to the opposite end.
3. Transfer 1 mL of 1mg/10mL epinephrine (100mcg of epinephrine) into the saline flush.
4. Disconnect saline flush and agitate to mix, then label syringe immediately as epinephrine 10 mcg/mL.
5. Administer 1-2 mL at a time per protocol.

X.7 Orogastric Tube Placement for King Airway

EMT | AEMT | INT | PM

INDICATIONS

****Requirements**: Confirmed placement of a King Airway with auscultation and end-tidal capnography***

- Gastric decompression in patients with a king airway

SIDE EFFECTS/COMPLICATIONS

- Gastric trauma
- Gastric tube obstruction

Procedure:

1. Select the appropriately sized catheter for the King Airway
    a. 16 - 18 Fr suction catheter for adult size king airways
    b. Recommended OG tube size is listed on the King Airway below the gastric port
2. Estimate the length of insertion by measuring from the corner of the mouth, around the ear to the xiphoid process
3. Pass through the *orogastric port* of the king airway until the appropriate depth of insertion is reached
4. Confirm placement by using a Toomey syringe filled with air (20 - 50 cc) and auscultate over the stomach for a swish of air or bubbling
5. Secure the OG tube to the king airway with a piece of tape (if needed)
6. Decompress the stomach by connecting the OG tube to suction (120 mmHg)
    a. Maximum of 80 mmHg suction for pediatric patients
7. Document procedure in Imagetrend “GI/GU - Orogastric Tube Insertion”
    a. Also document “Airway- Clear/Suction”

X.8 Orogastric/Nasogastric Tube Placement without King Airway

EMT | AEMT | INT | PM

INDICATIONS
- Gastric decompression post-intubation

SIDE EFFECTS/COMPLICATIONS
- Gastric trauma - Gastric tube obstruction

Procedure:

1. Select appropriately sized OG tube (adult/pediatric).
2. Estimate length of insertion by measuring tube from nose (nasogastric) or corner of mouth (orogastric) around the ear then down to xiphoid process.
3. If placing nasogastric tube in adults, insert NPA first as guide for tube.
4. Consider anterior displacement of mandible with non-dominant hand to facilitate placement.
5. Advance tube through nose or mouth until desired depth is reached (estimated 50-70 cm in adults).
6. Confirm placement by connecting Toomey syringe and insufflating with 20-50 cc of air (adults) or 10 cc of air (pediatrics) and auscultating over epigastrium for bubbling noises, indicating correct placement.
7. Secure the NG/OG tube to patient's face utilizing tape.
8. Decompress the stomach by connecting NG/OG tube to suction at low vacuum pressures (maximum 120 mmHg for adults, 80 mmHg for pediatrics)
9. Removal of gastric contents further confirms correct placement - if no gastric contents appear with suction, reassess placement.

X.9 Modified Valsalva Maneuver

EMT | AEMT | INT | PM

INDICATIONS
- Suspected SVT in hemodynamically stable patients

Note: *This is the ONLY approved Vagal maneuver for use at CARS. Carotid sinus massage, ocular pressure, and cold water immersion (or any others) are not approved for use.*

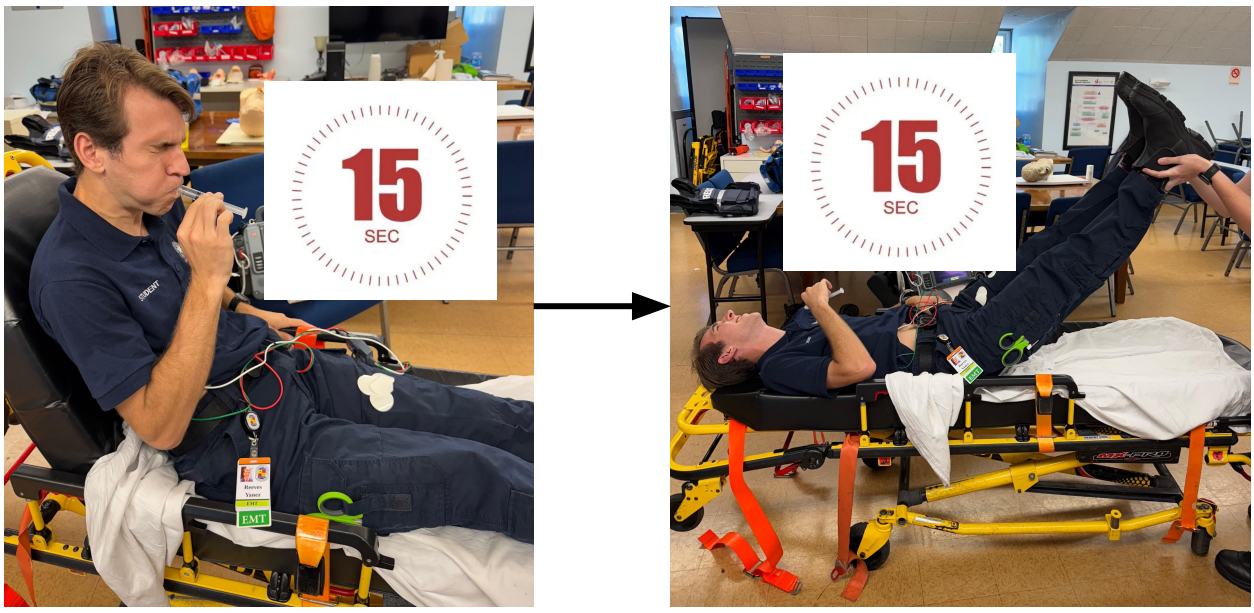
Procedure:

1. Inform patient about the maneuver, what to expect, and why it is necessary. Ensure ECG monitoring is in place, and set monitor to print a strip during the maneuver.
2. Position the patient in fowler's position.
3. Provide the patient a 10 cc syringe, and ask them to blow into the end until the plunger just begins to move and keep blowing very hard for 15 seconds.
4. Immediately after the patient has done this for 15 seconds, lie the patient flat and lift their legs to a 45° angle. Hold this position for 15 seconds.
5. Return patient to position of comfort and assess for rhythm changes.

PEARLS

- This maneuver is to be used in place of the standard valsalva maneuver, as it has been shown to be roughly 3 times as effective as the standard valsalva maneuver[1].
- After the maneuver is completed, there may be a delay of up to a minute before a rhythm change occurs

1. Postural modification to the standard Valsalva manoeuvre for emergency treatment of supraventricular tachycardias (REVERT): a randomised controlled trial. Appelboam, Andrew et al. The Lancet, Volume 386, Issue 10005, 1747 - 1753



X.10 Synchronized Cardioversion

EMT | AEMT | INT | PM

INDICATIONS
- Tachydysrhythmia in a hemodynamically unstable patient

Procedure:

1. Consider sedation per dysrhythmia protocol as appropriate based on patient condition.
2. Explain procedure to patient, including its necessity and what to expect during the procedure
3. Ensure all necessary monitoring is in place, including a minimum of 4-lead ECG monitoring, pulse oximetry, and end-tidal capnography.
4. Place electrical therapy pads on patient using anterior-lateral pad placement whenever possible.
5. Press ‘sync’ button on monitor, and observe that the synchronization indicators are properly lined up with each R wave.
6. Charge monitor to desired energy level per protocol.
7. Ensure that all providers are clear of the patient and that the patient’s hands are securely tucked by their waist.
8. Deliver shock by holding the shock button
9. Reassess ABCs and rhythm.
10. Repeat as necessary if unsuccessful. If repeating, note that the lifepak 15 does **NOT** remain synchronized between cardioversion attempts and must be re-synchronized.

X.11 Transcutaneous Pacing

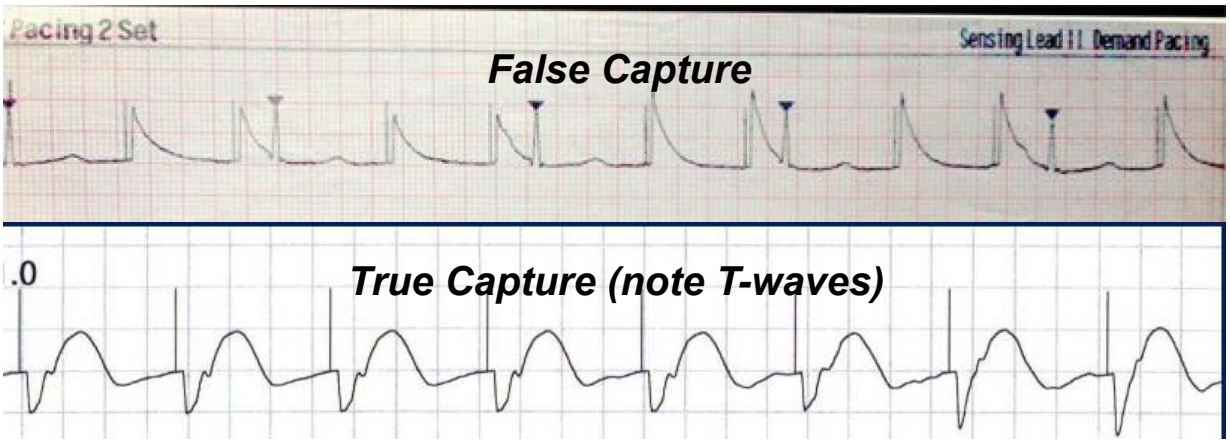
EMT | AEMT | INT | PM

INDICATIONS
- Patients presenting with <u>hemodynamically unstable</u> bradycardia

Procedure:

1. Verify that appropriate monitoring equipment is in place (4-lead ECG, capnography, pulse oximetry)
2. Consider sedation per guidelines as appropriate for patient condition.
3. Place pads in anterior-posterior position. This position has been shown to require lower current to achieve capture.
4. Turn on LP15 pacer, set rate to 70-80 bpm.
5. Press “current” and set current until electrical capture is achieved *see note regarding false capture*, then add 10mA above point at which electrical capture is obtained.
6. Verify that mechanical capture is obtained by palpating right radial or femoral pulse. Avoid left-sided pulses and carotid pulses as muscular contractions may decrease accuracy of pulse checks. Consider use of plethysmograph (SpO_2 waveform) to assess mechanical capture.
7. Continue to monitor hemodynamics. Vasopressors may be used in conjunction with pacing if adequate hemodynamic response is not achieved.
8. On arrival at hospital, ensure that hospital team is aware that the patient is being paced before any equipment is removed - have hospital team overdrive pace EMS pacer by increasing hospital pacer rate higher than EMS pacer rate before discontinuing EMS pacing.

PEARLS	
	- Artifact from the depolarization caused by a sub-threshold pacing impulse may give the appearance of a QRS complex following an ineffective pacing impulse. To ensure that capture is achieved, look for a QRS complex followed by a distinct T-wave, which is evidence of true electrical capture. - $ETCO_2$ is a great resource for monitoring perfusion in these patients as NIBP is often unreliable. Low $ETCO_2$ values may indicate hypoperfusion



X.12 Intravenous Access

EMT	AEMT	INT	PM

INDICATIONS
- Any patient with a current or anticipated future need for intravenous fluid or medication administration

CONTRAINDICATIONS
- Signs of infection at desired site

Procedure:

1. Identify site on upper extremity by palpating to identify a suitable vein.
2. Prepare equipment, to include venous tourniquet, antiseptic scrub, appropriately sized catheter, extension set, 10 cc saline “flush” syringe, and securing device/tape.
3. Scrub site with appropriate antiseptic solution using aseptic technique.
4. Puncture vein with needle, thread catheter over needle, and remove needle using sharps-securing technique. Dispose of needle in sharps container.
5. Attach extension set and flush to catheter and aspirate blood, then flush with saline to confirm placement - observe for infiltration suggesting improper placement
6. Place securement device/dressing over site, then tape extension set as desired.
7. Monitor IV throughout use for extravasation/dislodgement.

PEARLS	
	- Chlorhexidine-based antisepsis is preferred to alcohol pads as it has been shown in some studies to have a decreased rate of infections - An 18g catheter in the antecubital fossa is preferred for stroke/trauma patients when feasible.

X.13 Double Sequential Defibrillation

EMT | AEMT | INT | PM

INDICATIONS
- Ventricular Fibrillation/Pulseless Ventricular Tachycardia refractory to 2 standard defibrillation attempts

Procedure:

1. In a shockable arrest, it is recommended to place a second set of defibrillation pads in the opposite placement position (one set anterior-lateral, one set anterior-posterior) when applying the LUCAS.
2. Acquire a second monitor and connect the second set of defibrillation pads to the monitor.
3. Charge both monitors to 360J while preparing for rhythm check
4. Once both monitors charged, perform rhythm check and identify shockable rhythm. If non-shockable rhythm present, refer to PEA/Asystole Guideline.
5. The ALS provider should deliver both shocks in a *sequential* fashion. Do not trigger both shocks at the same time, ensure there is a brief delay by saying “shock and shock” whilst pressing each one.
6. Immediately resume chest compressions.
7. DSD should be repeated for subsequent shocks. If unsuccessful and persistently shockable, utilize intra-arrest transport for potential ECMO initiation. Notify medical command early if considering transport.

PEARLS	
	- There is a small risk of equipment damage if both shocks are delivered simultaneously. Ensure to press the buttons sequentially, not simultaneously.

X.14 Ultrasound-Guided Intravenous Access

EMT | AEMT | INT | PM

RATIONALE

Ultrasound guidance can enhance the ability of paramedics to obtain intravenous access for medication and fluid administration in patients who are either profoundly hypotensive or have pathology preventing catheterization of the more accessible veins.

Release Requirement: *Red dot skill - must be signed off by training officer/ALS coordinator before protocol application*

INDICATIONS

*******Requirements:*** *This protocol is only to be used to cannulate superficial veins of the upper extremity (within or distal to the antecubital fossa).****

- Patients requiring fluid/medication administration in whom IV access is assessed to be difficult

Procedure:

1. Clean desired site thoroughly with antiseptic solution.
2. Identify suitable vessel with ultrasound. Verify vessel is a vein and not an artery by verifying at least 2 of the 3 below:
   a. Compressibility with gentle pressure
   b. Non-pulsatile appearance
   c. Non-pulsatile flow on color doppler
3. Optionally obtain clip of compressibility of vessel for documentation.
4. Perform venipuncture while maintaining needle visualization with ultrasound throughout. Consider ‘biplane imaging’ mode on ButterflyIQ ultrasound to view longitudinal and cross-sectional view of needle within vessel before advancing catheter.
5. Obtain image of needle within lumen of vessel for documentation
6. Verify patency of IV as normal and dress according to intravenous access protocol.

X.15 External Jugular IV Access

EMT | AEMT | INT | PM

Release Requirement: *AEMTs require sign-off on this skill by a training officer or ALS coordinator.*

INDICATIONS
- Patient requiring immediate fluid/medication administration in whom peripheral IV access is assessed to be difficult or attempted unsuccessfully - consider IO access as an alternative

Procedure:

1. Prepare venipuncture equipment and cleanse desired site thoroughly with antiseptic solution.
2. Place patient in trendelenburg position if tolerated
3. Identify external jugular vein, and tamponade with gentle pressure using one finger near clavicle to enable filling of vein.
4. Perform venipuncture, ensuring needle is directed toward the patient's trunk.
5. Flush, verify patency, and dress the IV as normal according to intravenous access guideline.

PEARLS	
	- The external jugular vein pressure approximates central venous pressure, which is lower than peripheral venous pressure and can become sub-atmospheric, especially during inspiration. Ensure the hub is not left open to air, as air can be entrained and cause air embolism.

X.16 Endotracheal Intubation

EMT | AEMT | INT | PM

INDICATIONS
- Unresponsive patients in respiratory failure w/ anticipated need for prolonged positive pressure ventilation. Adults and adolescents >12 years old only.

CONTRAINDICATIONS
- Intact gag reflex

Note: *Use of a bougie (not stylet) and video laryngoscopy is mandatory on all intubation attempts at CARS unless video laryngoscope is unavailable or malfunctioning.*

Procedure:

1. Ensure adequate ventilation and BLS airway management is ongoing.
2. Prepare all equipment in an organized manner, to include: bougie, appropriate sized ETT with 1 smaller size readily available and open, 10cc syringe, tube holder, video laryngoscope with appropriate blade attached, $ETCO_2$ ETT adapter, backup airway device (King Airway/surgical kit), suction, and stethoscope.
3. Hyperventilate the patient for ~3-5 breaths by providing breaths at an increased frequency.
4. Position patient to align tragus of ear to sternal notch. Use padding behind head/shoulders as needed.
5. If fluid/contamination noted in airway on initial assessment, lead video laryngoscope with suction.
6. Perform video laryngoscopy and obtain laryngoscopic view.
7. Advance bougie through cords, maintaining laryngoscopic view of bougie.
8. Advance, or have assisting provider advance ETT over bougie and visually observe ETT passing through vocal cords.
9. Inflate ETT cuff, remove laryngoscope, and attach $ETCO_2$ adapter.
10. Ventilate patient, observing for chest rise and fall, $ETCO_2$ waveform. If present, have assisting provider take over ventilations and auscultate breath sounds, focusing on ensuring both lungs are being ventilated.
11. If $ETCO_2$ waveform is not present, remove ETT immediately and ventilate patient with BLS adjunct.
12. Apply PEEP valve as indicated to BVM, titrate between 5-10cmH2O to maintain oxygenation.
13. Insert a nasogastric or orogastric tube, confirm placement by auscultation/return of stomach contents, and apply low suction to minimize gastric distention.
14. Continuous waveform capnography, pulse oximetry, and ECG monitoring are mandatory after intubation until handoff of care is complete.

X.17 Oropharyngeal Airway

EMT | AEMT | INT | PM

INDICATIONS
- Unconscious patients unable to maintain their own airway - Absence of gag reflex

CONTRAINDICATIONS
- Intact gag reflex

Procedure:

1. Size the adjunct by measuring from the corner of the patient's mouth to the angle of the patient's jaw.
2. If no cervical injury is suspected, hyperextend the patient's head and neck (Head Tilt, Chin Lift); If cervical trauma is suspected, use a jaw thrust
3. Check oropharynx for any obstructions and remove as possible
4. Control tongue with tongue-jaw lift or bite-stick
5. Insert the oropharyngeal airway into the side of the patient's mouth and rotate 90 degrees until the adjunct is fully inserted and rests over the patient's tongue

X.18 Nasopharyngeal Airway

EMT | AEMT | INT | PM

INDICATIONS
- Conscious or unconscious patients unable to maintain their own airway

CONTRAINDICATIONS
- Suspected basilar skull fracture - Significant trauma to the nasopharynx (including rhinoplasty or sinus surgery)

Procedure:

1. Size the adjunct by measuring from the patient's nose to the patient's earlobe
2. Ensure that the diameter of selected adjunct is slightly smaller than patient's nare
3. Lubricate nasopharyngeal airway with lube
4. Gently insert nasopharyngeal airway into patient's nostril following curve of NPA with bevel facing the septum
5. Insert until nasopharyngeal airway is fully inserted and flared end rests against patient's nose (if nasopharyngeal airway cannot be fully inserted into selected nare, attempt to insert it into the other nare)

X.19 King Airway

EMT | AEMT | INT | PM

INDICATIONS
- Unresponsive or apneic patients without an intact gag reflex in need of long-term airway management (ex. Cardiac arrest)

CONTRAINDICATIONS
- Intact gag reflex - Caustic Substance ingestion - Esophageal disease

Procedure:

1. With a BLS adjunct in place, pre-oxygenate the patient with 100% oxygen (can delegate this task)
2. Choose adjunct size per manufacturer's recommendations
3. Check the proximal and distal cuffs for proper inflation, deflation and leaks
4. Apply a water-based lubricant to the beveled tip and posterior aspect of the tube. Avoid placing lubricant in or near the ventilation opening
5. Position the head into the "sniffing position" unless contraindicated by c-spine precautions
6. Hold the King LTS-D airway at the connector with the dominant hand. With non-dominant hand, open the mouth and apply a chin lift.
7. With the King LTS-D airway rotated laterally 45°-90° such that the orientation line is touching the corner of the mouth, introduce tip into the mouth and advance behind the base of the tongue.
8. With the King LTS-D airway rotated laterally. Without excessive force, advance tube until base of connector aligns with teeth or gums.
9. Inflate the cuff per the manufacturer's recommendations until a seal is obtained.
10. Connect the LTS-D to an Ambu bag, ventilate, and slowly withdraw the tube until ventilation becomes easy and free-flowing (normal tidal volume with minimal airway pressure). Note depth at teeth.
11. Auscultate for absence of gastric sounds with ventilation first. Then auscultate breath sounds. Look for chest rise and fall or gastric distension simultaneously.
12. Apply the inline end-tidal carbon dioxide monitor
13. If necessary, adjust cuff inflation pressure to maintain seal.
14. Ventilate the patient with the BVM supplied with 100% oxygen. Deliver breaths approximately once every 5-6 seconds. Consider the placement of an NG/OG tube for gastric decompression (A/I/P only)
15. Document "Airway-King" procedure on Imagetrend

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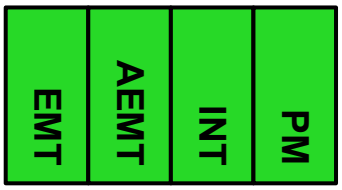
X.19 King Airway



Suctioning through the King LTS-D

1. Utilize a French suction catheter through the tube connector (main) lumen. Insert flexible suction catheter to the desired depth and withdraw catheter while applying suction.
2. Use the gastric access lumen for suctioning and removal of gastric contents
3. OG/NG (Salem sump) can only be placed through the gastric lumen

X.20 LUCAS Chest Compression Device

EMT | AEMT | INT | PM

INDICATIONS
- Cardiac arrest

CONTRAINDICATIONS
- Pregnancy - Patients too large or too small for the LUCAS to fit appropriately

Procedure:

1. Ensure that compressions, defibrillation, and basic airway management are ongoing. These take priority over placing the LUCAS device.
2. Pre-plan placement with your team - it is often best to time LUCAS placement in conjunction with a rhythm check to minimize interruptions in compressions.
3. Log-roll patient onto one side and quickly slide backboard beneath patient. Roll patient back to supine and resume compressions.
4. Position backboard so that it is all the way up to patient's axilla on both sides. Place LUCAS over patient while continuing compressions and connect hooks to backboard bilaterally. If backboard connection points are not visible on both sides of patient, patient is too large for LUCAS device use.
5. Power on LUCAS and press plunger adjustment button. Slide plunger down to to patient's chest.
6. Press pause on LUCAS, then press "continuous compressions" button.
7. Utilize pause button to pause compressions for rhythm checks/ROSC.

PEARLS	
	- Frequently monitor LUCAS for displacement - it can easily become displaced toward patient's abdomen. - Place LUCAS relatively early in cardiac arrest care to ensure quality compressions are delivered throughout and to relieve physical and cognitive load on providers. - Automated CPR devices have not been shown to lead to any differences in outcomes in resuscitation, so they are primarily used to ease logistical burden of resuscitation - Alternate approaches to placement of the LUCAS are acceptable - the goal is to minimize any ineffective compressions and interruptions in compressions - use what you practice and are comfortable with, the above is only one of several acceptable methods

X.21 End-Tidal Capnography

EMT | AEMT | INT | PM

INDICATIONS

BLS:
- Advanced airway confirmation, BLS adjunct in place
- Monitor breathing in patients with the following complaints:
  - Chief complaint of difficulty breathing
  - Patients with a GCS < 8

ALS:
- All indications above, plus any patient for whom additional respiratory monitoring is desired (suspected acidosis, sepsis, tachypnea, etc.)
- Any patients who receive opioids, benzodiazepines, or ketamine *must* have continuous $EtCO_2$ monitoring until transfer of care

Procedure:
1. Place the monitor-facing end of the FilterLine into the port on the monitor and turn clockwise. *Allow 30 seconds for autozero of $ETCO_2$ before placing it on the patient*.
2. Place the patient-facing end of the FilterLine resting in the patient's nose (for nasal capnography) or secured to the end of an advanced airway device (for inline capnography).
3. Monitor for presence or absence of a waveform and for respiratory rate.

Oxygen administration with End-Tidal Circuit:
1. Open NRB mask and disconnect green tubing from the mask
2. Connect the green oxygen tubing between the oxygen source and the End-Tidal CO_2 circuit.
   a. Attach one end to the oxygen source and the other end to the tree-style connector branching off the main line of the End-Tidal circuit.
3. Titrate oxygen between 2-6 LPM

SPECIAL CONSIDERATIONS

- End-tidal does not replace counting a respiratory rate.
- End-tidal can be utilized as an adjunct to a careful assessment and reassessment of ABCs.
- For pediatric invasive $ETCO_2$, utilize special pediatric circuit as it minimizes dead space

X.22 Automated External Defibrillation with Lifepak 15

EMT | AEMT | INT | PM

RATIONALE

This procedure is meant to outline the necessary steps to utilize the **LifePak 15 (LP15) for AED (Automated External Defibrillation)** use. The LifePak 15 in AED mode should only be utilized with patients who are in cardiac arrest and in accordance with various manufacturer recommendations. In AED mode, the LifePak 15 is not intended to be used on patients less than 8 years of age. *The LifePak 15 is set to operate in AED as the default mode when turned on.*

INDICATIONS
- Unresponsive patient without a palpable pulse

Procedure:

1. Turn LP15 ON.
2. Place defibrillation pads as indicated on packaging and ensure pads are connected to treatment cable and ensure cable is connected to LP15.
3. When the pads are appropriately placed, push the **ANALYZE** button and follow prompts regarding CPR and whether the arrest was witnessed or not.
4. The LP15 should prompt all providers to ‘stand clear’ of the patient. Ensure no providers are touching the patient while the LP15 is analyzing.
5. After analysis, the LP15 should prompt the next step:
    a. **If defibrillation is indicated:**
        i. The LP15 will indicate ‘shock advised’
        ii. Resume CPR while device is charging (roughly 17 seconds)
        iii. When the LP15 indicates ‘push SHOCK button’, ensure all providers are clear and not touching the patient and press the SHOCK button
        iv. After the shock has been delivered, resume CPR
    b. **If defibrillation is not indicated:**
        i. The LP15 will indicate ‘no shock advised’
        ii. Resume CPR
6. Continue to follow LP15 prompts

X.23 Automated External Defibrillation with LIFEPAK 1000

EMT | AEMT | INT | PM

RATIONALE

This procedure is meant to outline the necessary steps to utilize the **LIFEPAK 1000 for AED (Automated External Defibrillation)** use. The LIFEPAK 1000 in AED mode should only be utilized with patients who are in cardiac arrest and in accordance with manufacturer recommendations.

INDICATIONS

- Establish that the patient is in cardiopulmonary arrest (the patient must be unresponsive, not breathing normally and no carotid pulse).

PEDIATRICS

For children less than 8 years of age or 55 lbs (25 kg), use Infant/Child Reduced Energy Defibrillation electrodes. Do not use Pediatric QUIK-COMBO electrodes; these electrodes do not attenuate the energy delivery by this defibrillator.

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X.23 Automated External Defibrillation with LIFEPAK 1000

EMT | AEMT | INT | PM

Procedure:

1. Press ON/OFF to turn on the defibrillator (the green LED illuminates). Voice prompts will sound, guiding you through the rescue process.
2. Prepare the patient for therapy electrode placement.
3. Open the therapy electrode packet and remove the electrodes.
4. Apply the therapy electrodes to the patient's chest. Starting from one end, press the electrodes firmly onto the patient's skin, as shown in Figure 1.
5. Connect the electrodes to the defibrillator (if they are not already connected).
6. Follow the screen messages and voice prompts provided by the defibrillator.
7. When “STAND CLEAR, ANALYZING NOW, STAND CLEAR” is said, do not touch or move the patient, or therapy cables, during analysis. ECG analysis requires 6–9 seconds.
8. After analysis, the LIFEPAK 1000 should prompt the next step:
    a. **If defibrillation is indicated:**
        i. “PREPARING TO SHOCK” is said Message displayed if the defibrillator detects a shockable rhythm. The defibrillator charges to the joule setting for that shock number. A rising tone and a charging bar on the screen indicate that the defibrillator is charging.
        ii. When “STAND CLEAR, PUSH SHOCK BUTTON” is said when charging is complete. The shock button flashes. Clear everyone away from the patient. Press the shock button to discharge the defibrillator.
        iii. Resume CPR
    b. **If defibrillation is not indicated:**
        i. “ NO SHOCK ADVISED” is the voice prompt and message when the defibrillator detects a nonshockable rhythm. The defibrillator will not charge, and a shock cannot be delivered.
        ii. Check patient’s pulse, if no pulse, resume CPR
9. Continue to follow LIFEPAK 1000 prompts

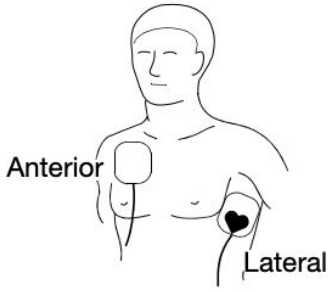


Figure 1. Pad placement

X.24 Intramuscular Administration

EMT | AEMT | INT | PM

RATIONALE

Intramuscular (IM) injection is an indirect route of medication administration and an option when intravascular (IV) or intraosseous (IO) administration is not possible.

INDICATIONS

- Required administration of a medication when IV and / or IO administration is not possible or appropriate.

SPECIAL CONSIDERATIONS

The following site are approved sites for IM injections with the maximum volume of injection for each site noted. Volume administered is dependent on muscle mass at the injection site. Smaller muscle mass should follow lower volumes with higher muscle mass following higher volumes.

- **EMT**: Quadricep is preferred injection site for IM epinephrine injection. Deltoid or gluteus are suitable alternatives.
- **AEMT/Intermediate/Paramedic**:
  - Deltoid – 1 - 2 mL
  - Gluteus – 2 - 3 mL
  - Quadricep – 2 - 3 mL

NOTE: *EMTs are only allowed to administer IM epinephrine for anaphylaxis. Below is the approved equipment for EMT epinephrine IM administration.*

- *EpiRite Syringe*
- *25g 1.5” needle*
- *Blunt fill needle for drawing up medication*
- *Epinephrine 1 mg/mL*

Procedure:

1. Identify site and cleanse with alcohol prep.
2. Assemble blunt-fill needle and syringe, if necessary.
3. Draw appropriate volume of medication into syringe. Remove blunt needle and discard in sharps container.
4. Connect injection needle (25ga, 1.5” needle) to syringe.
5. Insert needle into cleansed site perpendicular to skin surface.
6. Administer medication and withdraw when complete. “Safe” needle promptly.
7. Discard syringe and needle in sharps container.

X.25 Intraosseous Access

EMT | AEMT | INT | PM

INDICATIONS
- IO access is indicated in patients requiring immediate fluid/medication therapy following 2 unsuccessful IV attempts - IO may be used as the first-line access approach in cardiac arrest

CONTRAINDICATIONS
- Fracture of bone at desired site - Joint replacement surgery at desired site (shoulder or knee) - Suspected infection at desired site (suspect with redness, swelling over site) - Previous unsuccessful IO attempt at site

Procedure:

1. Select appropriate site:
    - Proximal tibia: Palpate tibial tuberosity. Move 2-3 cm medial to palpate flat region of bone (tibial plateau) - this will serve as insertion site. This site is an approved alternative site in pediatrics.
    - Distal femur (pediatrics): Identify patella. The insertion site is just proximal to superior edge of patella and ~1 cm medial from midline of leg.
2. Select appropriate needle sizing:
    - Pink is for neonatal patients.
    - Blue (25 mm) is for pediatric and adult patients.
    - Yellow (45 mm) is for large adult patients or humeral site insertions.
3. Cleanse site thoroughly with alcohol or chlorhexidine.
4. Attach needle to EZ-IO driver and, without squeezing trigger, advance needle through skin and soft tissue at site until it is firmly against bone. For patients <5kg, do not use drill and manually insert needle instead.
5. Verify that at least one marker line on the needle is still visible above the skin. If not, the needle will not fully penetrate the bone and a larger size will be needed.
6. Squeeze trigger while applying gentle downward pressure on needle until loss of resistance is felt.
7. Remove trochar and connect primed extension set with flush to catheter. Attempt to aspirate bone marrow to confirm correct placement.
8. Firmly flush 10 ml of saline through catheter.
9. Attach desired infusion to catheter (pressure bag likely required) and administer medications as desired.
10. Dress site using bulky gauze dressings and attempt to immobilize site as much as possible. Monitor for dislodgement.

X.26 Needle Decompression

EMT | AEMT | INT | PM

INDICATIONS

Requirements: *Patients should receive needle decompression only for tension pneumothorax, defined as a pneumothorax of sufficient magnitude to produce signs and symptoms of obstructive shock.*

- *Patients should have 2 or more of the following:*
  - *Hypotension (MAP < 65 mmHg or SBP < 90 mmHg)*
  - *Altered mental status*
  - *Significant respiratory distress*
  - *Confirmed lack of pleural sliding on point-of-care ultrasound*
- ***MEDICAL COMMAND**: Signs and symptoms of tension pneumothorax without cardiopulmonary arrest.
- **Standing order:** Cardiopulmonary arrest with trauma to the thorax or other traumatic mechanism suspicious for tension pneumothorax

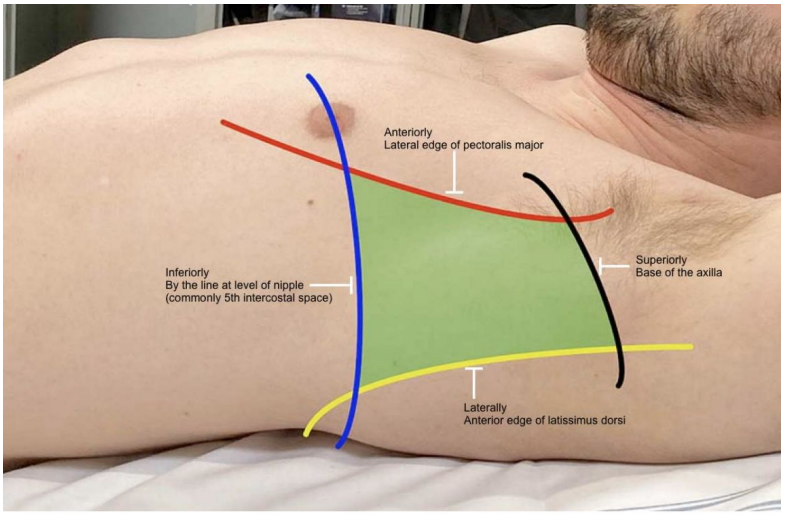
Procedure:

1. Identify site: Preferred site is 5th intercostal space of affected side on anterior axillary line. Backup site is 2nd intercostal space of affected side on mid-clavicular line.
2. Prepare equipment:
3. Advance needle just over the top of the rib (intercostal neurovascular bundle runs beneath each rib) until “pop” is felt or rush of air noted.
4. Advance catheter over needle and remove needle
5. Secure catheter in place with tape, using caution to avoid kinking catheter.

PEARLS

- Review of EMS records has indicated that a large number of EMS needle decompressions are unnecessary and can carry serious adverse effects - use caution with patient selection to ensure positive risk-benefit ratio
- Positive-pressure ventilation can cause a pneumothorax to worsen or recur - continue to monitor patients with suspected pneumothoraces for development of tension physiology

“Triangle of safety” as shown in image to the right can be used to help determine safe area of insertion - no lower than 5th ICS (approx. level of nipple in males, inframammary fold in females) and along anterior axillary line.



X.27 Surgical Cricothyrotomy

EMT | AEMT | INT | PM

INDICATIONS
Requirements: *Bag-valve-mask ventilation should have been attempted and unsuccessful and patient older than 8 years old* - Respiratory failure in patients who cannot have their airway secured using any other means - "Can't intubate, can't ventilate" scenarios   - Example scenarios: severe angioedema, airway burns, foreign body airway obstruction that cannot be cleared, massive facial trauma.

Procedure:

1. Identify site: Palpate thyroid cartilage (Adam's apple) and cricoid ring - between the two is the cricothyroid membrane
2. Prepare equipment: Scalpel, bougie, Shiley-styled cuffed ETT from cricothyrotomy kit, $ETCO_2$ monitoring device, 10 cc syringe, dilator tool (optional)
3. Quickly clean site with alcohol/iodine solution
4. Use scalpel to make 2-3 cm vertical skin incision over site. Palpate incision site to identify cricothyroid membrane (soft portion)
5. "Punch" horizontally through cricothyroid membrane and insert dilator or gloved finger into trachea to dilate incision.
6. Advance bougie into incision, then advance tube over bougie.
7. Inflate cuff and ventilate patient, observing for chest rise and fall and monitoring waveform $ETCO_2$.
8. Secure tube in place using built-in securement device.

PEARLS	
	- Can't-intubate can't-ventilate scenarios are rare, but must be responded to quickly. - Procedure will quickly cloud surgical field with blood and must be performed mainly by "feel"

X.28 Needle Cricothyrotomy

EMT | AEMT | INT | PM

INDICATIONS
Requirements: *Bag-valve-mask ventilation should have been attempted and unsuccessful and patient under 8 years old or surgical cricothyrotomy otherwise impossible* - Respiratory failure in patients who cannot have their airway secured using any other means - "Can't intubate, can't ventilate" scenarios   - Example scenarios: severe angioedema, airway burns, foreign body airway obstruction that cannot be cleared, massive facial trauma.

Procedure:

1. Identify site: Palpate thyroid cartilage (Adam's apple) and cricoid ring - between the two is the cricothyroid membrane
2. Prepare equipment: 14g angiocath, 15mm airway adapter (in PALS kit), 3cc syringe half-full of saline, BVM or insufflation setup
3. Quickly clean site with alcohol/iodine solution
4. Directing needle caudally, insert through cricothyroid membrane until loss of resistance is felt, then advance catheter into trachea
5. Connect 3cc syringe with saline to needle and aspirate, confirm placement via air aspiration (bubbles in saline).
6. Disconnect 3cc syringe and connect airway adapter.
7. Ventilate using BVM while transporting rapidly for definitive airway management.

PEARLS	
	- Can't-intubate can't-ventilate scenarios are rare, but must be responded to quickly. - This procedure provides some oxygenation, but minimal ventilation - emergent transport for definitive airway acquisition is critical - In a pinch, 3cc syringe can be connected to catheter and 7.0 ETT adapter fitted into end of 3cc syringe with plunger removed to create connector for BVM.

X.29 CPAP Pulmodyne

EMT | AEMT | INT | PM

INDICATIONS

Requirements: *Patient is over 12 years of age. Awake* ***and*** *able to follow commands with the ability to maintain an open airway without intervention or adjunct.*

- Moderate to severe respiratory distress with signs and symptoms consistent with asthma, COPD, pulmonary edema, CHF, or pneumonia.
- Near-drowning with intact mentation

CONTRAINDICATIONS

- Suspected pneumothorax or chest trauma
- Facial trauma or deformity
- Respiratory or cardiac arrest
- Agonal or inadequate respirations
- Vomiting or active GI bleeding with emesis
- Hypotension with SBP < 90 mmHg
- Tracheostomy
- Not alert or not able to follow basic commands
- Unable to maintain an open/patent airway

SIDE EFFECTS/COMPLICATIONS

- Hypotension
- Gastric distention
- Vomiting

Administration Notes:

- *CPAP can and should still be used for patients with DNRs.*
- *Notify hospital that patient is on CPAP. A respiratory therapist will need to be present to transfer patient to hospital machine.*

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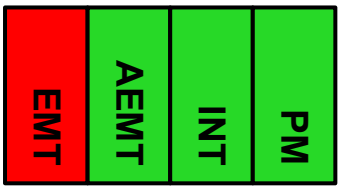
X.29 CPAP Pulmodyne



Procedure:

1. Place patient in upright (> 45°) position
2. Connect full circuit to oxygen source
3. Place patient on pulse oximeter, nasal $EtCO_2$ circuit, and cardiac monitoring (I/P)
4. Assure air is flowing from mask and there are no leaks along circuit or at connection to O_2 source
5. Place mask over mouth and nose and manually seal against face. It is okay to do short periods of CPAP with breaks in between to allow patient to adjust if needed.
6. Secure mask with straps. Adjust to eliminate leaks
7. If patient mentation deteriorates to the point where patient can no longer follow commands or respiratory status deteriorates, remove CPAP and consider assisting ventilation with a BVM

Titrating PEEP:

- Advanced, Intermediate, and Paramedic level providers at CARS can titrate PEEP.
- The Pulmodyne O_2 MAX recommended starting PEEP is 5 cm H_2O
- Increase PEEP by 2.5 cm H_2O increments every 5 minutes to maintain O_2 saturation > 88%
- Reassess SBP, respirations, mental status, ability to maintain open airway, and lung sounds before each PEEP increase

PEARLS	
	- The Pulmodyne O_2 MAX CPAP does not provide 100% oxygen. The estimated FiO_2 of our system is 30%. Consider adding additional supplemental oxygen via $ETCO_2$ cannula - The goal of assessing mentation prior to CPAP application is to ensure the patient is capable of removing the mask if they begin to vomit. If the patient has this level of mentation, CPAP use is appropriate.

X.30 Post-Advanced Airway Sedation

EMT | AEMT | INT | PM

RATIONALE

This is a protocol for sedating an adult patient that had an advanced airway placed (ETT or supraglottic) while obtunded. This does not allow providers to sedate a patient in order to place an advanced airway.

INDICATIONS

- Patient is starting to awaken, gag, spasm, etc. and provider is concerned for self-extubation, tube dislodgement, provider/patient safety

CONTRAINDICATIONS

- Known hypersensitivity/allergy

SIDE EFFECTS/COMPLICATIONS

- Hypotension

Administration Notes:

- *Do not mix medications in a single syringe. Administer separately.*

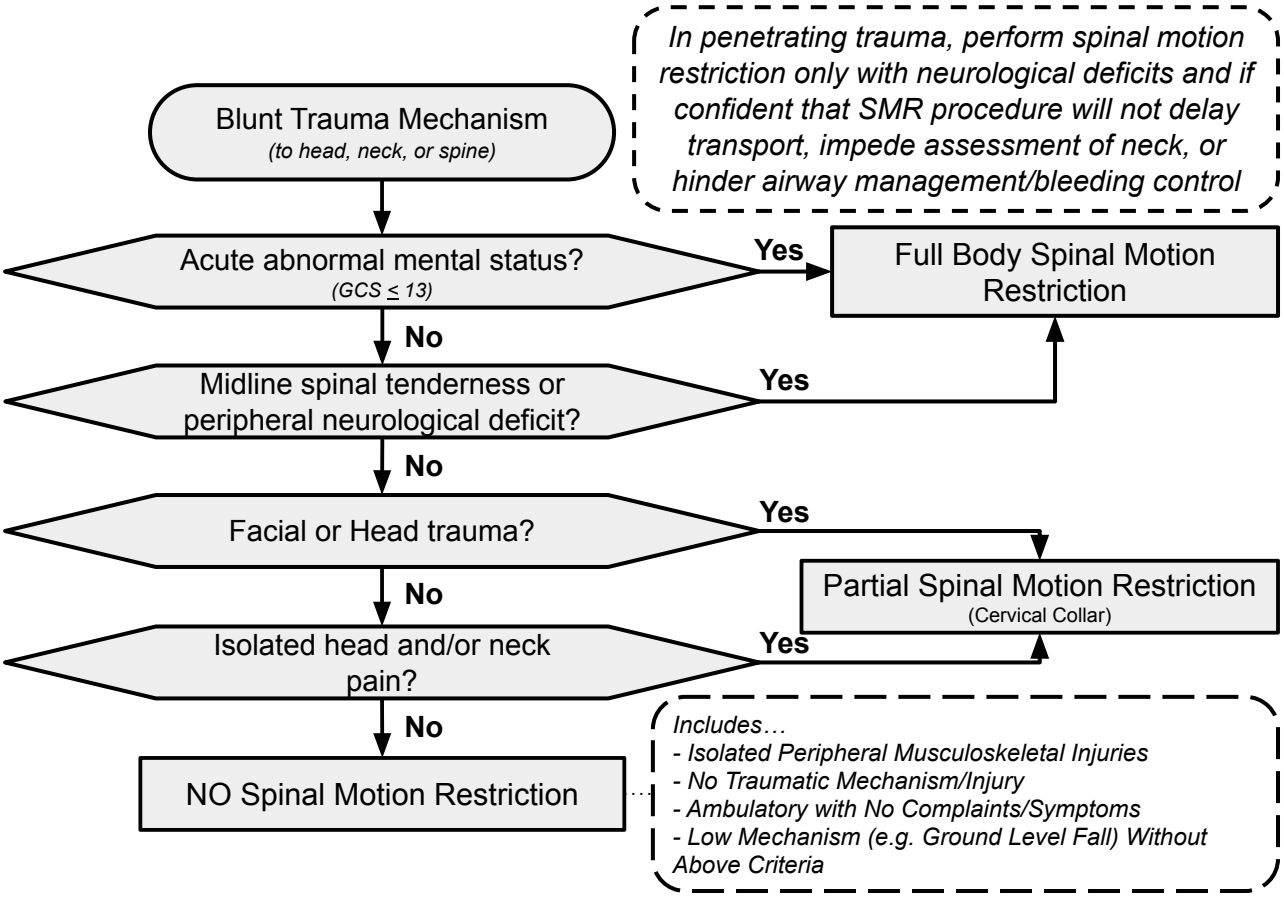
Intervention:

- 50 micrograms of Fentanyl (Sublimaze) IV/IO/IM/IN **AND** 2.5 mg Midazolam (Versed) IV/IO/IM/IN
- **OR** Alternative option: **Paramedic-level only:** 1 mg/kg Ketamine IV/IO
- Dose may be repeated every 5 minutes as needed to achieve sedation. If sedation using other medications (such as Ketamine) is needed, contact Medical Control.

X.31 Spinal Motion Restriction (SMR)

EMT | AEMT | INT | PM

Procedure: The following criteria should be used to determine which traumatically injured patients will require spinal motion restrictions (e.g. a cervical collar or backboard).



PEARLS

- Patient shall not receive Full Body Spinal Motion Restriction if already standing or sitting on stretcher. **NO STANDING TAKEDOWNS.**
- If patient will not tolerate motion restriction, document this and transport in position of comfort. Do not attempt to "wrestle" or force Spinal Motion Restriction
- If spinal motion restriction causes or worsens any pain or neurologic symptoms, provoking motion restriction device should be removed.
- Penetrating trauma without neurologic deficits should not be placed in motion restrictions.
- In remote access rescue situations, the vacuum mattress may be used with a cervical collar in place of a backboard.
- Seizure patients with ground level fall who do not meet other criteria should not have SMR performed.
- SMR devices may be used to prevent excessive movement during complex patient extrications (remote access, high/low angle, rough terrain, etc.) and then devices removed to appropriate level of immobilization.
- Utilize abundant padding behind anatomical voids.

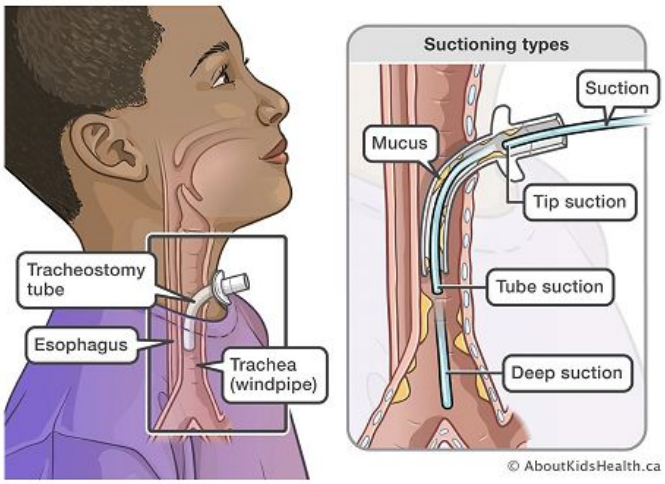
X.32 Suctioning a Tracheostomy

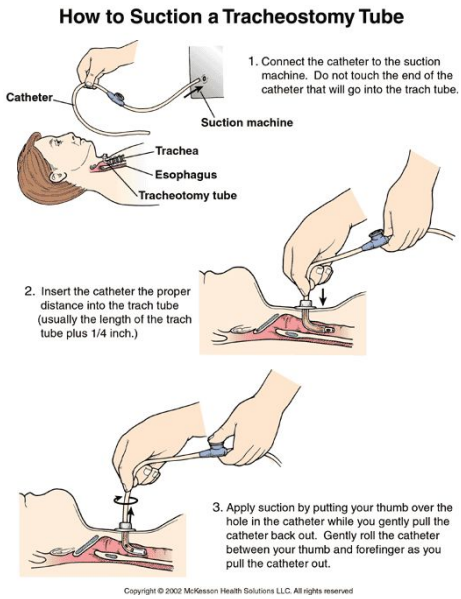
EMT | AEMT | INT | PM

INDICATIONS
- Airway obstruction (ex. visible/audible secretions) - Gurgling or bubbling sounds - Difficulty breathing - Desaturation or cyanosis - Suspected mucus plug

Procedure:

1. Don PPE. Patients frequently cough during suctioning and can expel mucus/phlegm forcefully.
2. Measure french catheter from the hub of the trach down to the carina.
    a. External landmark for the carina is the Angle of Louis. Locate the sternal notch and run your fingers down the sternum a few time and you should feel bony prominence (Angle of Louis) around the 2nd intercostal space.
3. Connect french catheter to suction tubing and start suction between 80 mmhg - 120 mmhg.
4. Maintain sterility by having one hand dedicated to holding the catheter
5. Insert catheter until measured depth and coughing is stimulated or until resistance is met. Allow for it to follow natural curvature of the tube.
6. Occlude thumb on suction hole and slowly withdraw catheter.
7. While slowly withdrawing catheter, rotate gently.
8. Repeat 2-3 times til secretions are clear. May repeat as needed during transport. Allow for breaks in between passes and suctioning.
9. If french catheter becomes clogged, suction sterile saline or water to clean.
10. Prioritize rapid transport to the hospital if suctioning does not relieve airway obstruction (patient may require a bronchoscopy/lavage).
11. If inner cannula is clogged (catheter will not pass), remove and transport immediately.





X.33 Diagnostic Point-of-Care Ultrasound

EMT | AEMT | INT | PM

Release Requirements:
- *Providers must complete an orientation with a PACO-approved preceptor*
- *5 scans on healthy volunteers must be obtained for each domain (lung, cardiac, vascular) and reviewed by an approved reviewer*
- *Providers must pass ultrasound quiz*
- *Final release must be issued by PACO*

INDICATIONS

- Respiratory Distress
- Shock/Hypotension
- Cardiac Arrest
- Suspected Pneumothorax

Documentation:
- See Butterfly Ultrasound user guide in Google Drive for full instructions
- Imagetrend should have documentation of scans that took place with interpretation
- In ButterflyIQ cloud, documentation should be labeled with operators name and incident number - no patient identifiers should be entered in the Butterfly cloud.

Quality Assurance:
- All scans will be reviewed for quality assurance purposes

SPECIAL CONSIDERATIONS

- Prehospital ultrasound scans are limited in nature and don't replace formal evaluation. Transport to a hospital will always take precedence over ultrasound image acquisition.
- Butterfly IQ probe should not be used over open wounds

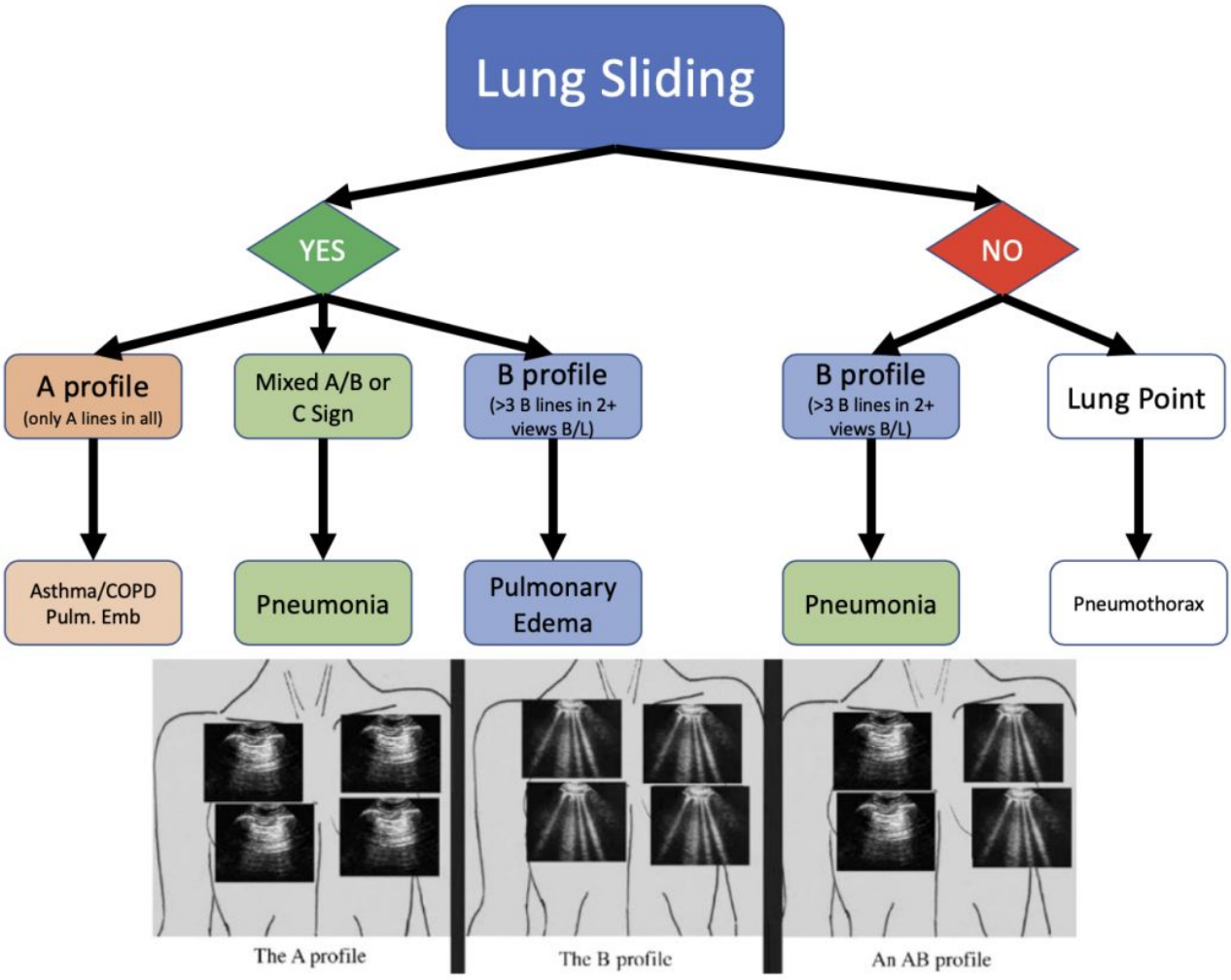
(continued on next page)

X.33 Diagnostic Point-of-Care Ultrasound

EMT | AEMT | INT | PM

Procedure for Lung Ultrasound for Dyspnea:

1. Indicated for evaluation of dyspnea
2. Required views (6 total)
   a. Bilateral anterior/superior thorax
   b. Bilateral anterior/inferior thorax
   c. Bilateral lateral/inferior thorax
3. Utilize “Bedside Lung Ultrasound in Emergency” (BLUE) protocol shown below to interpret findings and refer to appropriate guideline



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X.33 Diagnostic Point-of-Care Ultrasound

EMT | AEMT | INT | PM

RATIONALE

Cardiac ultrasound can be used to recognize causes of poor cardiac output including cardiogenic shock, valvular pathology, cardiac tamponade. It can be incorporated into cardiac arrest resuscitation to identify Hs and Ts and help with the decision to terminate resuscitation by identifying organized cardiac activity or lack thereof.

Procedure for Limited Point-of-Care Echocardiography:

In patients with pulse:

1. Indications: Shock/hypotension
2. Required views:
    - Parasternal long axis
    - Parasternal short axis
    - Apical 4-chamber
    - Subxiphoid
    - Subcostal IVC view
3. Examine for qualitative ejection fraction (hypodynamic, normal, hyperdynamic), IVC diameter and collapsibility with respiration, regional wall motion abnormalities, RV dilation (“D-sign”), and tamponade at minimum. Other items that may be examined if trained include end-point septal separation (EPSS) measurement and EF estimation, valvular dysfunction, and color doppler.

In patients in cardiac arrest:

1. Providers should not interrupt compressions for ultrasound acquisition. Operator should be completely ready to scan prior to rhythm check.
2. Obtain either parasternal long axis or subxiphoid view and examine for cardiac motion.
3. Record images for documentation and so that interpretation can be performed while compressions are resumed.
4. Obtain scan for no longer than 10 seconds before resuming compressions.

X.34 Hemostatic Gauze

EMT | AEMT | INT | PM

INDICATIONS
- Serious extremity hemorrhage that cannot be controlled with other means (e.g. tourniquet) - Serious hemorrhage in the junctional spaces: axilla (armpit), groin, or neck

CONTRAINDICATIONS
- Hemostatic gauze should not be used in the head, chest, or abdomen

Procedure:

1. Place a gloved finger/hand into the wound to determine source of bleeding.
2. Apply direct pressure to the bleeding site with pressure focused towards the heart.
3. If wound is full of blood, sweep out excess blood.
4. While still maintaining pressure, ball up a small amount of hemostatic agent, and place directly on the bleeding site.
5. Continue to pack more of the hemostatic agent while maintaining constant pressure back towards the heart to the best of your ability.
6. Pack the hemostatic agent into the wound until you run out of hemostatic, or the entire wound cavity is filled. If the would cavity is not filled add another hemostatic or non-hemostatic until the wound cavity is completely filled and sticks up about one half of an inch above the level of the skin.
7. Apply high quality direct pressure with a palm/fist for the prescribed amount of time
8. After the prescribed time has elapsed, check for further bleeding, if further bleeding is noted, remove all packed material and start back at step 1 with a new hemostatic agent.
9. If bleeding is controlled, apply a compression bandage over the wound site and note time of hemostatic agent application.

PEARLS

- Hemostatic agents act as an adjunct to high quality direct pressure to speed hemostasis
- Direct pressure should be applied towards the heart.
- Hemostatic agents will not work without proper direct pressure for their prescribed amount of time.
- Various forms of hemostatic agents exist, and require different times of mandated direct pressure
  - Celox Rapid Gauze – Require at least one full minute of direct pressure.
  - Combat Gauze - Require at least three full minutes of direct pressure.

X.35 Tourniquet Placement

EMT | AEMT | INT | PM

INDICATIONS
- Serious extremity hemorrhage that cannot be controlled with other means - Serious or life-threatening extremity hemorrhage where conditions, patient location, tactical, or hazmat environment, etc. prevent the use of standard hemorrhage control techniques. - Life threatening condition(s) that require immediate attention and significant extremity hemorrhage where the use of a tourniquet is more expedient than standard hemorrhage control (e.g. apneic patient with major extremity hemorrhage)

CONTRAINDICATIONS
- Tourniquets cannot be used for non-extremity bleeding - If wound is too proximal (in junctional space), tourniquets cannot be used

Notes:
- *Guiding principle is to place it "high and tight"*
- *Tourniquet should be tightened to maximum allowed by the strength of the provider*
- *Diameter of a limb is the best indicator of pressure required to occlude blood flow. Larger limbs require more pressure*

Procedure:

1. Outside of tactical environments, ensure appropriate initial bleeding control measures have been taken before escalating to tourniquet use.
2. Place tourniquet proximal to wound (e.g. axillary area for upper extremity, inguinal area for lower extremity)
3. Tighten until loss of distal pulses (if palpable). Failure to adequately tighten the tourniquet may allow arterial flow while restricting venous return resulting in compartment syndrome and increased venous bleeding.
4. Secure tourniquet. Tourniquet should be easily visible on affected limb.
5. Note time of tourniquet application and communicate this to receiving care providers.
6. Dress wounds per standard bleeding control guideline.
7. Refer to pain management guideline as needed.
8. An additional tourniquet may be placed just distal to initial tourniquet if one tourniquet doesn't adequately control bleeding. Leg wounds often require two tourniquets.
9. Frequently assess for bleeding, increased MAP from resuscitation may cause patient to re-bleed.

SECTION XI:
MEDICATION FORMULARY

ACETAMINOPHEN (TYLENOL)

EMT AEMT INT PM

Generic name:	Acetaminophen
Trade or other names:	Tylenol, Paracetamol, APAP
Description:	Centrally acting analgesic and antipyretic with minimal anti-inflammatory properties. Mechanism of action is not known but may be due to an inhibition of central prostaglandin synthesis [specifically cyclooxygenase (COX)] and an elevation of the pain threshold.
Indications:	Mild to moderate orthopedic pain (sprains, strains, minor suspected fractures) Mild to moderate pain for medical complaints Fever (> 101.5°F/38.5°C)
Contraindications:	History or signs of severe hepatic impairment/disease (e.g. jaundice, liver failure, hepatitis, etc) Hypersensitivity Acetaminophen administration in the past 4 hours Unable to swallow Altered mental status
Precautions:	Alcohol use disorders Anaphylaxis has been reported Malnutrition and severe renal impairment increase risk of hepatic injury *Patients should be specifically asked about any over-the-counter (OTC) medications they have taken, as many OTC products contain acetaminophen (Ex: DayQuil, NyQuil) and pain relievers (Ex: Excedrin). Unintentional acetaminophen overdose can lead to hepatotoxicity; therefore, careful history-taking is essential before administration.
Side effects:	Itchy skin, Stevens-Johnson Syndrome (SJS), constipation, nausea, vomiting, liver failure
Supply:	325 mg tablet
Administration:	Adult (≥ 14 years): 975 mg PO (3 tablets)
Notes:	ALS providers may give 975 mg in conjunction with Fentanyl.

ADENOSINE

EMT | AEMT | INT | PM

Generic name:	Adenosine
Trade or other names:	Adenocard
Description:	Class V antidysrhythmic - Slows electrical conduction in the heart, slowing heart rate, and/or normalizing heart rhythm
Indications:	Regular narrow-complex tachycardia (suspected SVT)
Contraindications:	Known hypersensitivity (allergy) 2nd and 3rd degree heart block Pre-excited atrial fibrillation (Atrial fibrillation with WPW)
Precautions:	Pregnancy Category C Use caution in patients with asthma
Side effects:	Shortness of breath, chest pain, palpitations, lightheadedness, seizure, severe headache, sudden numbness or weakness, flushing, nausea, headache, dizziness, neck or jaw discomfort
Supply:	12 mg/4mL
Administration:	<u>Adult</u> *For tachycardia:* - 12 mg RAPID IV PUSH followed by 20 mL flush <u>Pediatric</u> *For tachycardia* - 0.1mg/kg (max 12mg) RAPID IV PUSH followed by 20 mL flush - If repeats are required, contact medical command
Notes:	Ensure defibrillation pads are in place

ALBUTEROL

EMT | AEMT | INT | PM

Generic name:	Albuterol sulfate
Trade or other names:	Proventil, Ventolin, ProAir
Description:	Bronchodilator Stimulates beta-2 receptors to relax muscles in the airway, dilating passages, and increasing air flow to and within lungs.
Indications:	Bronchospasm (reactive lower airway disease) due to asthma or COPD, anaphylaxis, suspected hyperkalemia from crush injury (ALS only)
Contraindications:	Known hypersensitivity (allergy)
Precautions:	May increase heart rate Use caution in patients with cardiovascular disease Use caution in patients with heart failure, risk of decreased cardiac output and worsening pulmonary edema.
Side effects:	Tachycardia, jittery sensation, anxiety
Supply:	2.5 mg
Administration:	*For bronchospasm due to asthma, COPD or anaphylaxis:* 2.5 mg via HHN every 10 minutes, may repeat 3 times May combine with ATROVENT to make DuoNeb ALS only for suspected hyperkalemia ISO crush injury, severe burns, POC confirmed hyperkalemia Pediatric dosing same as adult
Notes:	

AMIODARONE

EMT | AEMT | INT | PM

Generic name:	Amiodarone
Trade or other names:	Cordarone
Description:	Class III antidysrhythmic that prolongs action potential duration, refractory period and QT interval - also has Class I, II, and IV antidysrhythmic activity
Indications:	Ventricular fibrillation (VF) or pulseless ventricular tachycardia (pVT) in cardiac arrest; wide complex tachycardia (VT) with a pulse
Contraindications:	Known hypersensitivity (allergy) 2nd and 3rd degree heart block Cardiogenic shock Pregnancy (Category D) - relative contraindication (use in arrest)
Precautions:	Use with caution in patients taking beta-blockers, calcium channel blockers, anticoagulants or drugs that prolong QTc. Use caution in suspected WPW
Side effects:	Bradycardia, dizziness, headache, hypotension, dyspnea
Supply:	150 mg/3 mL
Administration:	<u>Adult</u> *For cardiac arrest (VF/pVT)* - 1st dose: 300 mg IV push - 2nd dose: 150 mg IV push *For wide complex tachycardia with a pulse:* - 150 mg in 100 mL D5W or NS given over 10 minutes, can repeat x1 <u>Pediatric dosing</u> *For cardiac arrest (VF/pVT)* - 5 mg/kg IV push (max 300mg) - For persistent VF/pVT, give 2 additional doses 5 mg/kg doses *For wide complex tachycardia with a pulse:* - 5 mg/kg in 100 mL D5W given over 10 minutes
Notes:	

ASPIRIN

EMT | AEMT | INT | PM

Generic name:	Aspirin
Trade or other names:	Acetylsalicylic acid (ASA), Bayer
Description:	Decreases platelet aggregation thus decreasing clot formation
Indications:	Chest pain/suspected acute coronary syndrome (ACS)
Contraindications:	Known hypersensitivity (allergy) Active bleeding or bleeding disorders Stomach ulcers and/or history of GI bleeding
Precautions:	Use caution in patients taking anticoagulants For pregnant patients - contact medical command before administration
Side effects:	Tinnitus, confusion, hallucinations, seizures, nausea or vomiting, bloody/tarry stools, heartburn, abdominal discomfort
Supply:	81 mg tablet
Administration:	Adult 324 mg orally (PO), chewed
	Pediatric Not indicated
Notes:	

ATROPINE

EMT | AEMT | INT | PM

Generic name:	Atropine
Trade or other names:	N/A
Description:	Inhibits acetylcholine receptors, causing a blockage of the parasympathetic nervous system which increases SA node rate and dries secretions
Indications:	Symptomatic bradycardia
Contraindications:	Known hypersensitivity (allergy)
Precautions:	May cause tachydysrhythmias and/or hypertension, use caution in acute MI May be ineffective in 2nd degree type 2 or 3rd degree blocks Will be ineffective in heart transplant patients
Side effects:	Dilated pupils, blurry vision, chest pain, dizziness, eye pain, fever, syncope, tachycardia or bradycardia, weakness, nausea or vomiting, headache, abdominal pain, hives/rash
Supply:	1 mg/10 mL
Administration:	<u>Adult</u> *For symptomatic bradycardia:* - 1 mg IV - May repeat to maximum of 3 mg <u>Pediatric dosing</u> *For symptomatic bradycardia (of suspected vagal origin)* - 0.02 mg/kg IV over 1 minute - May repeat to maximum of 3 mg
Notes:	

CALCIUM CHLORIDE

EMT | AEMT | INT | PM

Generic name:	Calcium Chloride
Trade or other names:	N/A
Description:	Naturally occurring electrolyte in the body critical for cardiac and muscle function
Indications:	Calcium channel blocker overdose, suspected hyperkalemia, crush injury
Contraindications:	Digitalis toxicity Hypercalcemia
Precautions:	DO NOT MIX with sodium bicarbonate in the same IV line. Ensure an adequate flush is used between medication administration
Side effects:	Tingling sensation, burning at injection site, constipation, muscle cramps
Supply:	Determined at time of ordering if needed
Administration:	Adult *For cardiac arrest in known renal disease or hyperkalemia suspected* - 1g IVP *For symptomatic calcium channel OD or crush injury with ECG changes:* - 20 mg/kg in 100 mL NS or D5W over 10 minutes Pediatric dosing For symptomatic calcium channel blocker OD: - 20 mg/kg in 100 mL NS or D5W over 10 minutes, maximum dose of 1g
Notes:	This is a backup medication protocol for times when Calcium gluconate is not available due to supply shortages or other logistical problems. Calcium chloride is not to be used if calcium gluconate is available.

CALCIUM GLUCONATE

EMT | AEMT | INT | PM

Generic name:	Calcium Gluconate
Trade or other names:	N/A
Description:	Naturally occurring electrolyte in the body critical for cardiac and muscle function
Indications:	Calcium channel blocker overdose, suspected hyperkalemia, crush injury Guidelines:
Contraindications:	Digitalis toxicity Hypercalcemia
Precautions:	DO NOT MIX with sodium bicarbonate in the same IV line. Ensure an adequate flush is used between medication administration Hepatic or renal impairment
Side effects:	Tingling sensation, burning at injection site, lightheadedness, irregular heartbeat, constipation
Supply:	1 g/10 mL
Administration:	<u>Adult</u> *For cardiac arrest in known renal disease* - 1 g IVP *For symptomatic calcium channel OD or crush injury with ECG changes:* - 20 mg/kg in 100 mL NS or D5W over 10 minutes
	<u>Pediatric dosing</u> *For symptomatic calcium channel blocker OD:* - 20 mg/kg in 100 mL NS or D5W over 10 minutes, maximum dose of 1 g
Notes:	

CEFAZOLIN (ANCEF)

EMT AEMT INT PM

Generic name:	Cefazolin
Trade or other names:	Ancef
Description:	Cephalosporin antibiotic, action due to inhibition of bacterial cell wall synthesis. Clinically effective against infections caused by staphylococci and streptococci species of Gram positive bacteria. It attains high serum levels and is excreted quickly via the urine.
Indications:	Open skeletal fracture or break in skin at site of fracture Penetrating abdominal trauma Significant soft-tissue injury with possibility of fracture deep to injury
Contraindications:	History of circulatory shock, facial or airway swelling, or respiratory distress with previous administrations of penicillin or cephalosporins Nonspecific penicillin allergy (including hives) is NOT a contraindication to administration; anaphylactic reaction as described above is a contraindication
Precautions:	None
Side effects:	Diarrhea, pain/rash at injection site
Supply:	1 g vial, should be reconstituted with 2.5 mL sterile water prior to use
Administration:	Adult (≥ 14 years or signs of puberty): ● ≥ 80 kg (175 lb): 2 g IV piggyback in 100 mL D5W ● ≤ 80 kg (175 lb): 1 g IV piggyback in 100 mL D5W ● 1 g reconstituted with 2.5 mL sterile water for IM administration Dose may be given IM in anterolateral thigh if IV access is unavailable or would delay transport
Notes:	Unless the patient reports a history of circulatory shock, respiratory, or airway problems with previous administrations of penicillin or cephalosporins (e.g., Ancef), the subsequent use of cephalosporins in such patients is considered safe (even in patients who are unconscious) given the fact that anaphylaxis is generally witnessed in less than 1 in 1000 cases. Put simply, penicillin allergy is generally NOT a contraindication to administration of Ancef.

DEXAMETHASONE (DECADRON)

EMT | AEMT | INT | PM

Generic name:	Dexamethasone
Trade or other names:	Decadron
Description:	Glucocorticosteroid (hormone) that reduces inflammation and immune response by multiple mechanisms including modifying inflammatory mediators such as prostaglandins and leukotrienes. Decreases capillary permeability and increases surfactant synthesis.
Indications:	Allergic reactions Asthma exacerbation COPD exacerbation Angioedema Reactive Airway/Inflammation Pneumonia
Contraindications:	Hypersensitivity Systemic infections
Precautions:	Cushing's Syndrome; Infection or Sepsis; Antiviral Use; Anticoagulant Use (Apixaban); Immunosuppressed; Diabetics
Side effects:	Hyperglycemia, hypertension, nausea, vomiting, insomnia, delirium, fluid retention, CHF exacerbation, hypokalemia, hypernatremia, hiccups
Supply:	10 mg/ml
Administration:	Adult (≥ 14 years): 10 mg IV/IM/PO
	Pediatric (< 14 yrs): 0.6 mg/kg IV/IM/PO 10 mg max PO is preferred
Notes:	IV formulation can be given directly PO with syringe or mixed with small volume flavored liquid if available (e.g. apple sauce, juice). Pregnancy Class C - Safety Not Established

DEXTROSE (D10)

EMT | AEMT | INT | PM

Generic name:	Dextrose
Trade or other names:	N/A
Description:	Simple sugar used for raising blood sugar levels. Supplied as 10% solution
Indications:	Altered mental status from suspected hypoglycemia
Contraindications:	Known hypersensitivity (allergy) Known intracranial/intraspinal hemorrhage Wernicke encephalopathy
Precautions:	Patients with corn allergies may develop allergic reactions to dextrose solutions
Side effects:	Hyperglycemia, phlebitis at site
Supply:	250 mL bag
Administration:	Adult For hypoglycemia: 25 g bolus, repeat once in 10 minutes Pediatric dosing For hypoglycemia: 5mL/kg (up to 25g maximum) Neonate dosing: 2 mL/kg
Notes:	Use extra caution to ensure IV site is patent and flushing smoothly without infiltration

DIPHENHYDRAMINE

EMT | AEMT | INT | PM

Generic name:	Diphenhydramine
Trade or other names:	Benadryl
Description:	An antihistamine (H1 antagonist) used to control itchiness, hives, and other symptoms of allergic reactions
Indications:	Allergic reaction Dystonic reaction
Contraindications:	Known hypersensitivity (allergy) MAO inhibitor use Avoid in patients who are breastfeeding
Precautions:	Can burn with IV administration, consider diluting
Side effects:	Drowsiness, lack of coordination, increased secretions, headache, dryness of mouth, thickening of bronchial secretions
Supply:	50 mg/mL
Administration:	<u>Adult</u> *For allergic reaction or dystonic reaction:* - 25-50 mg IV/IM <u>Pediatric dosing</u> For allergic reaction: - 1 mg/kg IV/IM
Notes:	Administer deep IM into large muscle mass

EPINEPHRINE 1 mg/1 mL (1:1000)

EMT AEMT INT PM

Generic name:	Epinephrine
Trade or other names:	Adrenalin
Description:	Synthetic sympathetic neurotransmitter, stimulating alpha, beta-1 and beta-2 receptors
Indications:	Anaphylaxis, severe asthma, vasopressor for shock
Contraindications:	Known hypersensitivity (allergy)
Precautions:	Use caution in patients with cardiac conditions
Side effects:	Difficulty breathing, tachycardia, nausea or vomiting, dizziness, weakness, headache, anxiety, restlessness
Supply:	1 mg/mL (1:1000)
Administration:	<u>Adult</u> *For anaphylaxis (EMT ONLY)* - 0.3 mg in pre-filled syringe *For anaphylaxis:* - 0.3 mg - 0.5 mg IM, may repeat every 5 minutes *For severe asthma:* - 0.3 mg IM once *For refractory anaphylactic shock* - 1-10 mcg/min *Push-dose* - 10-20 mcg (10 mcg/mL)
	<u>Pediatric dosing</u> For anaphylaxis: - 0.01 mg/kg IM (max 0.3 mg) For croup/epiglottitis: - 2 mg nebulized
Notes:	

EPINEPHRINE 1 mg/10 mL (1:10000)

EMT AEMT INT PM

Generic name:	Epinephrine
Trade or other names:	Adrenalin
Description:	Synthetic sympathetic neurotransmitter, stimulating alpha, beta-1 and beta-2 receptors
Indications:	Cardiac arrest
Contraindications:	Known hypersensitivity (allergy)
Precautions:	Use caution in patients with cardiac conditions
Side effects:	Difficulty breathing, tachycardia, nausea or vomiting, dizziness, weakness, headache, anxiety, restlessness
Supply:	1mg/10mL (1:10000)
Administration:	<u>Adult</u> *For cardiac arrest (ALS only)* - 1mg/10mL (1:10,000): 1mg IV/IO every 3 - 5 minutes <u>Pediatric dosing</u> *For cardiac arrest:* - 1 mg/10 mL (1:10,000): 0.01 mg/kg IV/IO, max 1 mg every 3 - 5 minutes <u>Neonate dosing:</u> *For cardiac arrest:* - 0.02 mg/kg (0.2 mL/kg) IV/IO every 3 - 5 minutes
Notes:	

FENTANYL

EMT | AEMT | INT | PM

Generic name:	Fentanyl
Trade or other names:	Sublimaze
Description:	Schedule II narcotic that stimulates opioid receptors producing analgesia, some sedation and respiratory depression
Indications:	Control of moderate to severe pain Post-intubation sedation management
Contraindications:	Known hypersensitivity (allergy) Respiratory depression
Precautions:	Use caution in patients with opioid use disorder
Side effects:	Hypotension, respiratory depression, dizziness, nausea, vomiting, diaphoresis
Supply:	100 mcg/2 mL
Administration:	Adult *For pain management:* - 25-50 mcg IV/IO/IM/IN (max 200 mcg total dose) Pediatric dosing *For pain management* - 1 mcg/kg IV/IO/IM/IN (max 50mcg) - I/P may repeat once
Notes:	

GLUCAGON

EMT | AEMT | INT | PM

Generic name:	Glucagon
Trade or other names:	N/A
Description:	Raises blood sugar by stimulating release of glycogen from liver
Indications:	Hypoglycemia, Beta Blocker OD
Contraindications:	Known hypersensitivity (allergy)
Precautions:	May be less effective if given to a patient who recently received a dose
Side effects:	Nausea, swelling at injection site, vomiting, headache, hypoglycemia (in patients with insulinomas)
Supply:	1 mg vial to be reconstituted with 1 mL of sterile water
Administration:	<u>Adult</u> *For hypoglycemia* - 1 mg IM *For beta blocker/calcium channel blocker OD:* - 1 mg IM
	<u>Pediatric dosing</u> For hypoglycemia - 1 mg IM if >20kg - 0.5mg IM if <20kg For beta blocker/calcium channel blocker OD: - 1 mg IM
Notes:	A significant dose is needed to be effective for a beta-blocker overdose.

GLUCOSE (ORAL)

EMT | AEMT | INT | PM

Generic name:	Glucose
Trade or other names:	Insta-Glucose, etc
Description:	Simple sugar used to raise blood glucose levels
Indications:	Hypoglycemia in an awake patient that is able to swallow
Contraindications:	Known hypersensitivity (allergy) Altered LOC inhibiting ability to follow commands and swallow
Precautions:	None
Side effects:	Nausea, lightheadedness
Supply:	15 g tube
Administration:	<u>Adult</u> Hypoglycemia: - 15 g PO Q10 x2 <u>Pediatric dosing</u> Hypoglycemia: - 15 g PO
Notes:	15 g of oral glucose can increase blood sugar by up to 75 mg/dL.

HALOPERIDOL

EMT | AEMT | INT | PM

Generic name:	Haloperidol
Trade or other names:	Haldol
Description:	Antipsychotic used in treatment of schizophrenia, mania, delirium and acute psychosis
Indications:	Chemical restraint in acutely agitated patients
Contraindications:	Known hypersensitivity (allergy) Hypotension Respiratory depression
Precautions:	Be alert for dystonic reactions Be cautious in patients that take medications that prolong QTC
Side effects:	Uncontrolled facial muscle movements, muscle spasms, drowsiness, high fever, palpitations, headache, dizziness, anxiety, nausea, vomiting, dry mouth
Supply:	5 mg/mL
Administration:	Adult For acute psychological agitation: Pediatric dosing: - By medical command only
Notes:	Haloperidol shall not be mixed in the same syringe with any other medication.

IPRATROPIUM BROMIDE

EMT | AEMT | INT | PM

Generic name:	Ipratropium bromide
Trade or other names:	Atrovent
Description:	Bronchodilator/mucolytic used in reactive and obstructive airway disease processes to dilate bronchial passages and reduce bronchial secretions
Indications:	Bronchospasm due to asthma, COPD or infectious process
Contraindications:	Known hypersensitivity (allergy)
Precautions:	Use caution in patients with preexisting glaucoma or urinary retention
Side effects:	Cold symptoms (cough, sore throat, stuffy nose), anxiety, dizziness, headache, chest tightness, shortness of breath, bronchospasm
Supply:	0.5 mg/2.5 mL
Administration:	<u>Adult</u> *For bronchospasm due to asthma, allergic reaction, COPD or infectious process:* - 0.5 mg in Neb. Do not repeat. <u>Pediatric dosing</u> Same as adult
Notes:	Only to be used in conjunction with Albuterol

KETAMINE

EMT | AEMT | INT | PM

Generic name:	Ketamine
Trade or other names:	Ketalar
Description:	Dissociative anesthetic Blocks NMDA receptors in CNS causing decreased sensory processing and dissociation/amnesia
Indications:	Severe pain refractory to Fentanyl Sedation prior to cardioversion/pacing Anxiolysis for CPAP/BL Post-advanced airway sedation (paramedic only)
Contraindications:	Known hypersensitivity (allergy)
Precautions:	When pushing IV, push SLOWLY (60 seconds) to avoid hypotension Be aware for possible re-emergence reactions Laryngospasm can occur with rapid administration Use caution in conditions where an increase in blood pressure may be harmful
Side effects:	Bradycardia, lightheadedness, jerkiness, chest pain, seizures, double vision, hallucinations, tachycardia, laryngospasm
Supply:	200 mg/20 mL
Administration:	<u>Adult</u> *For pain management/anxiolysis for CPAP/BiPAP* - 0.1 - 0.3 mg/kg, maximum single dose 20 mg (max total dose 40 mg) *For post-advanced airway sedation (paramedic only):* - *1 mg/kg, may repeat dose in 5 minutes if sedation inadequate* <u>Pediatric dosing</u> *For pain management*
Notes:	Consider diluting low-dose Ketamine to help facilitate administration <u>All ketamine weight-based dosing should be based on ideal body weight</u>

KETOROLAC (TORADOL)

EMT | AEMT | INT | PM

Generic name:	Ketorolac
Trade or other names:	Toradol, Acular, Sprix
Description:	NSAID. Pharmacologically, acts as a non-specific cyclooxygenase inhibitor; produces pain relief by inhibiting production of pain-mediating prostaglandins. Additionally inhibits thromboxane synthesis, causing platelet inhibition as an off-target effect.
Indications:	Moderate to severe pain of any origin in patients age 18 - 65
Contraindications:	History of chronic kidney disease (nephrotoxic) History of or current gastrointestinal bleeding/gastric ulcers Multisystem trauma or high-risk mechanism of injury Any suspicion for head, chest, or abdomen injury or hemorrhage Pregnancy
Precautions:	ASK if patient has taken any other NSAIDs before use (ibuprofen, diclofenac, naproxen). Safe for use with ACETAMINOPHEN.
Side effects:	Drowsiness, platelet inhibition (and associated GI bleeding), injection site pain, bronchospasm, kidney failure
Supply:	15 mg/mL vial
Administration:	Adult *Pain management ONLY:* - 15 mg IV/IM (do not repeat) Pediatric Dosing Not approved
Notes:	Especially effective for orthopedic injuries and kidney stones. Can be used in conjunction with Fentanyl, as effects are additive.

LIDOCAINE

EMT | AEMT | INT | PM

Generic name:	Lidocaine
Trade or other names:	Xylocaine
Description:	Antiarrhythmic and local anesthetic that works by blocking fast voltage-gated sodium channels on cell membranes, thus raising the threshold for action potential generation. Class 1b antiarrhythmic.
Indications:	Refractory ventricular fibrillation/pulseless ventricular tachycardia Ventricular tachycardia w/ a pulse
Contraindications	None in shockable cardiac arrest rhythms In VT w/ a pulse: - Known/suspected Wolff-Parkinson-White syndrome
Precautions:	- In hypotensive patients with ventricular tachycardia, electrical cardioversion is the more appropriate treatment - Use in patients who take amiodarone may precipitate bradycardia
Side effects:	Bradycardia, hypotension, bronchospasm, respiratory depression, tinnitus
Supply:	100 mg/5 mL vial (2% lidocaine)
Administration:	Adult: *Refractory ventricular fibrillation/pulseless ventricular tachycardia:* - First dose: 1 - 1.5 mg/kg IV/IO after 3rd defibrillation - max 150mg - Second dose: 0.5 - 0.75 mg/kg IV/IO after 2 more unsuccessful defibrillation attempts. *Ventricular tachycardia w/ a pulse:* - 1 mg/kg in 100 ml D5W over 10 minutes. Pediatric Dosing *Refractory VF/pulseless VT:* - 1 mg/kg IV/IO after 3rd defibrillation. May repeat dose to maximum of 3mg/kg
Notes:	This is a backup medication protocol for times when amiodarone is not available due to supply shortages or other logistical problems. Lidocaine is not to be used if amiodarone is available.

MAGNESIUM SULFATE

EMT | AEMT | INT | PM

Generic name:	Magnesium Sulfate
Trade or other names:	None
Description:	Electrolyte - naturally occurring electrolyte in the body that is critical for cardiac and muscular function.
Indications:	Polymorphic Ventricular Tachycardia (Torsade de Pointes) Eclampsia
Contraindications:	Pregnancy in the absence of eclampsia Third Degree AV Block
Precautions:	Magnesium Sulfate is a smooth muscle relaxant, rapid administration can result in hypotension. Magnesium sulfate is a tocolytic medication (slows/stops uterine contractions). This medication can inhibit childbirth if administered for an inappropriate indication.
Side effects:	Hypotension with rapid administration Magnesium toxicity Arrhythmias, flushed skin, nausea/vomiting, drowsiness, slurred speech, double vision, respiratory depression
Supply:	1 g/2mL vial
Administration:	Adult: *For polymorphic ventricular tachycardia with a pulse:* 2 g IO/IV in 100 mL D5W over 5 minutes *Pulseless polymorphic ventricular tachycardia:* 2 g IO/IV diluted in 6 mL of NS over 1-2 minutes *For eclampsia:* 4 g IV in 100 mL D5W (wide open) *Pediatric pVT:* 50 mg/kg IV/IO undiluted over 2 minutes Max 2 g
Notes:	Any patient receiving Magnesium Sulfate IV should have continuous cardiac monitoring and frequent monitoring of vital signs.

METOPROLOL

EMT | AEMT | INT | PM

Generic name:	Metoprolol
Trade or other names:	Lopressor, Toprol
Description:	Beta-1 blocker used in the management of certain dysrhythmias
Indications:	Stable narrow complex tachycardia
Contraindications:	Known hypersensitivity (allergy) Bradycardia Hypotension (SBP <100) 2nd or 3rd degree AV block
Precautions:	Be alert for signs of heart failure, bradycardia, heart block, shock and bronchospasm. Use caution if patient is prescribed a non-dihydropyridine calcium channel blocker.
Side effects:	Hypotension, bradycardia, dizziness, lightheadedness, shortness of breath, confusion
Supply:	5 mg/5 mL
Administration:	Adult: *For irregular narrow complex tachycardia (atrial fibrillation):* - 5mg slow IV over two minutes for maximum of 15mg *For regular narrow complex tachycardia (SVT):* - IF refractory to Adenosine administration - - 5 mg slow IV push ONCE Pediatric dosing: Not approved
Notes:	Blood pressures should be reassessed before and after each dose of Metoprolol.

MIDAZOLAM

EMT | AEMT | INT | PM

Generic name:	Midazolam
Trade or other names:	Versed
Description:	Beta-1 blocker used in the management of certain dysrhythmias
Indications:	Seizures, chemical restraint, sympathomimetic overdose, alcohol withdrawal Sedation for agitation following endotracheal tube placement
Contraindications:	Known hypersensitivity (allergy) Acute angle closure glaucoma
Precautions:	Patients that take CNS depressants may experience more significant side effects
Side effects:	Hypotension, drowsiness, respiratory depression, tachycardia, bronchospasm
Supply:	5mg/mL
Administration:	Adult Seizure - 10 mg IM or 5 mg IV q5 minutes x2 Chemical Restraint - 2.5 - 5 mg IM Post Intubation sedation - 2.5 mg IV q 5 minutes for max of 10 mg Sympathomimetic Overdose - 2.5 - 5 mg Midazolam IV or 5 mg IM Alcohol Withdrawal - 2.5 mg IV or 5 mg IM, may repeat once after 5 minutes Pediatric dosing Seizure - 0.1 mg/kg
Notes:	Consider half dose in geriatric populations

NALOXONE

EMT | AEMT | INT | PM

Generic name:	Naloxone
Trade or other names:	Narcan
Description:	Competitive opioid receptor antagonist
Indications:	Opioid overdose
Contraindications:	Known hypersensitivity (allergy)
Precautions:	Rapid IV administration with appropriate ABC management can precipitate a combative return to consciousness
Side effects:	Nausea, vomiting, diarrhea, abdominal pain, restlessness, irritability, tachycardia, hypertension, tremors, body aches, weakness
Supply:	4 mg/10 mL vial 4 mg Intranasal spray (pink bag)
Administration:	<u>Adult</u> *For opioid overdose:* - 4 mg IN pre-packaged atomizer - 0.4 mg IV/IO <u>Pediatric dosing</u> *For opioid overdose:* - 0.1 mg/kg IV (max dose of 2mg) or 4mg IN (if >1 year old) - May repeat q3-5 minutes until cumulative dose of 4 mg is administered IV
Notes:	Avoid insertion of an advanced airway prior to Naloxone administration (if possible)

NITROGLYCERIN

EMT | AEMT | INT | PM

Generic name:	Nitroglycerin
Trade or other names:	Nitro-Bid
Description:	Smooth muscle relaxer causing vasodilation on peripheral veins and arteries, decreasing myocardial oxygen demand
Indications:	Chest pain/suspected acute coronary syndrome (ACS), heart failure exacerbation
Contraindications:	Known hypersensitivity (allergy) Hypotension (SBP < 100 mmHg) Sildenafil, Viagra, Cialis, Levitra (PDE-5 inhibitor) use within 24 - 72 hours Increased intracranial pressure (head injury)
Precautions:	In patients with identified inferior MI, obtain 15-lead ECG to assess for right ventricular involvement prior to administration - do not administer nitroglycerin to patients with right ventricular MI
Side effects:	Hypotension, headache, dizziness/lightheadedness, nausea, vomiting
Supply:	0.4 mg tablet 1” paste
Administration:	<u>Adult</u> *For chest pain:* - 0.4 mg SL up to three doses - 1” Nitropaste transdermally *Congestive heart failure exacerbation:* - 0.4mg SL up to three doses OR 1.2mg SL (three tabs) up-front if profoundly hypertensive (SBP >180mmHg) - 1” nitropaste transdermally <u>Pediatric dosing</u> Not approved
Notes:	Nitroglycerin is a venodilator more than an arterial vasodilator, and thus will drop preload more than afterload

NOREPINEPHRINE

EMT | AEMT | INT | PM

Generic name:	Norepinephrine
Trade or other names:	Levophed
Description:	Hormone of the sympathetic nervous system. Vasopressor. Agonist at alpha and beta receptors with preferential alpha-agonist activity.
Indications:	Hypotension refractory to appropriate fluid resuscitation
Contraindications:	Tachydysrhythmia
Precautions:	Use caution in patients with cardiogenic shock
Side effects:	Hypertension, tachycardia, reflex bradycardia
Supply:	4 mg/4 mL vial
Administration:	<u>Adult</u> - 5 - 30 mcg/min via intravenous pump. - 16-32 mcg via push-dose IV/IO until drip can be established - may repeat every 1-2 minutes as needed <u>Pediatric dosing</u> - 0.05-0.1 mcg/kg/min via intravenous pump
Notes:	For push-dose or drip norepinephrine, mix 4mg in 250mL D5W to make 16mcg/mL concentration

ONDANSETRON

EMT | AEMT | INT | PM

Generic name:	Ondansetron
Trade or other names:	Zofran
Description:	5-HT3 inhibitor that suppresses nausea by blocking the action of serotonin
Indications:	Nausea/vomiting
Contraindications:	Known hypersensitivity (allergy) Known or suspected prolonged QT-interval
Precautions:	Use caution in patients that take medications known to prolong QT-interval
Side effects:	Headache, fatigue, diarrhea, constipation, drowsiness, palpitations, serotonin syndrome, difficulty breathing
Supply:	4 mg/2 mL IV/IM -OR- 4 mg/tablet ODT (Orally Dissolving Tablet)
Administration:	Adult *For nausea/vomiting:* - 4 mg PO/IV/IM, repeat every 10 minutes as needed, for a maximum dose of 12 mg. Pediatric dosing *For nausea/vomiting:* Age 6 months - 4 years: 0.1 mg/kg IV/IM Age > 4 years: Adult dose (IV/IM/PO)
Notes:	Onset: Varies based on route Duration: 4-8 hours Serotonin syndrome: - Tachycardia, hypertension, hyperthermia, dilated pupils, tremors, muscle rigidity, deep tendon hyperreflexia EMTs can only administer the PO formulation of this medication

RACEMIC EPINEPHRINE

EMT AEMT INT PM

Generic name:	Racemic epinephrine
Trade or other names:	Racepinephrine
Description:	Racemic formulation of epinephrine - used in nebulizer therapy for croup.
Indications:	Croup
Contraindications:	Known hypersensitivity (allergy)
Precautions:	Use caution in patients that take medications known to prolong QT-interval
Side effects:	Tachycardia, hypertension, mydriasis, headache, anxiety
Supply:	0.5 mL “bullet” of 2.25% racepinephrine solution
Administration:	<u>Adult</u> - *Not approved* <u>Pediatric dosing</u> *For Croup:* - *0.5mL 2.25% racemic epinephrine mixed with 2.5mL normal saline administered via nebulizer*
Notes:	

SODIUM BICARBONATE (8.4%)

EMT | AEMT | INT | PM

Generic name:	Sodium Bicarbonate
Trade or other names:	N/A
Description:	Used primarily to assist in the alkalinization of the blood through supplementing the bicarbonate buffer system and binding to free hydrogen ions to form carbon dioxide and water
Indications:	TCA overdose, suspected hyperkalemia in crush syndrome or cardiac arrest
Contraindications:	Known hypersensitivity (allergy) Metabolic and respiratory alkalosis Cardiac arrest without suspected (renal/electrolyte/toxicological) cause
Precautions:	Should not be given routinely in cardiac arrest. Do not give in the same line as Calcium without large volume flush
Side effects:	Muscle pain/twitching, nausea or vomiting, restlessness, bradypnea
Supply:	50 mEq/50 mL
Administration:	<u>Adult</u> *TCA overdose:* - 1-2 mEq/kg for one dose *For crush syndrome:* - 1 mEq/kg IV over 5 minutes *For cardiac arrest with suspected hyperkalemia:* - 50 mEq
	<u>Pediatric</u> *For cardiac arrest with suspected hyperkalemia:* - *1 mEq/kg - contact medical command*
Notes:	

TRANEXAMIC ACID (TXA)

EMT | AEMT | INT | PM

Generic name:	Tranexamic acid (TXA)
Trade or other names:	Cyklokapron, Lysteda
Description:	Antifibrinolytic drug that reduces bleeding. Used in cases of internal hemorrhage to prevent the breakdown of already formed clots through inhibition of plasminogen and plasmin activity.
Indications:	Adult trauma patients with evidence or of hisk risk of significant internal hemorrhage meeting one or more of the following criteria: - Adult: SBP < 90 mmHg and/or MAP < 65 mmHg - Shock index* ≥ 1 - Postpartum hemorrhage that is acute (onset less than 3 hours)
Contraindications:	Known hypersensitivity or allergy Should not be given > 3 hours post-injury Postpartum hemorrhage > 3 hours post-birth
Precautions:	May cause worsened coagulopathy in some, use with caution in those with history of clotting disorders (e.g. DVT, PE, DIC, other blood clots), or severe renal failure. **Administration of TXA should not delay transport.**
Side effects:	Anxiety, headache, blurred vision, hypotension (with rapid IV infusion), chest pain, tachycardia, nausea, vomiting, diarrhea, shortness of breath, cough
Supply:	1 g/10 mL vial
Administration:	Adults (age ≥ 14 years): *For traumatic hemorrhage:* 2g slow IV/IO push (too fast may cause hypotension) *For post-partum hemorrhage:* 1g slow IV/IO push
Notes:	TXA does not help control external hemorrhage; use standard external bleeding control measures such as direct pressure, tourniquets, etc. *Shock index = HR/SBP (may be misrepresented with beta blocker use)

SECTION XII: REFERENCES

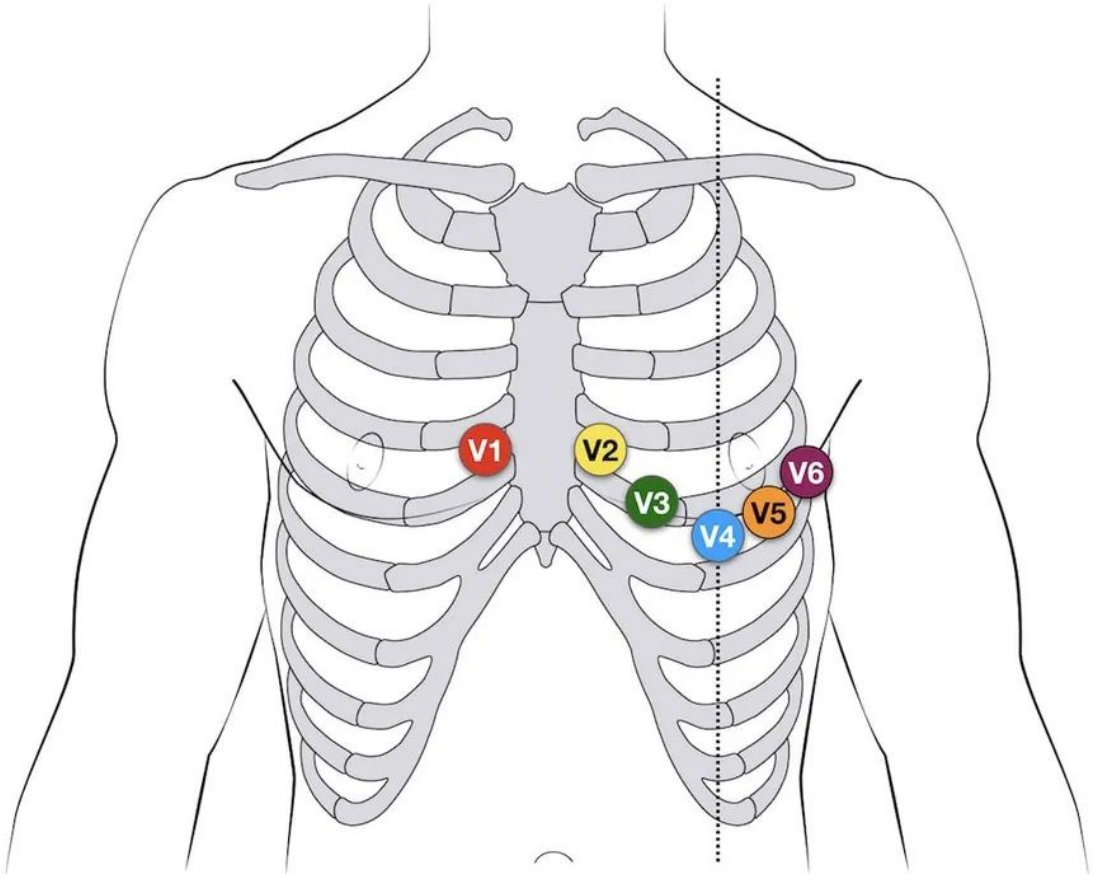
Reference: 12-lead ECG Acquisition

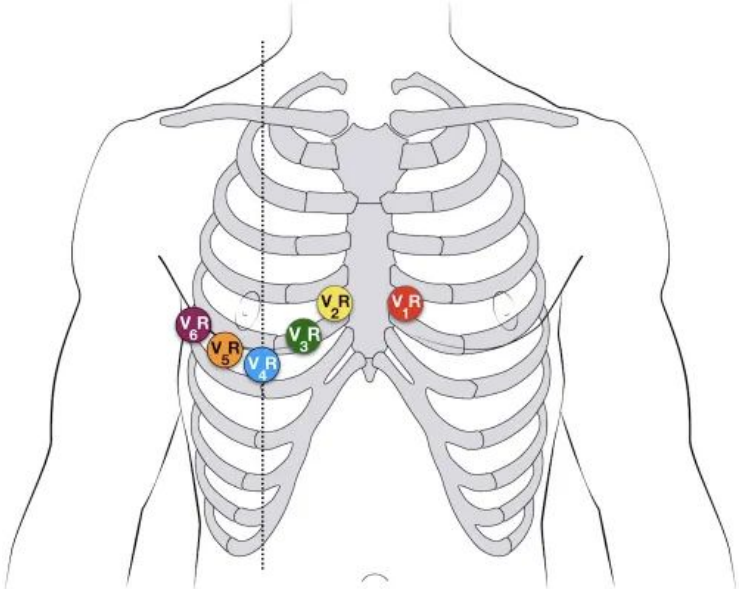
Review of The Basics: Electrode Positioning
Limb Leads: Put each of these on their respective limbs, in a spot where they are not directly over a bone and that avoids hair or obstructions. The left and right sides should be in symmetrical locations. If you are asked to obtain a “4-lead” for a medic, that means just place the limb leads.
* Make sure you haven’t switched left and right! These refer to the patient’s left or right side.
● RA: “Right Arm”
● LA: “Left Arm”
● RL: “Right Leg”
● LL: “Left Leg”
Precordial Leads (“V” leads): “Intercostal spaces” are the soft spaces you can feel between the ribs. If you are unable to palpate the spaces, make your closest guess. These leads frequently require you to move shirts, bras, and breast tissue out of the way. Try to be respectful of the pt’s dignity when possible while you place these.
● V1: Right side of chest. Fourth intercostal space. Just lateral of sternum.
● V2: Left side of chest. Fourth intercostal space. Just lateral of sternum. Symmetrical to V1.
● V4: Left side of chest. Fifth intercostal space. Midclavicular line (even with the center of their clavicle).
● V6: Left side of chest. Fifth intercostal space. Mid-axillary line (even with their armpit). (yes we skipped some)
● V3: Halfway between V2 and V4, avoiding being directly over a bone.
● V5: Halfway between V4 and V6, avoiding being directly over a bone.

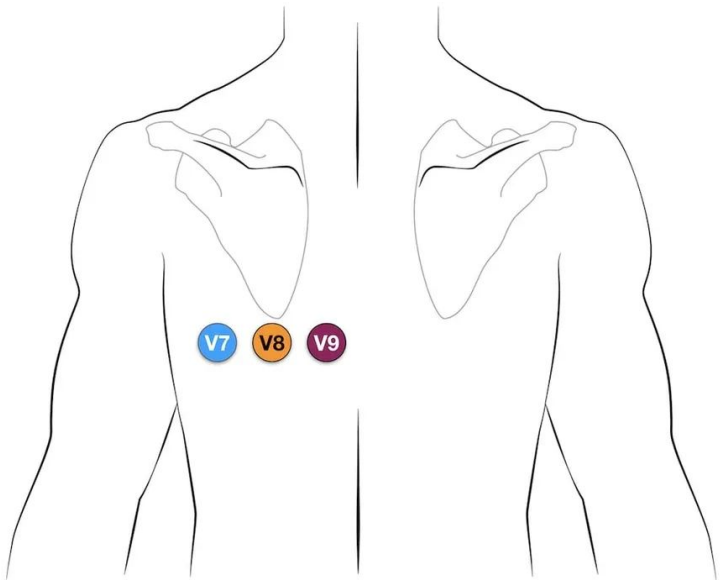
Troubleshooting
1. Repositioning patient (supine to <45 degrees, arms down by sides or in lap)
2. Repositioning wires (Threading all wires through the bottom of the shirt prevents them from pulling on each other and causing artifact).
3. Moving electrodes off of stomach
4. Make sure precordial leads have been plugged to connector. (Placing connector on patient’s lap keeps it from dragging at the electrodes which causes artifact).
5. Make sure electrode stickers aren’t overlapping with each other.
6. Placing limb leads distally and away from bone maximizes resolution.

(continued on next page)

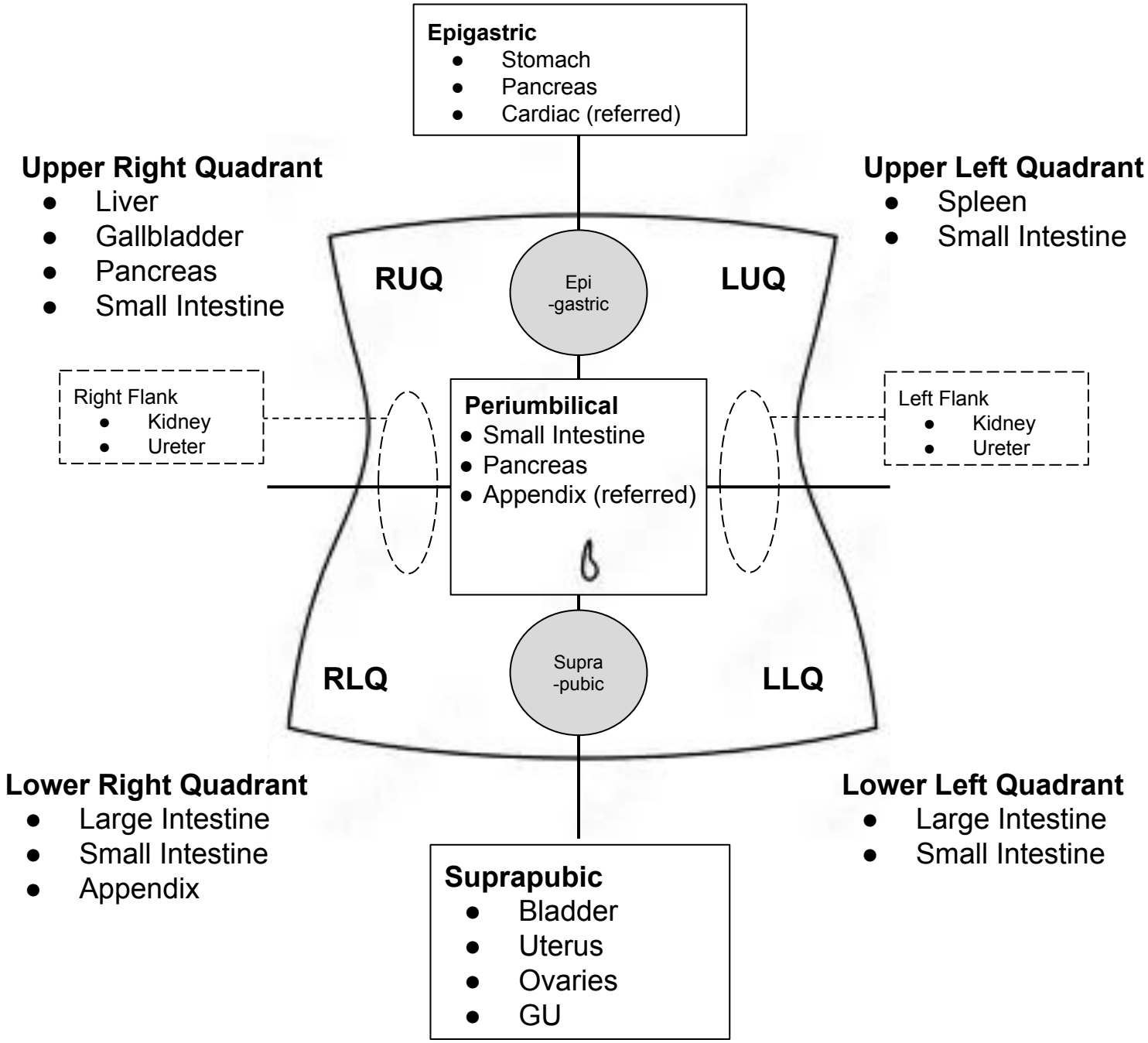
Reference: 12-lead ECG Acquisition: Lead placement







Reference: Abdominal Pain Reference



Reference: Alpha Trauma Alert Criteria

UVA Health

Alpha Trauma Alert (Adult ≥ 16) Criteria

Airway/Breathing

- ❒ Patients transported from the scene who require BVM assistance or who have had an advanced airway intervention (SGA, ETT, surgical cricothyrotomy, needle decompression)

  Patients intubated at OSH without any other alpha alert criteria or ongoing respiratory issues may be alerted at the beta level

Respiratory compromise:

- ❒ Sustained SPO2 ≤ 90% (with good waveform)
- ❒ Requires high flow oxygen (15L) to maintain saturations above 90%
- ❒ Significant work of breathing (ex. cyanosis, wheezing/stridor due to injury)
- ❒ Intra-oral/airway bleeding requiring ongoing suctioning or positioning
- ❒ Patients who are in need of an emergent airway intervention

Circulation

Confirmed hypotension at any time:

- ❒ Ages 16-64 years: SBP ≤ 90
- ❒ Ages 65+ years: SBP ≤ 100
- ❒ Patients who require ongoing blood transfusion or pressors
- ❒ Cardio/pulmonary arrest with ROSC

Disability

- ❒ GCS ≤ 9 (with mechanism attributed to trauma or signs of external injury) **

Physical Findings

- ❒ Gunshot wounds to the head, neck, chest or abdomen

Other

- ❒ Emergency or Trauma Service physician's discretion
- ❒ Alerts should be upgraded when alpha criteria are met (up until admission)

** Trauma alert with CNS

Burns: Isolated burns without traumatic mechanism of injury do not need trauma team activation. For burns with the potential for other injuries (i.e. car accident with fire), alert should be based on alpha/beta criteria.

Hangings/Drownings: See algorithm – trauma alert may not be necessary if there are no signs of external injury or potential spinal cord injury

Reference: APGAR Scale

Sign	Score		
	0	1	2
Heart rate	Absent	< 100	> 100
Respiratory effort	Absent	Irregular or gasping	Good crying
Muscle tone	Flaccid	Partial flexion of extremities	Complete flexion or Active movements
Reflex response	No response	Grimace	Cry
Color	Blue (central cyanosis) or Pale	Body pink but extremities blue (peripheral cyanosis)	Completely pink

Reference: Beta Trauma Alert Criteria

UVA Health

Beta Trauma Alert (Adult ≥ 16) Criteria

Airway/Breathing
❒ Patients intubated at OSH without any signs of respiratory compromise
❒ Chest wall instability, deformity, or suspected flail chest or in need of an emergent chest tube (at UVA ED)
Circulation
❒ HR>SBP (Shock Index >1)
❒ FAST positive (ED or OSH)
Disability
❒ GCS 10-13, if this is a change from their baseline **
❒ Known traumatic head bleed with any change in GCS from baseline **
❒ Head injury with severe headache, nausea or vomiting, combativeness **
❒ Suspected spinal cord injury with new motor or sensory findings (absent movement/sensation, tingling, numbness) **
Physical Findings/Other
❒ Penetrating trauma (stab/impalement) to head, neck, thorax or abdomen
❒ Severe maxillofacial trauma
❒ Skull deformity, suspected skull fracture
❒ Suspected pelvic fracture or use of pelvic binder
❒ Suspected fracture of two or more proximal long bones
❒ Crushed, degloved, mangled, or pulseless extremity
❒ Amputation proximal to wrist or ankle
❒ Suspected extremity compartment syndrome
❒ Fractures/dislocations with risk of avascular necrosis (e.g., femoral head or talus)
❒ Time-sensitive extremity injury WITH neuro/vascular compromise
Special Populations
❒ Patients with a traumatic mechanism of injury with concurrent concerns for stroke (stroke scale positive) (Page Stroke Team)
❒ Patients with a traumatic mechanism of injury with concurrent STEMI (Page STEMI Team)
❒ Pregnant patients with fundus above umbilicus or > 20 weeks with a traumatic mechanism of injury (Page L&D, NICU Teams)
Other
❒ Emergency or Trauma Service physician's discretion ❒ Alerts should be upgraded when criteria are met (up until admission) ❒ Any beta criteria that also meets alpha criteria should be alerted upgraded

** Trauma alert with CNS

Burns: Isolated burns without traumatic mechanism of injury do not need trauma team activation. For burns with the potential for other injuries (i.e. car accident with fire), alert should be based on alpha/beta criteria.

Hangings/Drownings: See algorithm – trauma alert may not be necessary if there are no signs of external injury or potential spinal cord injury

Rev. 8/15/2023

Reference: Broset Violence Checklist

RATIONALE

The **Broset Violence Checklist** can provide guidance and recommend clinician preparedness for risk of violent behavior and therefore risk to providers, the public, and law enforcement.

BROSET VIOLENCE CHECKLIST	Yes/No	Violence Risk
Is the patient confused?	-	0 = SMALL
Is the patient irritable?	-	
Is the patient behaving boisterously?	-	1-2 = MODERATE Take preventative measures.
Does the patient threaten verbally?	-	
Is the patient physically threatening?	-	3-6 = HIGH Take preventative measures. Create plan to manage escalation/violence.
Does the patient attack objects?	-	

PRE-HOSPITAL CHEMICAL RESTRAINT IS NEVER INDICATED TO FACILITATE ARREST

Reference: Pediatric Alpha Alert Criteria

PEDIATRIC ALPHA ALERT CRITERIA (< 16 Y.O.)

Any pediatric patient who arrives medically unstable and during the ED exam is found to have injuries consistent with non-accidental trauma/abuse, a trauma alert should be considered for full trauma workup to be done.

I. AIRWAY / BREATHING:

1. Patients who are demonstrating ongoing respiratory compromise
2. All intubated patients transported to UVA directly from the field

(e.g., SAO2 < 90, massive maxillofacial trauma, airway hemorrhage, stridor, or flail chest)

II. CIRCULATION:

Recognize any child with poor capillary perfusion and tachycardia is in shock, regardless of BP number

1. Weak central pulses or absent peripheral pulses
2. Dysrhythmia
3. Hypotension (SBP < 70mmHG+ 2x age in years)
4. Pre-hospital cardiac arrest (any mechanism)
5. Patient requires fluid or blood administration to maintain blood pressure

III. DISABILITY:

1. GCS < 9 with trauma mechanism or GCS declining by 2 with trauma mechanism
2. A V P U : Responsive only to pain or unresponsive
3. New paraplegia or quadriplegia

IV. MECHANISM:

1. GSW or stab wound to neck, thorax or abdomen
2. GSW to extremities proximal to elbow or knee
3. Hangings, especially if any of the physiologic criteria above are present
4. Two or more proximal long- bone fractures humerus or femur
5. Burns > 25% TBSA or inhalation injury
6. Threatened limb or complete/partial amputation proximal to wrist or ankle, crushed, degloved or mangled extremity

V. EM OR TRAUMA SERVICE PHYSICIAN DISCRETION

Reference: Pediatric Beta Alert Criteria

PEDIATRIC BETA ALERT CRITERIA (<16 Y.O.)

Any pediatric patient who arrives medically unstable and during the ED exam is found to have injuries consistent with non-accidental trauma/abuse, a trauma alert should be considered for full trauma workup to be done.

I. AIRWAY / BREATHING:

1. Intubated inter-facility transfer patients without ongoing respiratory compromise
2. Facial burns or singed facial hair with altered phonation

II. CIRCULATION:

1. Initial age specific hypotension stabilized after 20 CC/KG Isotonic Crystalloid IVF

III. DISABILITY:

1. GCS 9-13
2. Head injury / LOC with severe persistent headache, nausea / vomiting
3. Open or depressed skull fracture, GCS > 10
4. Known fracture to a vertebral body from outside imaging

IV. MECHANISM / INJURY:

1. Falls 10 feet or 2-3 times height of child
2. Pedestrian or bicyclist vs. car thrown, run over or significant > 20 MPH impact
3. Stable severe system injury (ie: Known SDH / EDH or pelvis fracture)
4. Concomitant thermal / multi-system injury
5. Burns with TBSA 10-15% (2nd and 3rd degree burns only)
6. High voltage electrical burns

V. EM OR TRAUMA SERVICE PHYSICIAN DISCRETION

Reference: Pediatric Pain Assessment - FLACC Scale and Wong-Baker FACES Scale

Table 1. FLACC Scale

Category	Scoring		
	0	1	2
Face	No expression or smile.	Occasional grimace/frown, withdrawn or disinterested.	Frequent/constant quivering chin, clenched jaw.
Leg	Normal position or relaxed	Uneasy, restless, tense	Kicking or legs drawn up
Activity	Lying quietly, normal position, moves easily	Squirming, shifting back and forth, tense	Arched, rigid or jerking
Cry	No cry	Moans or whimpers, occasional complaint	Crying steadily, screams or sobs, frequent complaints
Consolability	Content and relaxed	Reassured by occasional touching, hugging or being talked to, distractible	Difficult to console or comfort

Wong-Baker FACES® Pain Rating Scale

Reference: Stroke Scales

Cincinnati Stroke Scale: (Only 1 sign is required to be positive)
* patient's normal is considered baseline, taking into account previous deficits *
- Collect a detailed history of previous deficits:
    - i.e. "is the patient's slurred [or aphasic] speech worse than normal?"

Facial Droop: have patient smile
- Normal - both sides of face move equally
- Abnormal - one side of face does not move as well as other side

Arm Drift: have the patient close both eyes and hold arms straight out with palms up for 10 seconds
- Normal - both arms move same / both arms do not move at all
- Abnormal - one arm does not move or drifts down

Speech: have patient say "It's always sunny in Charlottesville"
- Normal - correctly uses words with no slurring
- Abnormal - slurs words, uses incorrect words, unable to speak

If Cincinnati positive, perform VAN assessment.

VAN Assessment: (Only 1 sign is required to be positive)
Vision: new onset visual disturbance?
- Blindness, loss of peripheral or focal vision, dark vision, double vision, blurry vision

Aphasia: ask the patient to identify a common object or follow a simple command
- Expressive: unable to speak the correct words (excludes slurred or stuttered speech)
- Receptive: unable to understand words or follow commands

Neglect: have a patient track an object (i.e. finger or pen) with their eyes and brush the patient's arms at the same time
- Forced gaze to one side OR the patient cannot track object to one side
- Cannot feel or ignores one side of their body