Summit Healthcare
REGIONAL MEDICAL CENTER

SACRED MOUNTAIN MEDICAL SERVICE
UT CO AZ NM

Version 1T⇕M

Summit Red Book Protocols and SMMS IV & OB Transport Information

IV MEDICATION TRANSPORT LIST

Amiodarone - IV pump required.
Antibiotics - Ensure medication is not antiviral.
Calcium Chloride
Corticosteroids – IV pump required.
Diltiazem - IV pump required.
Diuretics
Dopamine - IV pump required.
Epinephrine - IV pump required.
Fentanyl – IV pump required.
Glucagon
H2 Blockers (Famotidine)
Insulin - IV pump required. DKA patients only and not hyperkalemia.
Lidocaine - IV pump required.
Magnesium Sulfate - IV pump required. Consider foley cath to monitor urinary output.
Morphine - IV pump required.
Nitroglycerin - IV pump required.
Procainamide - IV pump required.
Potassium Salts – IV pump required.
TPN with or without lipids- IV pump required. Should be administered through central line. Infection risk, use aseptic techniques, D_{10} bag needed in case TPN runs out. Use hospital pump to reduce infection risk.
Vitamins

Below medications require more specific specialized training and/or clinical time experience. Only those authorized by Dr. Jason Johnson may transport these medications.

Phenobarbital
Phenytoin/Fosphenytoin
Heparin
Glycoprotein IIb/IIIa Inhibitors (tirofiban, abciximab)
Levophed

Propofol (these two meds are given for sedation of intubated patients…
Midazolam …further training is required)

COMMON MIXTURES AND INFUSION FORMULAS

UNITS/HOURS CONCENTRATION	Heparin	25,000 Units/500 mL
	Insulin	100 units/100 mL
MCG/KG/MIN (60) CONCENTRATION	Dopamine	400 mg/250 mL
	Dobutamine	250 mg/250 mL
MCG/MIN (60) CONCENTRATION	Nitroglycerine	50 mg/250 mL
	Epinephrine	2 mg/250 mL
MG/MIN (60) CONCENTRATION	Amidodarone	900 mg/500 mL
	Procainamide	1 g/250 mL
	Lidocaine	2 g/500 mL

CONVERSIONS

1 gram = 1000 mg	100 mcg = 0.1 mg
1 mg = 1000 mcg	10 mcg = 0.01 mg

CALCULATIONS

Example #1: X per minute

Step One: What is your order? Example: *10 mcg of Dopamine*.

Step Two: Determine your concentration of your med in 1 mL of fluid. You may need to convert down to MCG to get to 1 mL of fluid.

Dopamine $\frac{\text{400 mg of Dopamine}}{\text{250 mL D5W}} = \frac{\text{400 mg}}{\text{250 mL}} = \frac{\text{400,000 mcg}}{\text{250 mL}} = \frac{\text{1,600 mcg}}{\text{1 mL}}$

Step Three: Determine patient's weight if the medication is a weight based drug. Example: Patient is 200 lbs or 91 kilos.

Step Four: Plug in what you know based on the formula: $\frac{\text{MCG/KG/MIN (60)}}{\text{CONCENTRATION}}$

$$\frac{\text{10 mcg x 91 kilos x 60 mins}}{\text{1,600 mcg/1 mL}} = \frac{\text{10 x 91 x 60}}{\text{1,600}} = \frac{\text{54,600}}{\text{1,600}} = \textbf{34 mL/hour}$$

Step Five: Input 34 mL/hour in your pump.

Example #2: X per hour

Step One: What is your order? Example: *900 units per hour of Heparin*

Step Two: Determine your concentration of your med in 1 mL of fluid.

Heparin $\frac{\text{25,000 u of Heparin}}{\text{500 mL D5W}} = \frac{\text{25,000 u}}{\text{500 mL}} = \frac{\text{50 units}}{\text{1 mL}}$

Step Three: Plug in what you know based on the formula: $\frac{\text{UNITS/HOURS}}{\text{CONCENTRATION}}$

$$\frac{\text{900 units x 1 hour}}{\text{50 units/1 mL}} = \frac{\text{900}}{\text{50}} = \text{18 mL/hour}$$

Step Four: Input 18 mL/hour in your pump.

INSULIN

Insulin is infused in Units per Hour and is often mixed in a 1:1 ratio. Insulin may be ordered between 5 to 15 units per hour.

Step One: What is your order? Example: *13 units per hour of Insulin*

Step Two: Determine your concentration of your med in 1 mL of fluid.

$$\frac{100 \text{ u}}{100 \text{ mL}} = \frac{1 \text{ u}}{1 \text{ mL}}$$

Step Three: Plug in what you know based on the formula:

$$\frac{13 \text{ units} \times 1 \text{ hour}}{1 \text{ unit}/1 \text{ mL}} = \frac{13}{1} = 13 \text{ mL/hour}$$

Step Four: Input 13 mL/hour in your pump.

Note: Waste 20 mL of infusion through new tubing.
Check blood sugar ever 30-45 minutes.
Ask referring or med control what their low value is. For example, they may not want you to drop below 200 mg/dL and may ask you to give ½ amp of D50 to keep above 200 mg/dL.

MAKING A DRIP

How to make an Epi drip.

Step One: What is your order? Example: *Order of 2 mcg/min*.

Step Two: Put 1 mg of Epi (1:1,000) in 250 mL bag. Gives you 4 mcg/1 mL

$$\frac{1\text{ mg}}{250\text{ mL}} = \frac{1{,}000\text{ mcg}}{250\text{ mL}} = \frac{4\text{ mcg}}{1\text{ mL}}$$

Step Three: Plug in what you know. $\frac{\text{MCG/MIN (60)}}{\text{CONCENTRATION}}$

$$\frac{2\text{ mcg} \times 60\text{ mins}}{4\text{ mcg/1 mL}} = \frac{2 \times 60}{4} = \frac{120}{4}$$ **30 mL/hour**

Step Four: Input 30 mL/hour in your pump.

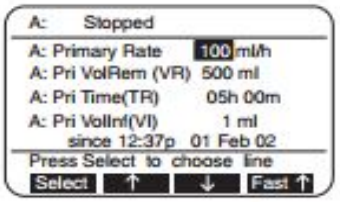
MedSystem III Pump

Basic infusions (e.g. mL/hr)

To set primary rate

1. Press [A], [B] or [C].
   - Programming Page is displayed.
   - Rate is highlighted.
2. Press **Select** if current rate is desired

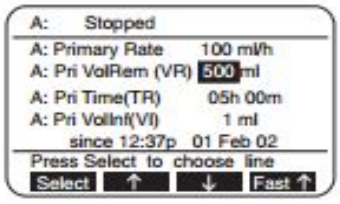
   OR
3. Press ↑, ↓, **Fast** ↑ or **Fast** ↓ to change rate.
   - Value flashes.
4. Press **Enter** to confirm.
   - Highlight moves to volume remaining (VR)



To set primary volume remaining (VR)

1. Press **Select** if current VR is desired

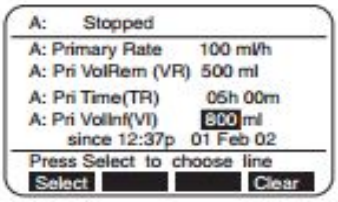
   OR
2. Press ↑, ↓, **Fast** ↑ or **Fast** ↓ to change VR.
   - Value flashes.
3. Press **Enter** to confirm.
   - Primary time remaining (TR) is calculated automatically based on VR and rate.
   - Highlight moves to volume infused (VI).



To clear primary volume infused (VI)

1. Press **Select** if current VI is desired

   OR
2. Press **Clear** to reset volume infused to zero.
   - Date and time are cleared.
   - **Clear** softkey switches to **Recall**.

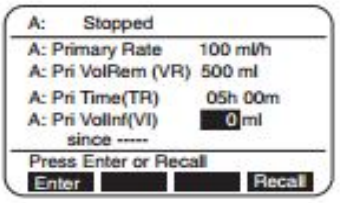


3. Press **Enter** to confirm

   OR
4. Press **Recall** softkey to recall previous VI, date and time.

   THEN
5. Open regulating clamp on administration set.
6. Press [START/STOP] to begin infusion.
   - Channel starts infusing.
   - Current date and time are entered.
7. Press [STANDARD DISPLAY]

   OR
   - Display reverts to Standard Display page after one minute.
8. Verify settings.
9. Verify solution flow from primary container.



OB Transport Policy

All Obstetrical (OB) Patients shall be transported following the criteria.
OB Patient Triage Criteria:

a. Low Risk – may be transported safely by ground crews
    i. Any gestational age without evidence of active labor
    ii. Ruptured membranes at any gestation with no labor
    iii. Fetal demise, stable maternal vital signs
    iv. Placenta Previa without active bleeding or active labor
    v. Abnormal fetal lie without active labor
    vi. Previable fetus less than (< 160/110 with proteinuria; no visual changes, headache or neurological abnormalities, no RUQ pain)
    vii. Postpartum mother and infant after observation > 1 hour postpartum with stable mother and infant
b. High Risk – Not recommended for standard ground transport. If air transport not advisable (inclement weather) or available, referring institution will designate appropriate personnel to accompany patient en route and will assume care for patient.
    i. Gestational age < 37 weeks in active labor
    ii. Non reassuring fetal status: abnormal fetal heart rate tracing
    iii. Maternal eclampsia or severe pre-eclampsia, maternal HELLP syndrome
    iv. Placental abruption
    v. Placenta Previa with bleeding
    vi. Gestational or preexisting diabetes with evidence of diabetic ketoacidosis Patients deemed to be in active labor will not be sent by ground

The final decision as to whether a patient transport will be ordered or cancelled remains with the IHS.

c. Referring Facility Assessment
    i. All antepartum patients referred for transport will have a reassessment of status of labor and cervical dilation a maximum of 15 minutes prior to departure from the facility. This may be accomplished by a pelvic exam or sterile speculum exam at the discretion of the referring provider.
    ii. All postpartum patients will be monitored for a minimum of 1 hour post-delivery. All infants will have at least one glucose determination, temperature monitoring, and oximetry on room air documented before transport. Mothers will have documentation of any postpartum hemorrhage, uterine tone, and vital signs a maximum of 15 minutes before departure. Use of Intravenous (IV) Pitocin will be at the discretion of the referring and receiving providers but consultation will be documented by the referring provider
d. Tocolysis – for patients with labor deemed stable for transport
    i. To minimize the possibility of delivery en route to the receiving facility, at the discretion of the referring and receiving providers, tocolysis with Terbutaline or Magnesium Sulfate may be used. The patient must be monitored for a minimum of 1 hour after starting the tocolysis to ensure that active labor is not progressing prior to ground transport. If contractions are reduced to > 5 minutes in frequency, and cervical effacement is stable, the option for ground transfer if no other disqualifying conditions exist, may be used.

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PCR Policy

All units transporting patients **MUST** leave a completed Patient Care Report (PCR) or a completed drop sheet prior to leaving the emergency department.

If a drop sheet is left, a completed PCR must be faxed to the emergency department at 928-537-2538 within one hour. If your EMR system doesn't have auto fax capability, you must manually fax the PCR to the above number.

Jason Johnson, MD, FACEP
EMS Medical Director

Clint Peck, RN, EMT
Base Hospital Director

Reviewed and approved by the Prehospital Care Committee on 12 September 2016.

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ALS Drug Box Storage & Sign Off Policy

All ALS Drug boxes must be stored according to DEA regulations.

All drug boxes must be inspected at change of shift with two signatures recorded as witness to the controlled substance contents.

If a drug box will be stored (out of service) more than 24 hours, two signatures must witness to the contents of the controlled substances prior to storage. Two witnesses must also sign to verify contents when the box is taken from storage and placed back into service.

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BLS Naloxone Policy

In accordance with AZDHS regulations, BLS providers may now administer nebulized nasal naloxone to patients after they have had received the proper training. This training and training date must be recorded and kept with the provider's file.

The naloxone treatments shall be administered according to off-line protocols and/or on-line medical direction.

Jason Johnson, MD, FACEP
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Reviewed and approved by the Prehospital Care Committee on 12 September 2016

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BLS Albuterol Policy

In accordance with AZDHS regulations, BLS providers may now administer nebulized albuterol to patients after they have had received the proper training. This training and training date must be recorded and kept with the provider's file.

The albuterol treatments shall be administered according to off-line protocols and/or on-line medical direction.

Jason Johnson, MD, FACEP
EMS Medical Director

Clint Peck, RN, EMT
Base Hospital Director

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SCENE MANAGEMENT

MEDICAL ADULT ≥ 15 Y/O

CONTINUE TO NEXT PAGE*

***NOT INCLUDED IN ALS PROVIDERS SCOPE-OF-PRACTICE UNDER SUMMIT HEALTHCARE REGIONAL MEDICAL CENTER*

TRAUMA ADULT ≥ 15 Y/O

ADULT CARDIAC ≥ 15 Y/O

PEDIATRIC MEDICAL ≤ 14 Y/O

PEDIATRIC TRAUMA ≤ 14 Y/O

PEDIATRIC CARDIAC ALGORITHMS

APPENDIX

Initial Medical Care

- Initial medical care is that care routinely provided to every patient, and that is individually listed in nearly every treatment algorithm. While only certain key elements are included in each algorithm, it is understood that every appropriate element of initial medical care is to be included in the care of the patient. Initial medical care shall include:

- **EMT and Paramedic**
  - Ensure scene safety and take appropriate Body Substance Isolation (BSI) precautions
  - Initial assessment
  - Spinal Motion Restriction as patient condition dictates
  - Open and maintain airway. Administer oxygen / provide ventilatory support as appropriate
  - Control obvious bleeding as needed
  - If suspected abuse or neglect, notify law enforcement, Child Protective Services (CPS), or Adult Protective Services (APS), as appropriate.
  - Initiate CPR as indicated
  - Treat fractures and soft tissue injuries
  - Perform cardiac monitoring /12 lead, as appropriate. Provide a copy when transferring care.
  - Obtain history related to the event
  - Vital signs (to include pulse, respirations, BP, pulse oximetry, ETCO2 (as applicable),and skin temperature
    - Repeated as needed, based upon patient severity.

- **Paramedic Only**
  - Establish and/or maintain a patent airway
    - If nasotracheal intubation is necessary, administer 2-3 sprays of Neo-Synephrine as needed.
  - Establish vascular access. For life threatening situations, **IO is preferred.** Any IV medication may be administered IO.
  - Consider placing a gastric tube when the patient has been ventilated > 2 minutes

Destination Guideline

For the purpose of providing guidelines to field EMS providers, the EMS Medical Directors recommend that patients be transported to the closest, most appropriate destination based on AEMS categorization criteria. We do not recommend transport to facilities that have not been categorized by AEMS. The EMS Medical Directors feel that patients confirmed or suspected to acutely have the following conditions would be best served by being triaged and transported initially to emergency departments affixed to hospitals with the applicable full medical or trauma intensive care admissions capabilities, as well as facilities with the appropriate interventional cardiovascular, radiologic, and subspecialty capabilities:

- **STEMI**
- **Post-code arrest with Return of Spontaneous Circulation (ROSC)**
- **CVA/TIA**
- **Adult LI and LIII trauma, including burns**
- **Pediatric trauma (age <15)**
- **Submersion Incidents/Drownings/Near-Drownings**
- **Suspected OB/GYN related complications in women known or suspected to be beyond 20 weeks Estimated Gestational Age**
- **Head, neck, back, thoracic, or pelvic trauma in women known or suspected to be beyond 20 weeks Estimated Gestational Age**
- **Post-delivery complaints by mother or neonate, up to 30 days post delivery**
- **Home deliveries, midwife-attended or otherwise**
- **Those intubated, with supraglottic airways, or on CPAP as acute treatment for respiratory distress**
- **Apparent Life-Threatening Event (≤ 2 y/o)**

The following should be taken to the closest AEMS categorized ED regardless of inpatient, interventional and subspecialty capabilities.

- **Code arrest <u>without</u> ROSC**
- **Lack of functional airway: ET, supraglottic or BLS**

Contact on-line Medical Direction, as needed, for assistance with determining destination.

Courtesy Notification

- On-line treatment orders may only be received from on-line medical direction. If an on-line physician outside the Base Station wishes to give treatment orders, the ALS provider must contact his or her assigned on-line medical direction; the exception to this is in the case of a burn patient or a trauma patient. On-line treatment orders may be received from a burn center physician or a trauma physician.

- Clearly state at the beginning of an on-line communication if you are making a “courtesy notification” or if you need to “obtain On-line Medical Direction .” If you are seeking orders, you are making a decision to “obtain On-line Medical Direction” .

- An ALS Courtesy Notification (CN) should be brief and include the following patient-related information:
  - Case (incident) number and/or patient name if requested
  - Age
  - Chief complaint
  - ETA
  - Special equipment in use or needed. Examples include: CPAP, ventilator, bariatric equipment, translator or restraints.
  - Treatments rendered
  - Vital signs, if abnormal (complete set)
  - Mechanism of injury (trauma)

- Notification may be done by phone.

- If a facility refuses to accept a patient during phone notification, contact on-line medical direction.

On Scene Physician

- A paramedic may follow the orders of an on-scene physician after obtaining On-line Medical Direction to medical control and obtaining a release from on-line medical control. The on-scene physician must be licensed to practice medicine in the state of Arizona and agree to accompany the patient to the receiving hospital in the ambulance. The paramedic may not follow any requests that are outside the scope of practice of a paramedic in the state of Arizona.

- The paramedic may wish to have the on-scene physician communicate directly with medical control to optimize patient care.

- The paramedic should clearly document the name and license number of the physician along with obtaining their signature on the patient care record.

Determination of Death Guideline

- Prehospital providers respond to patients of cardiopulmonary arrest in a variety of circumstances. The following guideline is intended to assist in determining how and when resuscitative measures should be withheld, initiated, and/or terminated. Refer to appropriate SOP's and related treatment algorithms for other specific information.

Obvious Death

- If the patient meets the criteria listed below, no resuscitative efforts need to be initiated. On-line medical direction is NOT necessary. Contact PD and initiate grief support. An EMS provider must remain with the patient until released to PD.

- All of the following criteria must be met:
  - Patient is pulseless and apneic
  - Asystole is confirmed on the monitor in two leads for at least ten seconds
  - Presence of one or more signs of irreversible death
  - Time down is presumed to be greater than 30 minutes
  - Hypothermia is not present
  - No on-scene request for resuscitative measures

Signs of Irreversible Death

- Decapitation*
- Decomposition*
- Dependent lividity
- Rigor mortis
- Pulseless and apneic with extrusion of brain matter
- Pulseless and apneic with removal of the lower half of the body
- Pulseless and apneic with full thickness burns over 90% of total body surface area

*Documentation of asystole by monitor is not needed.

Please refer to the Field Termination Guidelines as needed.

Obtain online medical direction for time of death.

Determination of Death Guideline

Prehospital Medical Care Directive (PMCD)

- Adults and children, usually with terminal illnesses, may not wish to have any resuscitative measures attempted if they become pulseless and apneic. Every attempt should be made to honor these “do not resuscitate” (DNR) requests. If the patient is not in cardiopulmonary arrest on arrival of EMS providers, refer to the appropriate treatment algorithm and begin treatment.

- To honor DNR requests:
  - Patient must be pulseless and apneic with no vital signs or signs of life
  - An orange PMCD is readily available. Up to two minutes can be taken to locate the document.
  - The document appears to be valid
  - If valid DNR is present, family resuscitative requests do not need to be honored. (A.R.S.36-3205)
  - Obtain online medical direction for time of death.

Field Termination Guidelines - Medical Patients

The purpose of this document is to assist decision–making regarding termination of resuscitation efforts for medical patients. Individual patient situations vary. Therefore, this guideline is not meant to be all-inclusive and does not take the place of using sound judgment. The paramedic retains the right to resuscitate any patient and/or seek on-line medical direction when it is deemed in the best interest of all concerned. This document does not apply to patients who meet the obvious death criteria or who have a properly completed Prehospital Medical Care Directive. Please refer to The Determination of Death guidelines as appropriate

1. Initiate resuscitation unless valid DNR is available.

2. Perform 4 rounds of CCR/MICR or ACLS. Focus on on-scene resuscitation versus "load and go".

3. Consider Termination of Resuscitation if the following criteria are met:
   - Not Witnessed
   - No shockable rhythm (i.e.. Asystole)
   - No ROSC (return of spontaneous circulation)

4. If patient meets all 3 criteria after 4 rounds of CCR/MICR or ACLS, consider termination of resuscitation (TOR). Termination of resuscitation requires on-line medical direction. If ROSC is achieved, continue treatment and refer to Post-Arrest Stabilization Off-line.

Field Termination Guidelines - Trauma Patients

Purpose

- The purpose of this document is to provide assistance in decision–making regarding termination of resuscitation efforts for trauma patients. Individual patient situations vary. Therefore, this guideline is not meant to be all-inclusive and does not take the place of using sound judgment. The paramedic retains the right to resuscitate any patient and/or seek on-line medical direction when it is deemed to be in the best interest of all concerned.
- In multiple patient situations, there may be inadequate resources to devote care to the resuscitation of pulseless patients. In such cases, the ALS provider on the scene should confirm that the patient is pulseless and direct care to more viable patients. In addition, if the patient is pulseless and extrication is necessary before CPR can be provided, the patient should be triaged as deceased.
- On-line medical direction is required for all trauma field terminations except those found in asystolic arrest due to blunt trauma.
- Specific information needed to determine patient management in trauma arrests
  - Time of arrest (see obvious death algorithm)
  - Mechanism: blunt vs. penetrating
  - Signs of irreversible death (see obvious death algorithm)
  - Possible underlying medical cause for arrest
  - Vital signs (pulseless and apneic)
  - Evidence of massive external blood loss
  - Evidence of massive blunt head, thoracic, or abdominal trauma
- All tubes (e.g., IVs, ET tubes) used during a resuscitation effort must be left in place unless the patient's primary care physician acknowledges he/she will sign the patient's death certificate.

Field Termination

- Field termination of resuscitative efforts may be considered for both trauma and medical patients. Patients must be in cardiopulmonary arrest in a rhythm incompatible with life (asystole, pulseless electrical activity, or sustained ventricular fibrillation/tachycardia). Treat patients according to the trauma or medical field termination guideline and associated treatment algorithm.
- Please refer to The Determination of Death guidelines as needed.
- Obtain online medical direction for time of death.

Management of Pediatric Cardiac Arrest

Traumatic Cardiac Arrest

- Pediatric patients suffering from traumatic cardiac arrest should be transported by the most expedient means to an appropriate Pediatric Trauma Center if they do not fit the criteria for field termination of resuscitative efforts. If the patient is considered non-salvageable, a obtain On-line Medical Direction should be carried out for the consideration of field termination or for an alternative destination.

Non-traumatic (Medical) Cardiac Arrest

- **In the absence of a specific protocol recommending a destination.**

  If an airway and IV/IO access is obtained and there is return of spontaneous circulation during the resuscitative effort pediatric patients should be transported to an appropriate hospital with pediatric critical care capability. Transport should be performed by the most expedient means.

- If an airway and IV/IO access cannot be established, the patient should be transported to the closest local hospital emergency department by the most expedient means.

- If there is no return of spontaneous circulation during the resuscitative effort, the patient should be transported to the closest local hospital emergency department by the most expedient means.

Notes

- Airway stabilization may be either an advanced airway or BVM ventilation with good air movement and appropriate monitoring.

- Air medical services may transport directly to a facility with pediatric critical care services if transport time is not significantly prolonged.

Refusal of Treatment and/or Transport

Purpose

- To define the circumstances and situations where paramedics may accept a patient's refusal of treatment and/or transport

General Guidelines

- All patients who request transport to the hospital will be transported
- Any patient who complains of any pain, discomfort, or problem will have an assessment performed
  - If the patient refuses an assessment, document the manner of the refusal and the patient's reason for the refusal in the report.
  - Assessment should include all items referenced in the treatment algorithm related to the patient's complaint.
- In all cases, a refusal form will be filled out and signed by the patient or appropriate consenting adult (if the patient is a minor).
  - If the patient refuses to sign the form, document the reason and have a witness sign the form.
- Offering opportunity for 3rd party to assist patient with decision-making and whether patient permitted or declined such assistance (if applicable).
- Decision making capacity must be demonstrated and documented as defined by these abilities:
  - Receive and comprehend information needed to make a decision
  - Process and deliberate a decision and its potential consequences
  - Make and articulate a decision that is consistent over time
  - Justify that decision with logic that fits the persons own value system.

Who Can Refuse

- The patient must meet all of the following criteria:
  - Is an adult (18 or over), or if under 18, is being released to a parent, guardian, responsible party, or law enforcement personnel
  - Is oriented to person, place, time, and event.
  - Exhibits no evidence of:
    - Altered level of consciousness
    - Alcohol or drug use that impairs judgment
  - Understands the nature of his/her medical condition, as well as the risks, and consequences of refusing care. (Decision making capacity.)
- An adult accepting care for a minor must sign the refusal form.
- Normal range vitals: See ALS Release of Patients for BLS Transportation algorithm. If abnormal vital signs, obtain On-line Medical Direction for refusal.

Refusal of Treatment and/or Transport

Who Cannot Refuse Without An On-line Physician Order (High Risk Refusals)

- On-line medical direction is required in the following situations in which a patient is refusing treatment and/or transport (high-risk refusals). On-line physician contact must be made before leaving the scene. When contacting on-line medical direction, please use verbiage to recommend whether a transport is appropriate.
  - Any patient that is a danger to self or others.
  - Any patient that have been stunned/stopped by means of an electro-muscular disruption weapon (i.e., TASER). Include ECG monitor strip with documentation.
  - Any patient with impaired judgment. Examples: head injury, postictal, alcohol/medication/drug use.
  - Any pediatric patient with reported symptoms by history or exam, including apnea, choking, color change, marked change in muscle tone (limpness), abnormal behavior, or increased work of breathing.
  - Any patient to which medication has been administered, including oxygen.
  - Any patient that lacks decision making capacity. Examples: language barrier, diminished mental capacity.
  - Minors that wish to be released to anyone other than parent or guardian.
  - Abnormal range vitals: See ALS Release of Patients for BLS Transportation algorithm.
  - Any patient with any of the mechanisms or conditions that should be transported to a Trauma Center in the Arizona Trauma Patient Identification & Field Triage Decision Standard.
  - Any patient that has any of the following characteristics or complaints:
    - Abdominal pain
    - Change in mental status
    - Acute cardiac dysrhythmia
    - Chest pain, suspected cardiac etiology or anginal equivalent
    - Electrical injury
    - Foreign body ingestion
    - Head injury
      - LOC, on blood thinning medication including aspirin; age less than 2 or greater than 60; vomiting; or cognitive impairment
    - Inability to walk (not normal for patient)
    - Overdose or poisoning
    - Pregnancy-related complaint
    - Seizures
    - Syncope or near syncope
    - Submersion incident

Refusal of Treatment and/or Transport

Documentation

Reports shall include:

- Patient name, age
- Date of birth (DOB)
- Medical history
- Two complete sets of vital signs
- Chief complaint
- Mental status exam findings (speech, gait, appropriate behavior, cooperative, follows instructions/commands)
- Physical exam findings
- Reason for refusal
- Signed refusal form
- Advice given
- Patient understands risks of refusal
- Patient understands possible outcome if advice is not followed
- Decision making capacity
- Third party involvement

Refusal Form Signatures

- Witnessed by law enforcement officer, family member, or friend
- If a minor is refusing, adult accepting care for child must sign
- If patient/adult refuses to sign, get witnessed by police if possible
- Patch on all refusals

Paramedic Ride in Guidelines

PURPOSE

The purpose of this document is to provide guidance in recognizing patient care situations that may require ride in with an additional ALS provider. This document is not intended to replace any agency specific policies or recommendations. Each agency should have an ALS-ALS transfer of care protocol which must be available to the transport agency.

GUIDELINES

It is recommended that an additional ALS provider consider riding in to assist in the care of the patient if there is an increased likelihood of complications or deterioration. Some criteria that should be considered include:

- Abnormal vital signs
- Altered mental status
- Abnormal neurologic exam
- Current, or risk of, unstable cardiac dysrhythmia
- Use of medication to support blood pressure
- Respiratory compromise or impending failure
- Uncontrolled or difficult to control bleeding

It is recommended that an additional ALS provider ride in to assist in the care of the patient in the following situations. These are some examples of situations with an increased likelihood of problems developing en route.

- Acute Stroke
- Acute MI
- Cardiac arrest / Return of Circulation
- Eclampsia / preeclampsia
- Imminent delivery
- Agitated, combative, or restrained patient
- Seizures
  - Adult – active seizure or status epilepticus
  - Pediatric - first-time seizure, active seizure, persistent febrile seizure, or status epilepticus
- Trauma - all immediate (by injury) patients
- Vaginal bleeding in pregnant patient with fetus of viable age (20 weeks)

In addition a second ALS provider should accompany the patient any time that it is requested by one of the treating paramedics.

If an ALS provider chooses not to ride in with the patient in any of the above situations, the member's rationale for that decision must be supported by his or her documentation.

ALS Release of Patients for BLS Transportation

Criteria 1: Non-emergency category must have vital signs within the following limits:

	Adult	Child
•Temp*	< 101	< 101
•Respirations	10 to 24	20 to 30
•BP	90 to 160 systolic 60 to 110 diastolic	70 mm Hg + (2 times age in years)**
•Pulse	60 to 100	60 to 150

• * If fever suspected

• **For age specific Pediatric BP, please refer to Page 48

Yes

Criteria 2: The following high-risk indications must be absent:

- ❑ Abdominal pain
- ❑ Altered mental status (altered for patient)
- ❑ Any acute cardiac arrhythmia
- ❑ Chest pain
- ❑ Electrocution
- ❑ Foreign body ingestion
- ❑ Inability to walk (not normal for patient)
- ❑ Overdose or poisoning
- ❑ Patient volunteers high-risk condition
- ❑ Pregnancy-related complaint
- ❑ Seizures
- ❑ Syncope or near syncope
- ❑ TASER
- ❑ Water-related incidents

Yes

Criteria 3: Absence of significant findings on physical exam

A physical exam must be completed and documented. After evaluation, the patient must have no signs, symptoms, or history that would indicate (or appear to indicate) significant findings or an emergent condition.

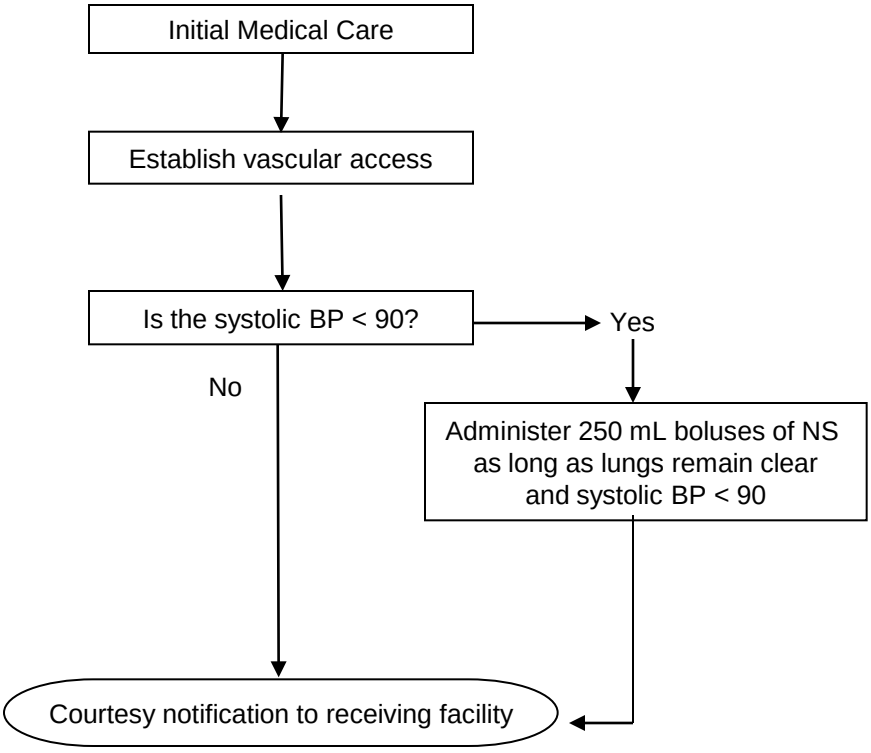
Yes

Release patient to BLS transport unit

No

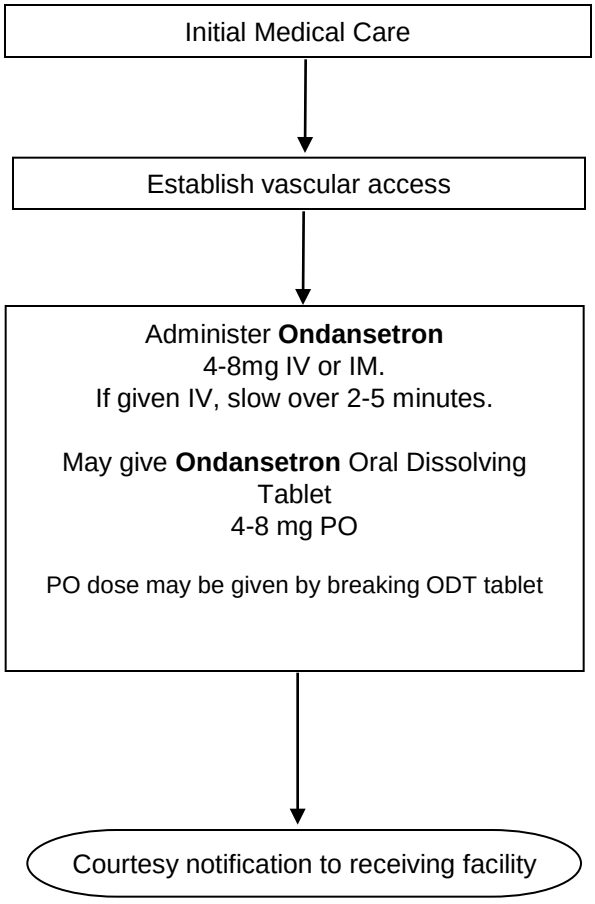
Obtain On-line Medical Direction to medical control to gain approval for BLS transport *OR* transport ALS

Abdominal Pain
– Non-Traumatic, Non-Pregnant
Adult (≥ 15 y/o)



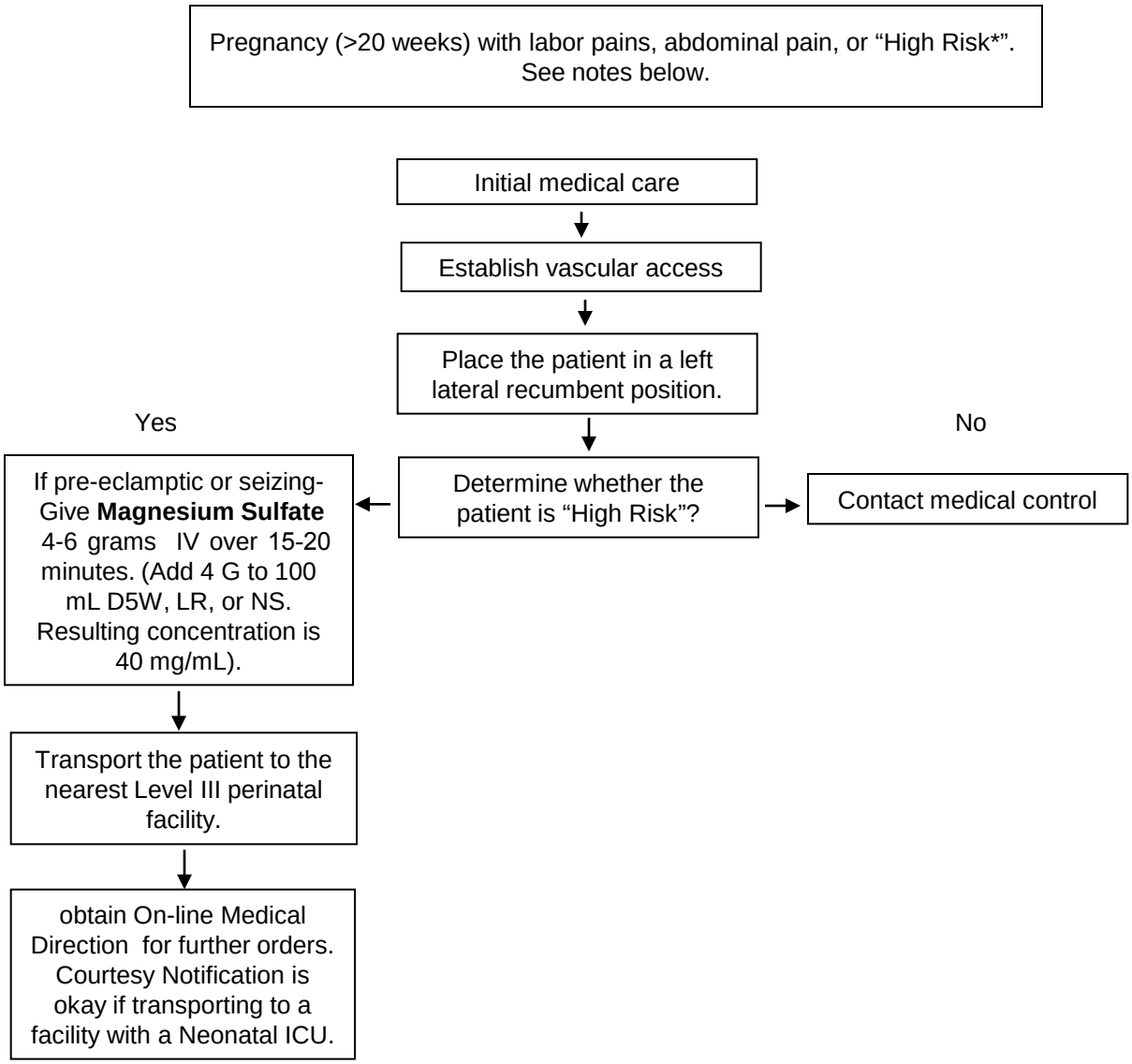
Refer to Pain Management On-line as needed.

Nausea / Vomiting
Adult (≥ 15 y/o)



Obstetrics

Adult (≥ 15 y/o)



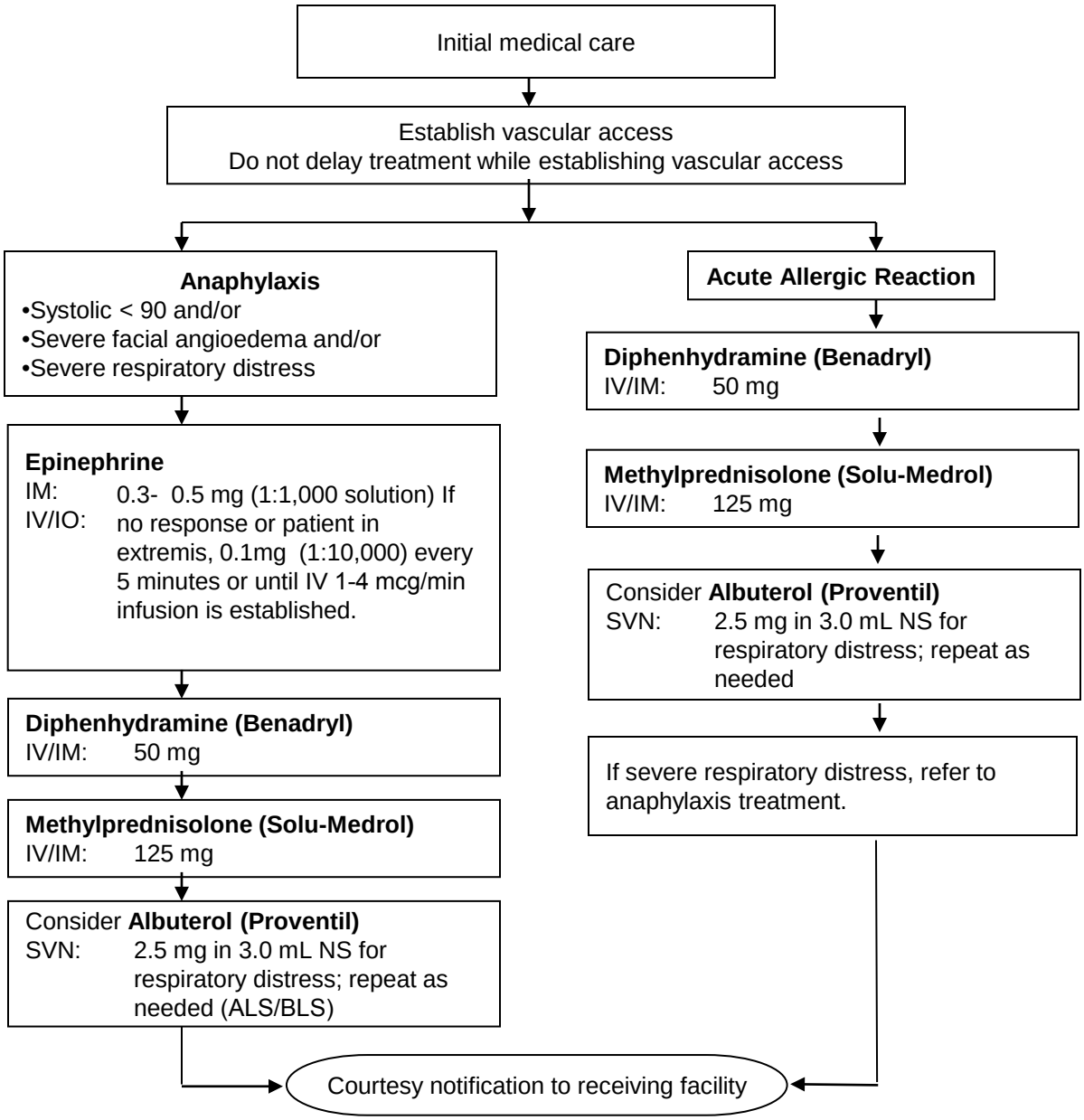
Note:

High risk pregnancies include: prematurity (<32 weeks), any bleeding in third trimester, pre-eclampsia/eclampsia (seizures), no prenatal care, twins or >, premature rupture of membranes, ante-partum hemorrhage (abruptio placenta, placenta previa, and uterine rupture), or other complications of labor (breech position, prolapsed cord, ect.), or recent drug use. These patients need transport to Level III perinatal facility.

Eclamptic Syndrome can occur up to 6 weeks post delivery.

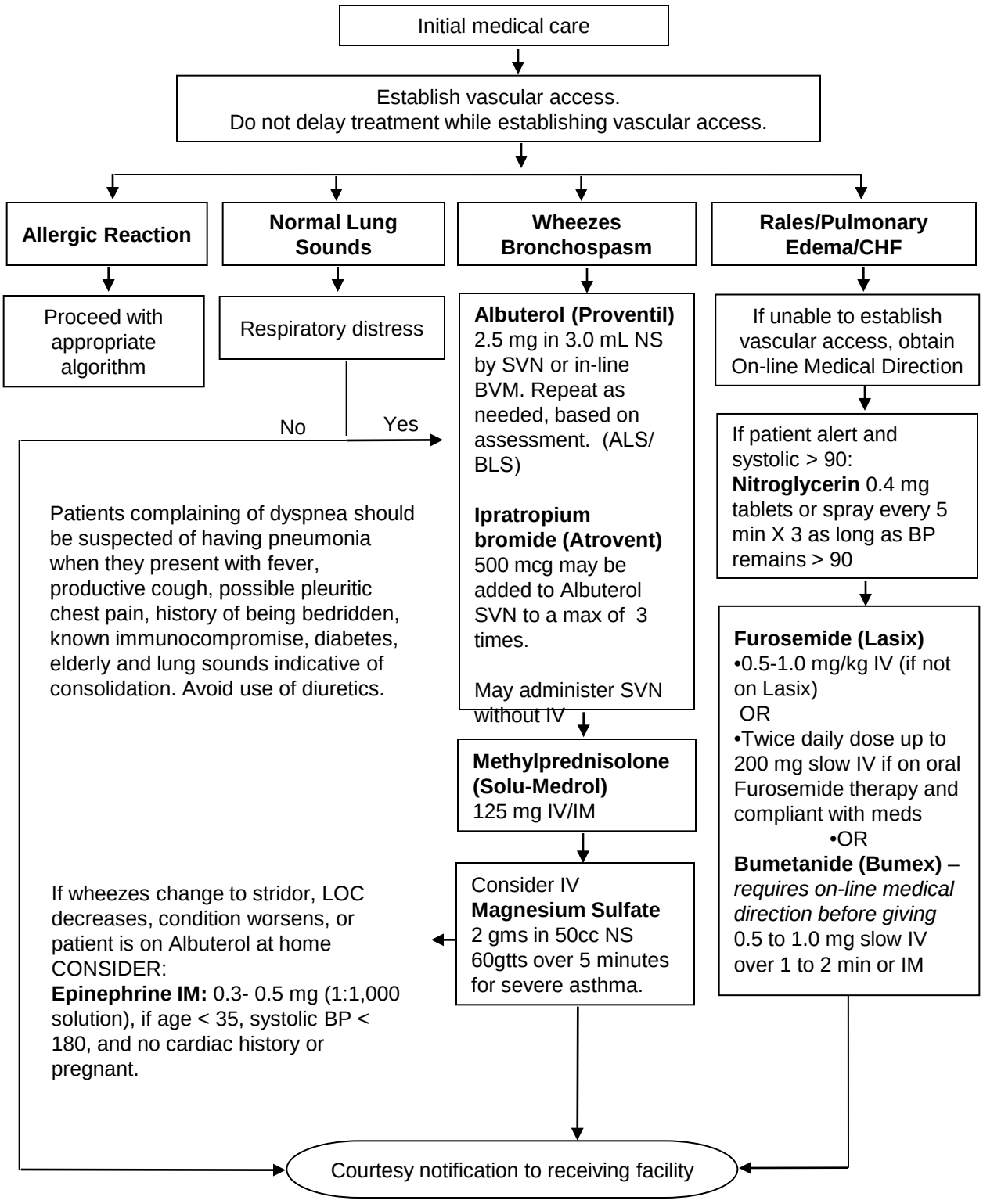
All OB patients should be transported to the ED if the L&D department does not have a ground floor direct entrance. The patient should be rapidly assessed in the ED. If the patient needs to go to L&D without further delay, a hospital provider will accompany the patient and EMS crew to L&D, according to hospital policy.

Allergic Reaction/Anaphylaxis
Adult (≥ 15 y/o)



Mild Distress: Itching, isolated urticaria, nausea, no respiratory distress
Severe Distress: Stridor, bronchospasm, severe abdominal pain, respiratory distress, tachycardia, shock, generalized urticaria, edema of lips, tongue or face (angioedema)

Respiratory Distress
Adult (≥ 15 y/o)



Respiratory Distress
Adult (≥ 15 y/o)

Altered Neurological Function
(Non-trauma)
Adult (≥ 15 y/o)

This protocol is used for patients with altered mental status where the etiology is unknown. Consider history and possibility of dysrhythmias, medication side effects, electrolyte imbalance, inner ear disorders, CVA, TIA, drug overdose, diabetic emergency, and MI. An ECG and glucose check are required on all patients with altered mental status.

Initial medical care

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Establish vascular access

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Check blood glucose. Is level < 60 mg/dL?

No

If blood glucose is greater than 300 mg/dL with signs of dehydration, administer normal saline bolus if 500 mL IV, if not contraindicated

If glucose > 60 but < 300, **consider Naloxone**
2.0 mg IV, IO, IM, or ET based on respirations; may repeat X 2 every 2 minutes if no response. Max dose 6.0 mg
Naloxone 4.0 mg may be given intranasal 1 mg each nostril, up to 4 mg. Consider IM dose, if needed. (ALS/BLS)

OR

Nalmefene
0.25 to 0.5 mg IV, IM, or SC based on respirations; if no response, may give 0.5 to 1.0 mg in 2 to 5 minutes

Yes

If the patient is awake and has a patent airway, 1-2 tubes of oral glucose may be given.

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Dextrose 12.5 - 25 gms IV/IO
125-250 mL IV/IO
(Administer glucagon 1-2 mg IM if no IV)

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Thiamine 100 mg* IV or IM

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Recheck blood glucose. If level < 60 mg/dL, may repeat **Dextrose** 5 minutes after first dose or administer **Glucagon** 1 mg IM

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Is patient alert?** If not, refer to >60mg/dl treatment.

Courtesy notification to receiving facility

*If no history of alcoholism or malnourishment, thiamine may be withheld.
**If patient is refusing transport, remain on-scene to ensure that patient eats. Do not release patient unless blood sugar > 100. Refusal requires a obtain On-line Medical Direction (high-risk). All patients with a syncopal episode or near-syncope should be transported to the hospital via ambulance. Refusal requires a on-line medical direction (high-risk).

Seizures

Adult (≥ 15 y/o)

Document history:
- Type of seizure?
- Witnessed by crew?
- First seizure?
- History of seizures?
- Fever?
- Length of seizure?
- Usual mental status?

Initial medical care

Consider causes*
If blood glucose level < 60 mg/dL, refer to altered neurological off-line.

Has vascular access been obtained?

No

****Midazolam (Versed) IM**

≥ 40 kg: administer 10 mg IM. May repeat once in 10-15 minutes, if needed.
≤ 40 kg: administer 5 mg IM. May repeat once in 10-15 minutes, if needed.

Or

Midazolam (Versed) Intranasal:
0.3 mg/kg per nostral to a max of 10 mg. May repeat once, if needed. Must use 5mg/ml concentration.

Or

Lorazapam (Ativan) IM
IM: 2-4 mg. May repeat in 10-15 minutes.
Age > 60: Reduce dose by half

Establish vascular access.

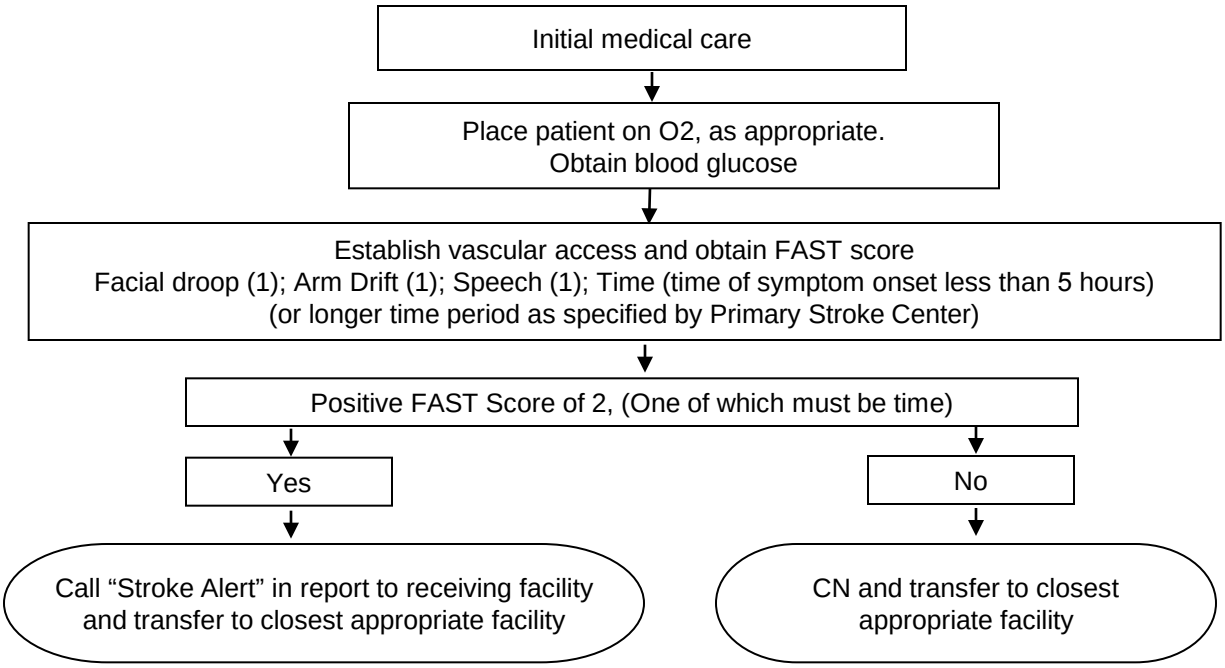
Yes

If given IV and age > 60: Reduce dose by half
**Lorazapam (Ativan) IV
≥ 40 kg: administer 1-2 IV. May repeat once in 10-15 minutes, if needed
≤ 40 kg: administer 1 mg IV. May repeat once in 10-15 minutes, if needed .
Or
**Midazolam (Versed) IV
Age 15 to 60: IV: 2.5 to 5 mg titrated to effect; administer slowly in increments of no more than 2.5 mg over at least 2 min; total dose no more than 20mg. Or
Midazolam (Versed) Intranasal:
0.3 mg/kg to a max of 10 mg. May repeat once, if needed. Must use 5mg/ml concentration. Or
**Diazepam (Valium) IV
IV: 5 -10 mg in 2 mg increments no faster than 2 mg/ min.

Courtesy notification to receiving facility

*****Consider underlying causes such as stroke, eclampsia, or drug use. Use appropriate algorithm.
Notes:
1. Females in their third trimester of pregnancy that are seizing should be assumed to have eclampsia. If the patient is an eclamptic female, place patient in left lateral recumbent position, minimize external stimuli, and administer **Magnesium Sulfate** 4-6 G IV bolus over 10-15 min (Add 4 G to 100 mL D5W, LR, or NS. Resulting concentration is 40 mg/mL).
2. ** Use 1st Choice medication, unless unavailable. Benzodiazepine administration applies to seizures that last > 5 minutes, more than two seizures in one hour, or status epilepticus. IV Benzodiazepine administration has been associated with respiratory depression and respiratory arrest. For IM administration, inject deep into large muscle mass. If given IV and age > 60: Reduce dose by half.

Stroke
Adult (≥ 15 y/o)



Plan: During their obtain On-line Medical Direction , EMS providers will give pre-notification of acute stroke patients that may be candidates for acute intervention. When the paramedic identifies such a patient, he/she will provide telemetry notification that they are in transit with a "Stroke Alert" patient and give an estimated time of arrival.

EMS providers will document the patient's FAST Score (Face asymmetry, Arm drift, Speech deficit, Time onset) along with standard Vital Signs, Blood Sugar and if another center was bypassed to go to a primary stroke center.

Action: At the beginning of the obtain On-line Medical Direction , the paramedic will clearly state that they have a "Stroke Alert" patient. The base hospital will advise what facility to transport the patient to. This same term will be used to notify the in-hospital stroke team and ancillary services.

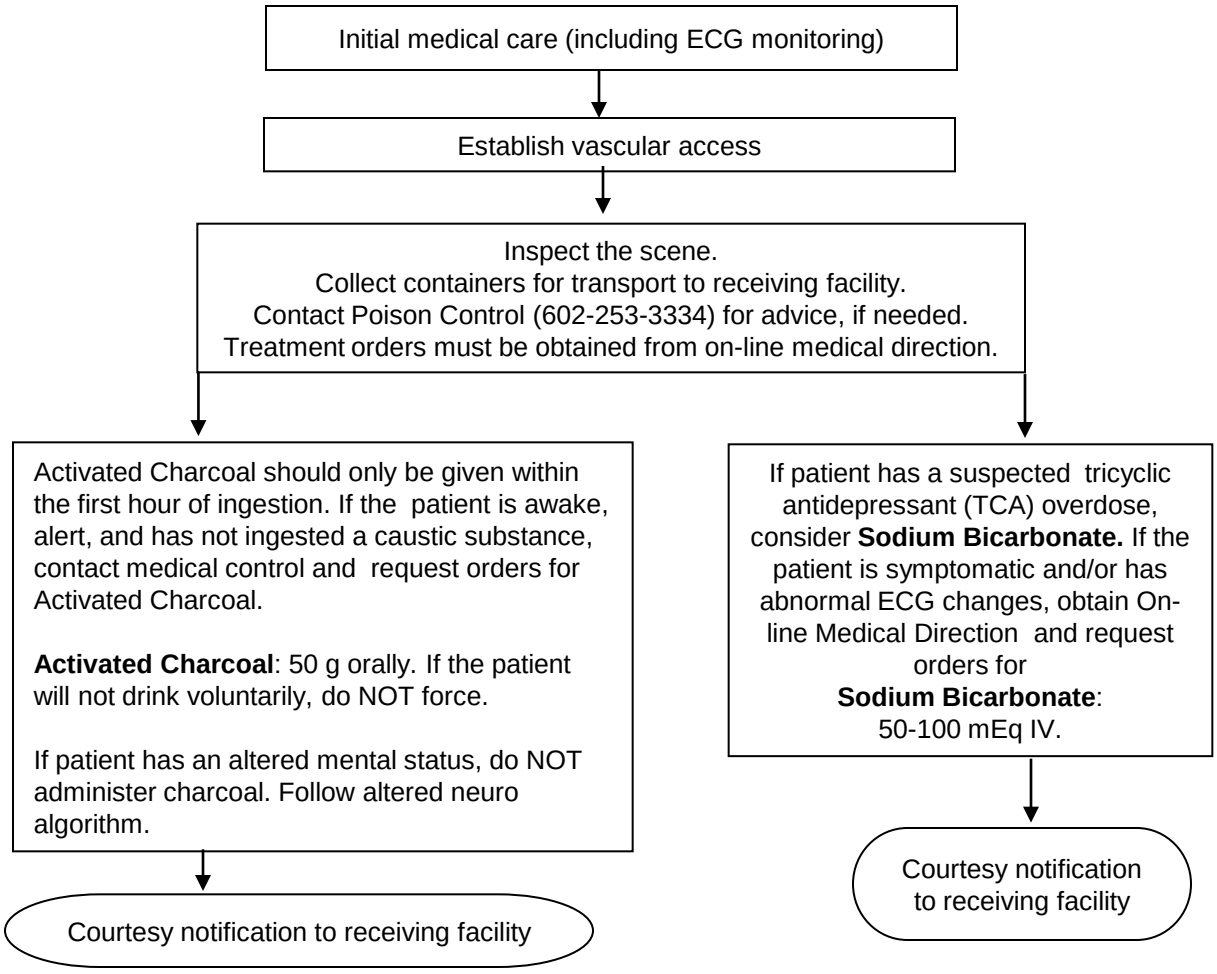
Candidates for Stroke Alert: Any patient with acute onset of focal neurological deficit(s) such as facial asymmetry, arm drift, or slurred speech, known to have had an onset within 5 hours (or longer time period as specified by Primary Stroke Center).

Non-candidates for Stroke Alert: Patients with complaint exclusively of generalized weakness, dizziness, syncope, loss of consciousness/coma, a fall, seizure, headache, head trauma/injury, neurological complaints of greater than 4 hours duration as determined from last time patient known to be without deficit .

Additional Treatment: Do not treat hypertension in patients suspected of having acute stroke unless directed to do so via online medical direction.

For Pediatric Patients (≤ 14 years old exhibiting signs/symptoms of a Stroke, contact medical direction for destinations orders.

Poisoning/Overdose
Adult (≥ 15 y/o)



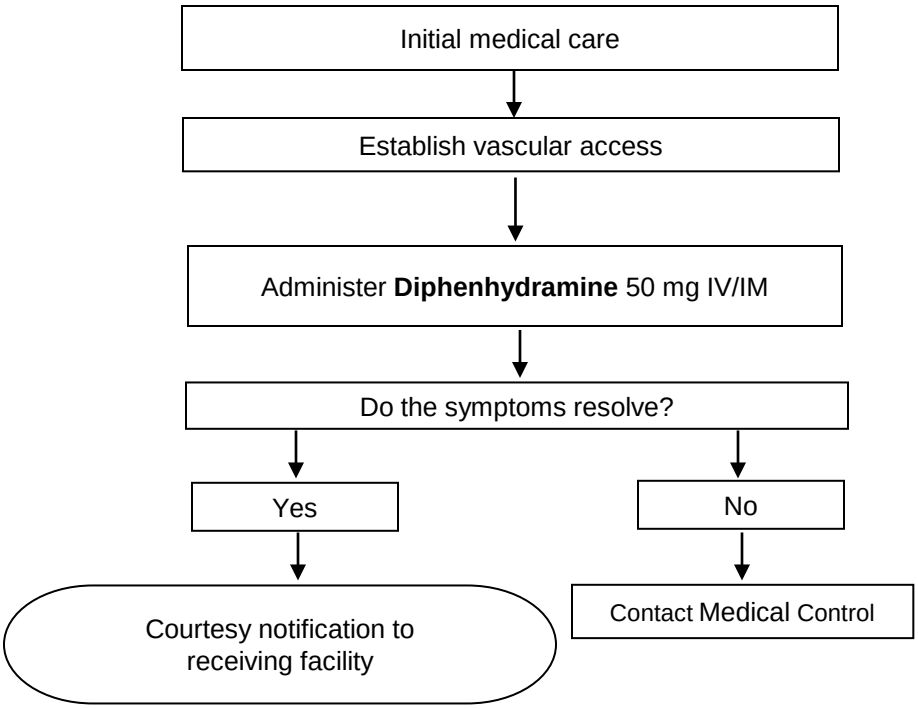
Document:

- Type of ingestion (What, when, how much.) Bring the substance ingested including packaging/pills to receiving center.
- Past history (medications, suicide attempts)
- Action taken by bystanders (induced emesis? “Antidote” given?)

Notes regarding **Activated Charcoal**:

- Contraindications: Ingestion of caustics, ingestion of hydrocarbons (relative), oral administration to comatose patient, simultaneous administration of other oral medications.
- Ineffective for iron, lithium, heavy metals, and other ions.
- May reduce the effectiveness of other treatments (Mucomyst) in pure acetaminophen OD's.
- Since charcoal bonds with whatever it is mixed with, flavoring with drinks reduces effectiveness.

Acute Dystonic Reaction
Adult (≥ 15 y/o)



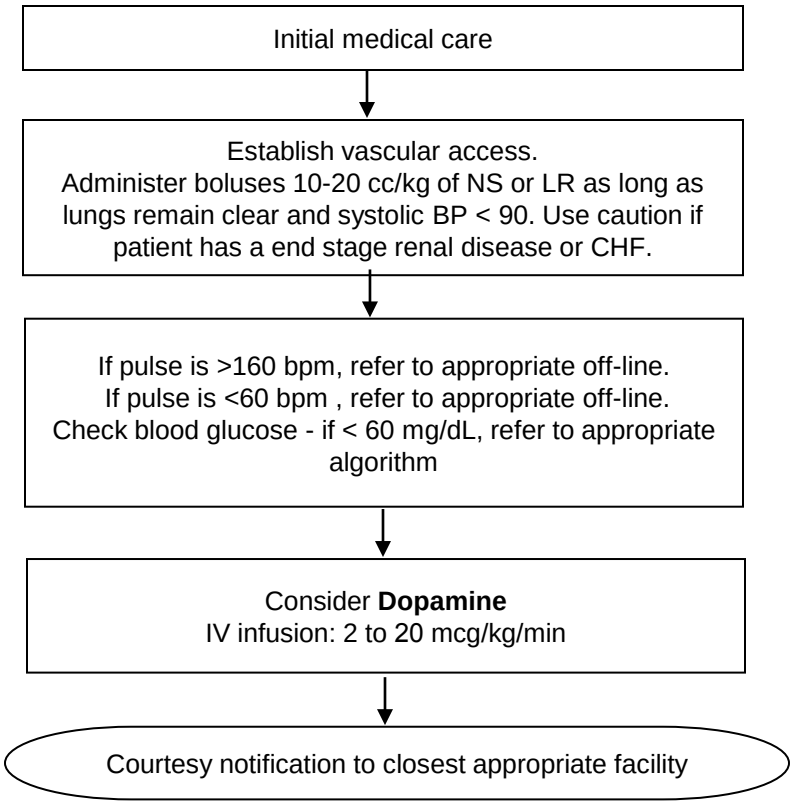
Dystonia is a neurological movement disorder characterized by involuntary muscle contractions, which force certain parts of the body into abnormal, sometimes painful, movements or postures. Dystonia can affect any part of the body including the arms and legs, trunk, neck, eyelids, face, or vocal cords.

Signs and symptoms of a dystonic reaction may include protruding or pulling sensation of the tongue; twisted neck, or facial muscle spasm; roving or deviated gaze; abdominal rigidity and pain; and/or spasm of the entire body.

The following medications can cause dystonia (partial list):

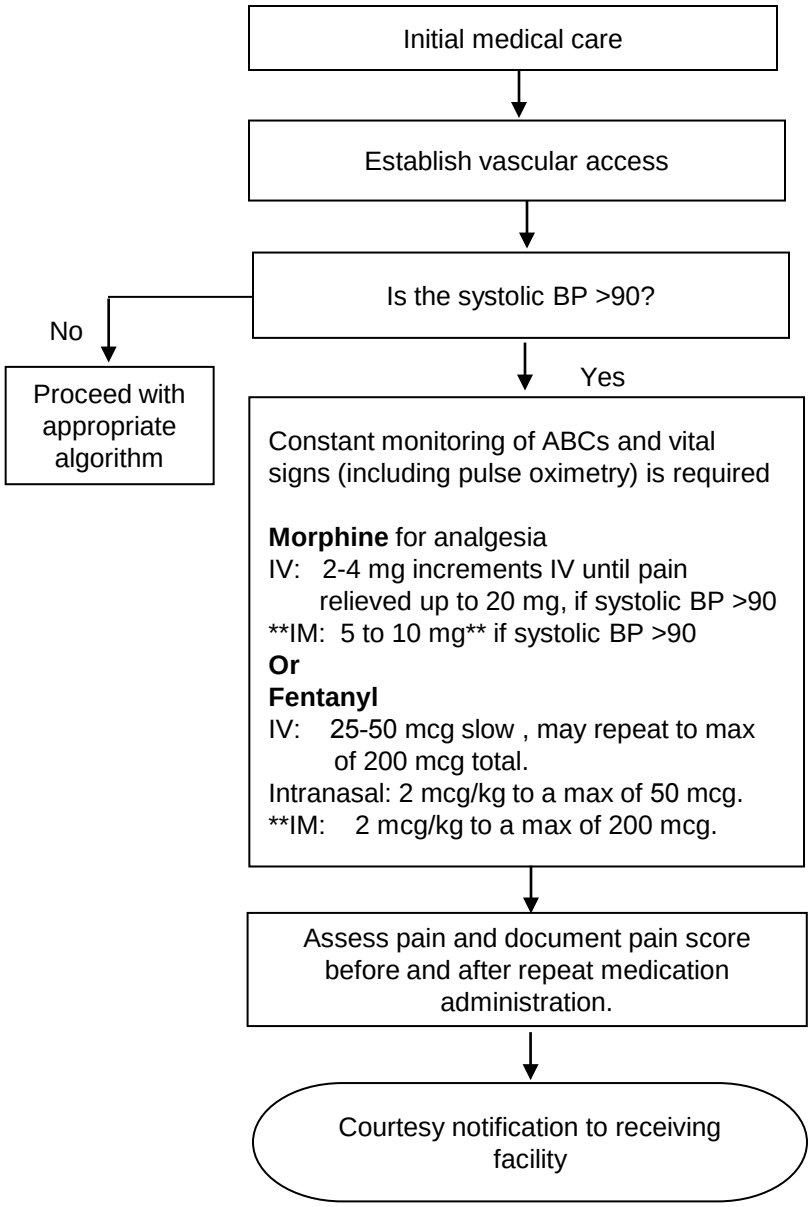
- Acetophenazine (Tindal®)
- Amoxapine (Asendin®)
- Chlorpromazine (Thorazine®)
- Fluphenazine(Permitil®, Prolixin®)
- Haloperidol (Haldol®)
- Loxapine (Loxitane®, Daxolin®)
- Mesoridazine (Serentil®)
- Metaclopramide (Reglan®)
- Molindone (Lindone®, Moban®)
- Perphenazine (Trilafon® or Triavil®)
- Piperacetazine (Quide®)
- Prochlorperazine (Compazine®, Combid®)
- Promazine (Sparine®)
- Promethazine (Phenergan®)
- Thiethylperazine (Torecan®)
- Thioridazine (Mellaril®)
- Thiothixene (Navane®)
- Trifluoperazine (Stelazine®)
- Triflupromazine (Vesprin®)
- Trimeprazine (Temaril®)

Shock/Hypotension
Adult (≥ 15 y/o)



All patients with a syncopal episode or near-syncope should be transported to the hospital via ambulance. Refusal requires on-line medical direction (high-risk).

Pain Management
Adult (≥ 15 y/o)



Before administering meds for pain, ask the patient to quantify their pain on a 1 to 10 scale. Document this information and use it as a guide to measure the effectiveness of analgesia.

**IV route offers better means for titration of med. Absorption via IM route may be unpredictable and should be used as a last resort – use only if no vascular access. Documentation must reflect rationale for IM route, if used.

Sedation
Adult (≥ 15 y/o)

Sedation should only be administered when indicated in specific off-line.

Sedation

Lorazapam (Ativan)
IV/IM: 1-2 mg. May repeat once in 10-15 minutes, if needed

Or Midazolam (Versed)
Age 15 to 60:
IV: 1-5 mg titrated to effect; administer slowly in increments of no more than 2.5 mg over at least 2 min; total dose no more than 20 mg
IM: 2-10 mg. Max of 10mg every 10 minutes up to total dose of 20 mg
Intranasal: 0.2-0.3 mg/kg to a max of 10mg. May repeat once if needed. Must use 5mg/ml concentration
Age > 60: Reduce dose by half

Or Diazepam (Valium)
IV: 5 -10 mg in 2 mg increments no faster than 2 mg/min

Or Ketamine

Use of Ketamine is an optional medication for sedation and requires special training and agency approval.

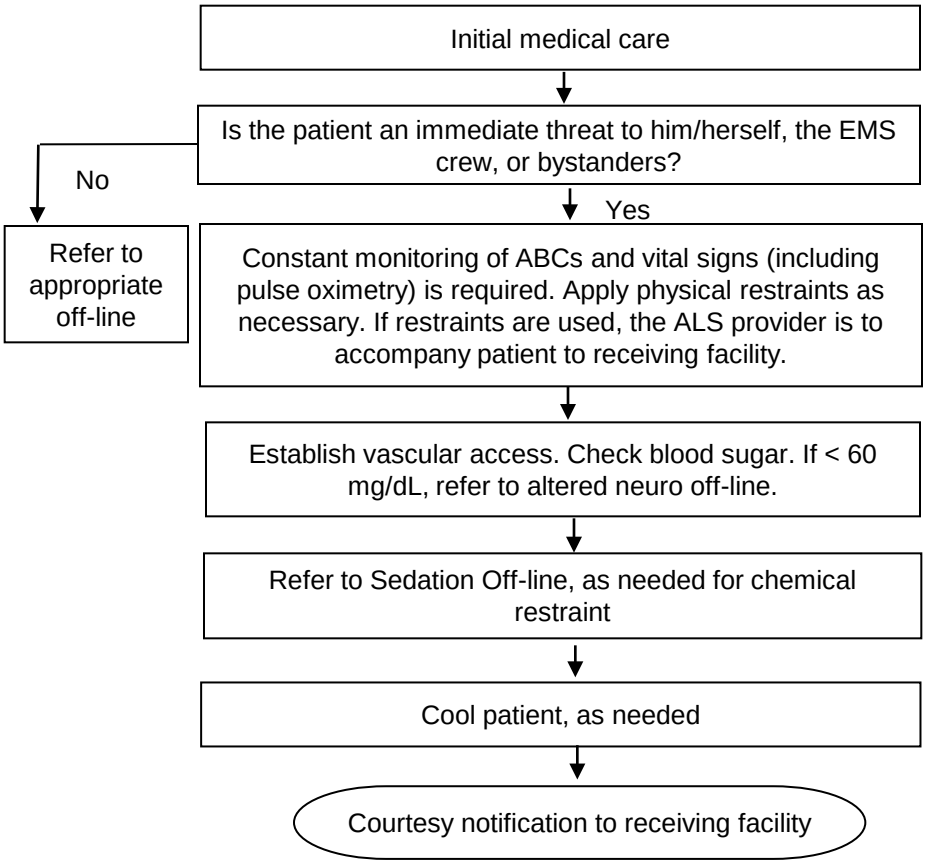
Ketamine
IV: 2 mg/kg. Half-life 5-10 minutes. May re-medicate with half-dose after 10 minutes.
IM: 4 mg/kg. Half-life 12-25 minutes. May re-medicate with half-dose after 10 minutes.

Agitated/Combative/Excited Delirium Patient

Adult (≥ 15 y/o)

If a patient is violent and an immediate threat to the patient, EMS crew, or bystander safety exists, physical restraint may be used to prevent the patient from harming him or herself or others. If the patient is not violent, be alert for possible violence and avoid provoking the patient.

Note: Sedation medications have been associated with respiratory depression and respiratory arrest. Monitor patient closely.



Patient Assessment

1. An ALS provider must assess a patient that is restrained.
2. The patient must be under direct supervision at all times during treatment and transport.
3. The patient's airway, breathing, and vital signs – including pulse oximetry – should be monitored closely at all times.
4. Circulation to the extremities shall be evaluated at least every 10 minutes when restraints are applied.

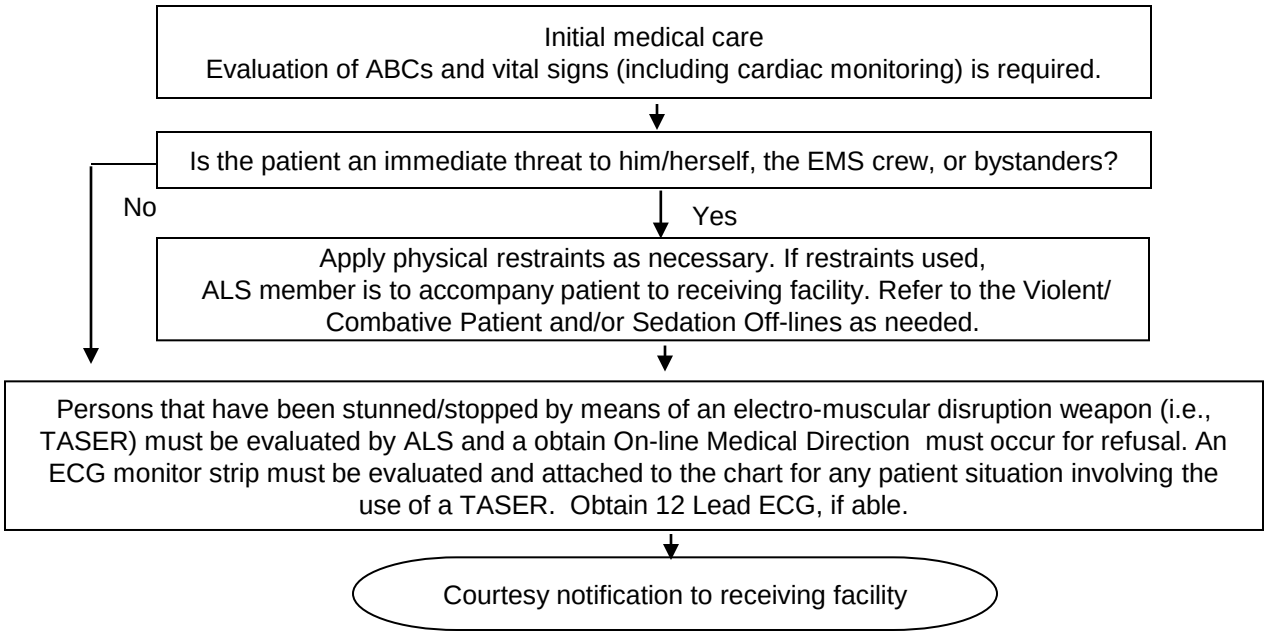
Type of Restraint - 1) Handcuffs may only be used as restraint devices when a law enforcement officer accompanies the patient to the hospital. A patient that is in police custody will require a handcuff key inside the ambulance during transport. The paramedic should have immediate access to keys needed to release handcuffs or other restraining devices. 2) Only non-locking leather or other ALS provider approved "soft" restraints may be applied and used by medical providers.

Patient Positioning – 1) Patients shall be positioned in a in a manner that does not compromise airway or breathing. 2) Restraints shall be placed in such a manner as to not preclude evaluation of the patient's medical status or injure the patient in any way.

Documentation - If restraints are necessary, documentation must include:

- Reason restraint was required
- Position of the patient during treatment and transport
- Patient status at the time of transfer of care
- Data indicating constant supervision of ABCs and vital signs, including pulse oximetry
- Total time the patient was restrained while in the care of ALS provider
- Type of restraint used
- Status of circulation distal to restraints

TASER Patients



1. The TASER probes may be removed by EMS providers, unless they are in a high risk area. If the TASER probe is in a high risk area (face, neck, hand, bone, groin, or spinal column), where it may injure bone, nerves, blood vessels, or an eye, do not remove the probe. Transport the patient to the ED in an appropriate position.
2. The patient should be transported to the most appropriate hospital.
3. When safe to do so, patients should be immediately evaluated, with particular attention to signs and symptoms of excited delirium.
4. Any injuries or medical conditions should be treated, refer to the appropriate off-line as needed.
5. These patients will be in the custody of law enforcement and will require transportation to and ED for medical clearance.
6. Unless otherwise contraindicated, the patient should be adequately and safely restrained in an upright positions prior to transport.
7. For removal of the TASER probes:
   a. Verify the wires to the probe have been severed
   b. Use universal precautions
   c. Place one hand on the patient in the area where the probe is embedded and stabilize the skin surrounding the puncture site between two fingers. Keep your hand several inches away from the probe. With the other hand, in one fluid motion pull the probe straight out of the puncture site
   d. Place TASER probes in sharps container. If sharps container unavailable, reinsert TASER probes, point down, into the discharged air cartridge and hand it to the law enforcement officer.
   e. Apply direct pressure for bleeding, and apply a sterile dressing to the wound site.

Some signs and symptoms of extreme forms of behavioral disturbances may include: agitation, aggression, excitability, exertion, exhaustion, great strength, non-response to pain, fear, panic, paranoia, pre-existing medical problems, medication effects, and illicit drug use. Illegal drugs such as PCP, cocaine, methamphetamines and other stimulants are known to cause acute behavioral disturbances.

Fall Injury / Minor Injury / Lift Assist
Adult (≥ 18 y/o)

Assess the need for immediate spinal motion restriction.
Refer to other off-lines as appropriate. Complete a patient encounter form.

↓

1. Evaluate mental status
2. FAST assessment
3. Vital signs
4. Complete secondary – Assess movement and for any injury
5. Blood glucose
6. Orthostatic vital signs
7. Cardiac Monitor – if available

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Determine cause of fall

- Syncope or near syncope
- Dizziness prior to fall
- Chest pain or difficulty breathing prior to fall
- Is patient normally ambulatory?
- Is this a mechanical fall? (i.e. did they trip, stumble, has a chronic balance issues, not using assistance device such as cane or walker, fall out of bed?)

↓

Courtesy notification to receiving facility or contact on-line medical direction for high risk refusal.

Exclusion Criteria

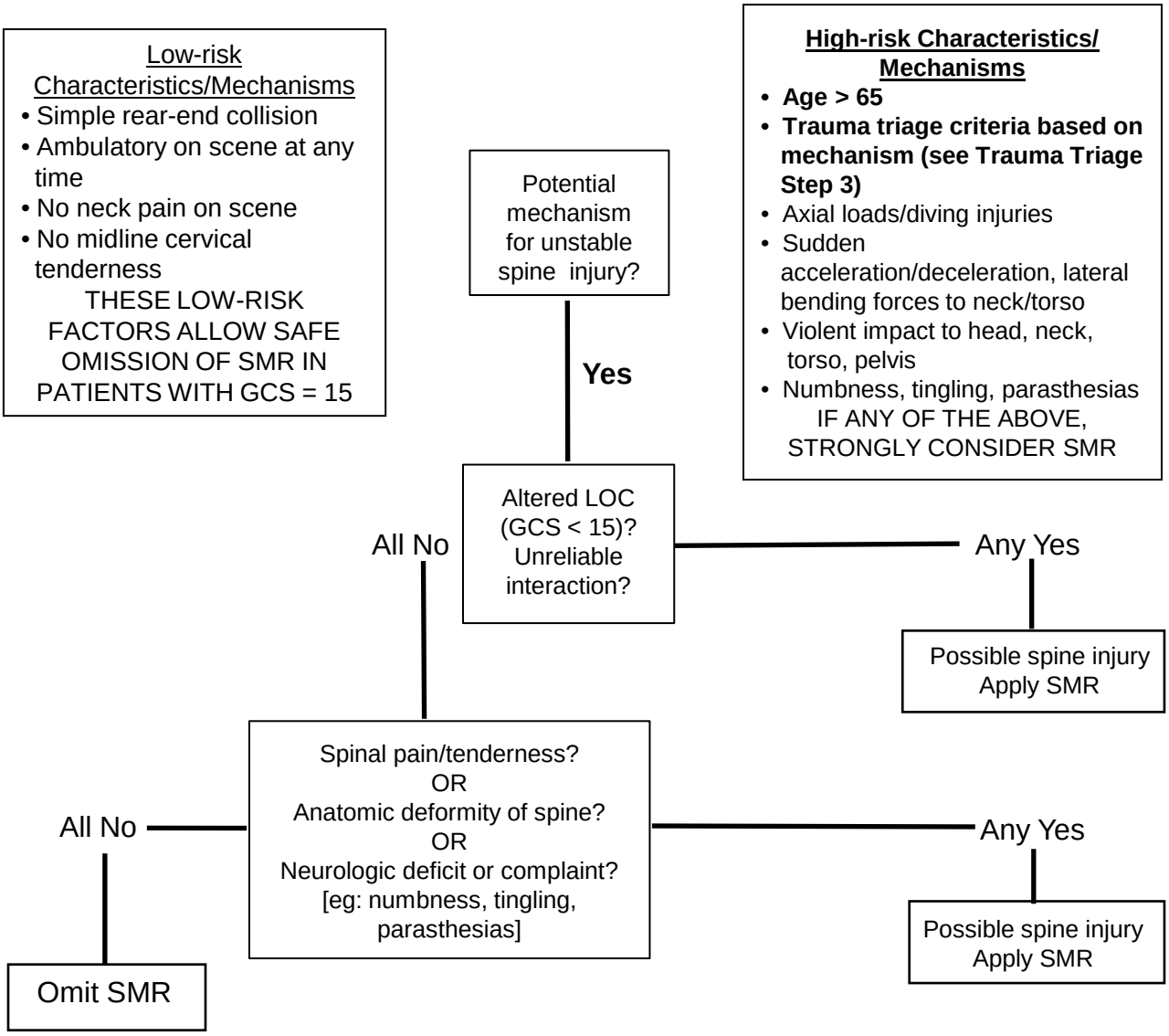
A **YES** to any of the following requires on-line medical direction.

- Does the patient have a concurrent illness that caused the fall?
- Is the patient confused or lacking decision making capacity?
- Is there a history of recent falls? If patient lives independently, do they need additional intervention?
- Abnormal vital signs or positive orthostatic changes?
- Positive FAST score?
- Abnormal EKG - if being assessed by ALS provider?
- Abnormal blood glucose?
- Is patient on blood thinners? Compare to list. Aspirin alone does not require on-line medical direction.
- Secondary assessment reveals significant injury?

Risk assessment

- Assess patient's residence for possible trip hazards and educate.
- Refusal (ensure pt understands potential risk.)
- If patient has POA, contact POA.
- Is patient safe to leave at home? Assure patient has responsible adult to stay with or check on patient. If someone is not at home with patient, contact friend/relative that is willing to check on patient.

Spinal Motion Restriction
Adult (≥ 15 y/o) Blunt Trauma

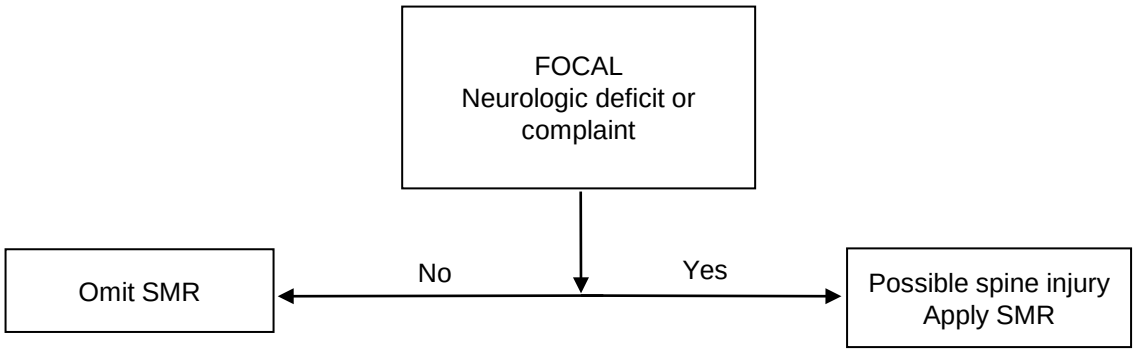


Unreliable Patient Interactions
- Language barriers; inability to communicate
- Lack of cooperation during exam
- Evidence of drug/alcohol intoxication
- Painful distracting injury such as long-bone fracture

Spinal Motion Restriction (SMR)
Refer to SMR Procedures page for preferred packing methods and tools

Motor/Sensory Exam
- Wrist/hand extension bilaterally
- Foot plantarflexion bilaterally
- Foot dorsiflexion bilaterally
- Gross sensation in all extremities
- Check for parasthesias

Spinal Motion Restriction
Adult (≥ 15 y/o) Penetrating Trauma



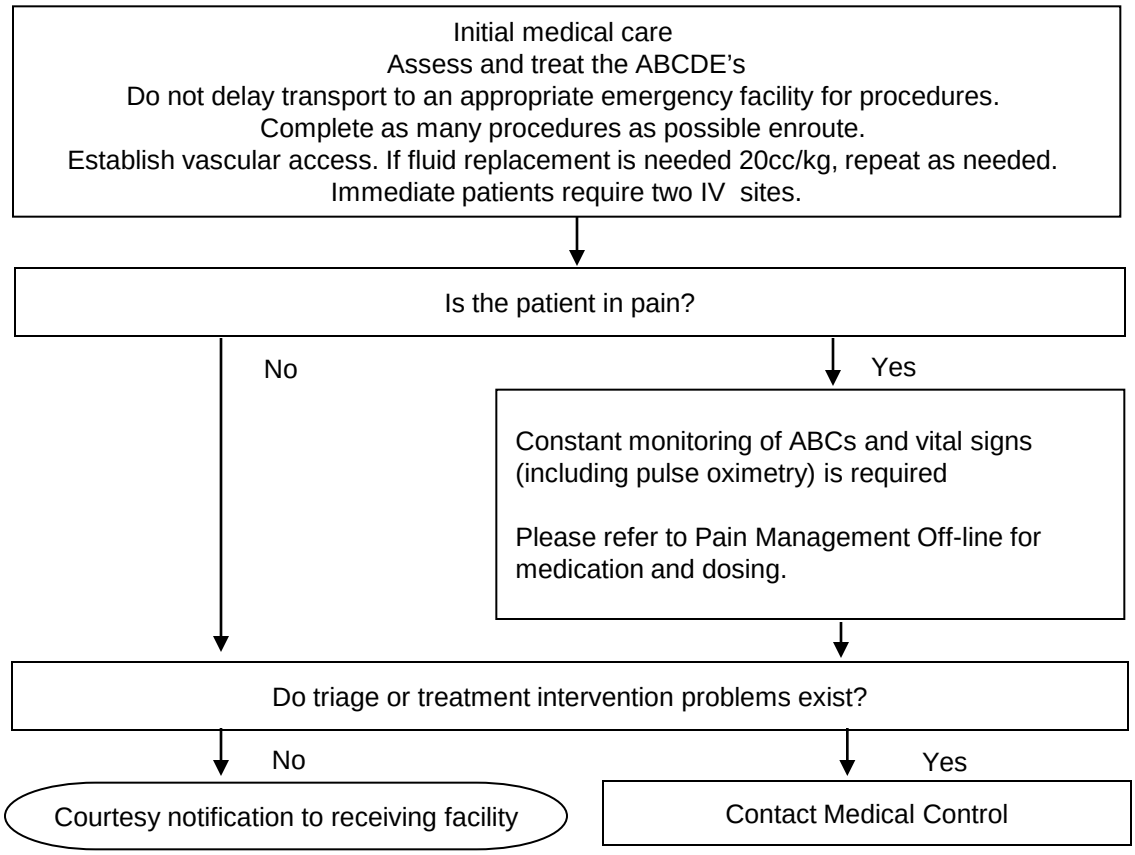
Notes

- Unstable spine fractures and spinal cord injury from penetrating head trauma are extremely rare
- Neuro deficits often present at moment of injury
- Life threatening conditions and evacuation from imminent threat take priority
- If history suggests combination penetrating *AND blunt trauma, revert to Blunt Trauma* SMR Algorithm
- Instructive information: Patients with global deficits do not require SMR

Spinal Motion Restriction (SMR)

- Refer to SMR Procedures page for preferred packing methods and tools

Trauma Management
Adult (≥ 15 y/o)



Head Injury

If patient has head injury:

1. Elevate the head of the board approximately 30 degrees.
2. Ensure pt ventilations adequate at age appropriate rate. (Assist with BVM if necessary)
3. Signs of severe traumatic brain injury (TBI) include unconsciousness and/or unresponsiveness; GCS < 9; pupils that are unequal, non-reactive, and/or dilated; oxygen saturation < 90% (adult); and/or systolic blood pressure < 90 mm Hg (adult).
4. Signs of impending cerebral herniation include all symptoms of TBI plus unresponsiveness to painful stimuli; extensor posturing; and/or a decrease by 2 or more point in the GCS. Other signs include Cushing's Triad: bradycardia, hypertension, and irregular respirations.

EPIC TBI Management
Adult (≥ 15 y/o)

Suspicion of a Traumatic Brain Injury (TBI) by mechanism, GCS, or Exam, then provide O2 15 L/min by NRB, establish IV access and monitor the patient's O2, BP, and HR every 3-5 minutes.

Airway/Breathing
O2 sat<90 &/or hypoventilation (despite NRB)

Circulation
SBP <90 or other signs of shock

Disability
Evaluate Mental Status/GCS

O2 sat<90 &/or hypoventilation (despite NRB)

- BLS airway maneuvers
- BVM 10/min
- Careful monitoring of O2 sat and airway
- If O2 sat <90, despite BLS consider ALS airway
- Maintain ETCO2 between 35-45 mmHg

If O2 sat <90, despite BLS consider ALS airway

- Place advanced airway
  - Pre-oxygenate: BVM with 100% O2 @10 breaths/min
  - Check placement using ETCO2 detector and/or monitor
- Control ventilatory rate:
  - ETCO2 available: maintain ETCO2 between 35-45 mmHg
  - ETCO2 not available: utilize cadence device Irate 10bpm)
  - Control ventilatory volume:
    - Ventilator available: utilize as soon as possible (Tidal volume = 7cc/kg)
    - Ventilator not available: utilize pressure controlled bag
- Monitor O2 sat and airway every 3-5 minutes
  - If O2 sat <90, despite above interventions, consider:
    - Tension pneumothorax and needle thorocostomy
- Meds that can rapidly drop BP and rapidly reduce blood flow to brain: Morphine, Fentanyl, Midazolam (Versed), Diazepam (Valium), Lorazepam (Ativan). Use with caution and watch SBP carefully. Don't give if patient's B/P is already low or falling. Start with VERY low doses (20-25% of usual dose).

SBP <90 or other signs of shock

- 1000 bolus of NS/LR
- Repeat 500 ml rapid boluses until SBP >90
- Continue careful monitoring BP/HR
- Pay attention for early signs of shock:
  - Tachycardia
  - Dropping SBP

Evaluate Mental Status/GCS

Always evaluate for hypoglycemia.

- It can mimic or cause a TBI.
- Check blood glucose. If <70 mg/dl:
  - 50 ml 50% Dextrose IV/IO
  - Repeat BG @ 10 min. Repeat previous dose X 1 if still <70 mg/dl

Consider impending herniation if:

- Dilated and unresponsive pupils
- GCS <9 or rapid deterioration in GCS by >2 points
- Extensor posturing
- Asymmetric pupils (one or both non-reactive to light)
- Re-evaluate every 3-5 minutes

If patient has signs of impending herniation.

- Elevate head of gurney 30˚

DO NOT hyperventilate

Hemorrhage Control / Tourniquets

Apply Tourniquet for Primary Hemorrhage Control:
- Suspected life-threatening hemorrhage due to amputation or partial amputation
- Penetrating injuries proximal to the wrist/ankle with significant hemorrhage
- Potentially life-threatening hemorrhage as initial/primary treatment

↓

Expose the bleeding site.
Apply the tourniquet as proximal as possible on the extremity.
Do NOT cross any joints with a tourniquet.
Tighten tourniquet until bleeding stops.
If distal pulse is still present, tighten tourniquet until pulse is not palpated.
The bigger the limb, the tighter the tourniquet will need to be to control bleeding.
Document time of application.

↓

For non-life threatening hemorrhage or hemorrhage not amendable to tourniquet:
Apply direct manual pressure to bleeding site.
If continued bleeding, apply hemostatic gauze, if available.

↓

If the first tourniquet is ineffective, a second tourniquet can be applied proximal to the first tourniquet.

↓

Refer to Pain Management off-line, as needed.

↓

Courtesy notification to receiving trauma center.

Contraindications:
- Non-extremity hemorrhage (i.e., scalp, neck, thorax, etc.).
- Proximal extremity location where tourniquet application is not practical (i.e., high groin).

Precautions:
- A tourniquet applied incorrectly can increase blood loss.
- Applying a tourniquet can potentially cause nerve and tissue damage EVEN if applied correctly. Use only on appropriate patients.
- Injury due to tourniquet is unlikely if tourniquet is removed within two hours. In cases of life-threatening hemorrhage, the benefits outweigh the theoretical risk. Tourniquets may be removed if they are inappropriately placed, unnecessary for the wound, or are potentially damaging improvised tourniquets applied by bystanders.
- Only a commercially-made, Medical Direction-approved tourniquet should be used.

Acute Coronary Syndrome/ Chest Pain/Anginal Equivalents
(non-traumatic) Adult (≥ 15 y/o)

Initial medical care and obtain 12 lead

↓

Establish vascular access

↓

IV successful? — No → Contact medical control if you believe the patient would benefit from NTG administration and no IV has been established.

↓ Yes

If the patient is hypotensive (systolic < 90), give one fluid challenge of 250 mL (if lungs sounds clear)

↓

Aspirin give 162-324 mg
2-4 low dose aspirin (81 mg) by mouth if:
• No aspirin allergy
• Patient can chew and swallow

↓

Nitroglycerin
0.4 mg sublingual tablets or spray
May be repeated 2 times, every 5 minutes, to relief of pain if systolic >90

↓

Morphine
2-4 mg increments IV up to 10 mg if systolic BP >90 and chest pain unrelieved by nitroglycerin
OR
Fentanyl
IV: 50-100 mcg slow , may repeat to max of 200 mcg total.
IM: 2 mcg/kg to a max of 200 mcg.
Intranasal: 2 mcg/kg to a max of 200 mcg.

↓

Courtesy notification to closest appropriate facility.

Note presence of ST-segment elevation in 2 or more contiguous leads
•II, III, aVF – inferior wall
•I, aVL, V5, V6 – lateral wall
•V1, V2 – septum
•V3, V4 – anterior wall

Bradycardia with hypotension may be due to inferior wall MI associated with right ventricular MI. In this situation, pacing and IV fluids may improve the patient's hemodynamic status. May withhold MS or nitro if right ventricular MI is suspected.

Consider risk factors:
•Gender
•Race
•Age
•Obesity

Document pertinent risk factors:
•Hypertension
•Smoking
•Family history
•High cholesterol
•Diabetes
•Lifestyle/stress

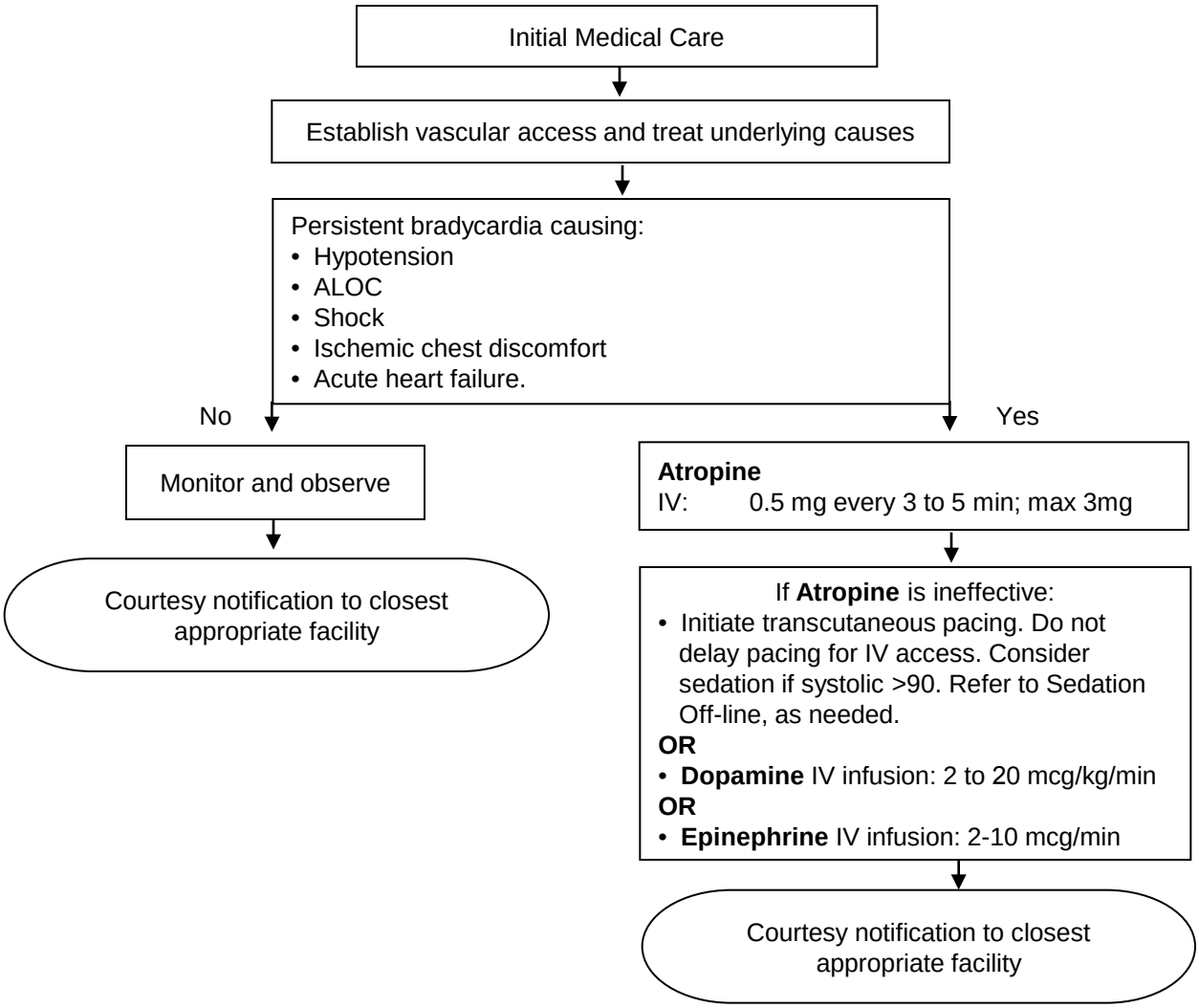
Document use/nonuse of sexual enhancement drugs in past 48 hrs. obtain On-line Medical Direction if <48 hrs
Levitra, Cialis, Viagra

Consider other treatment off-line where appropriate.

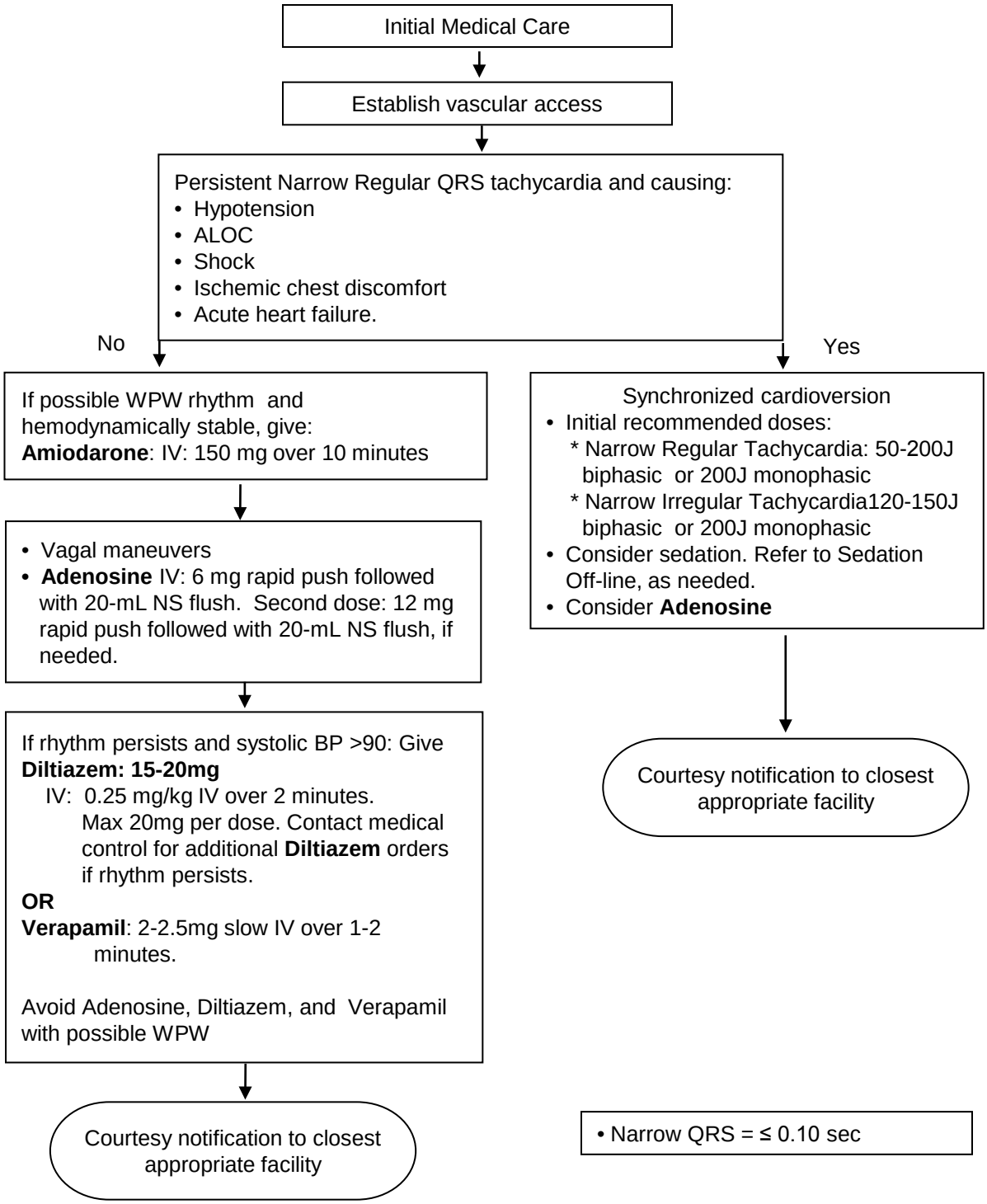
Leave a copy of the 12 lead ECG when transferring care

Symptomatic Bradycardia

Adult (≥ 15 y/o)

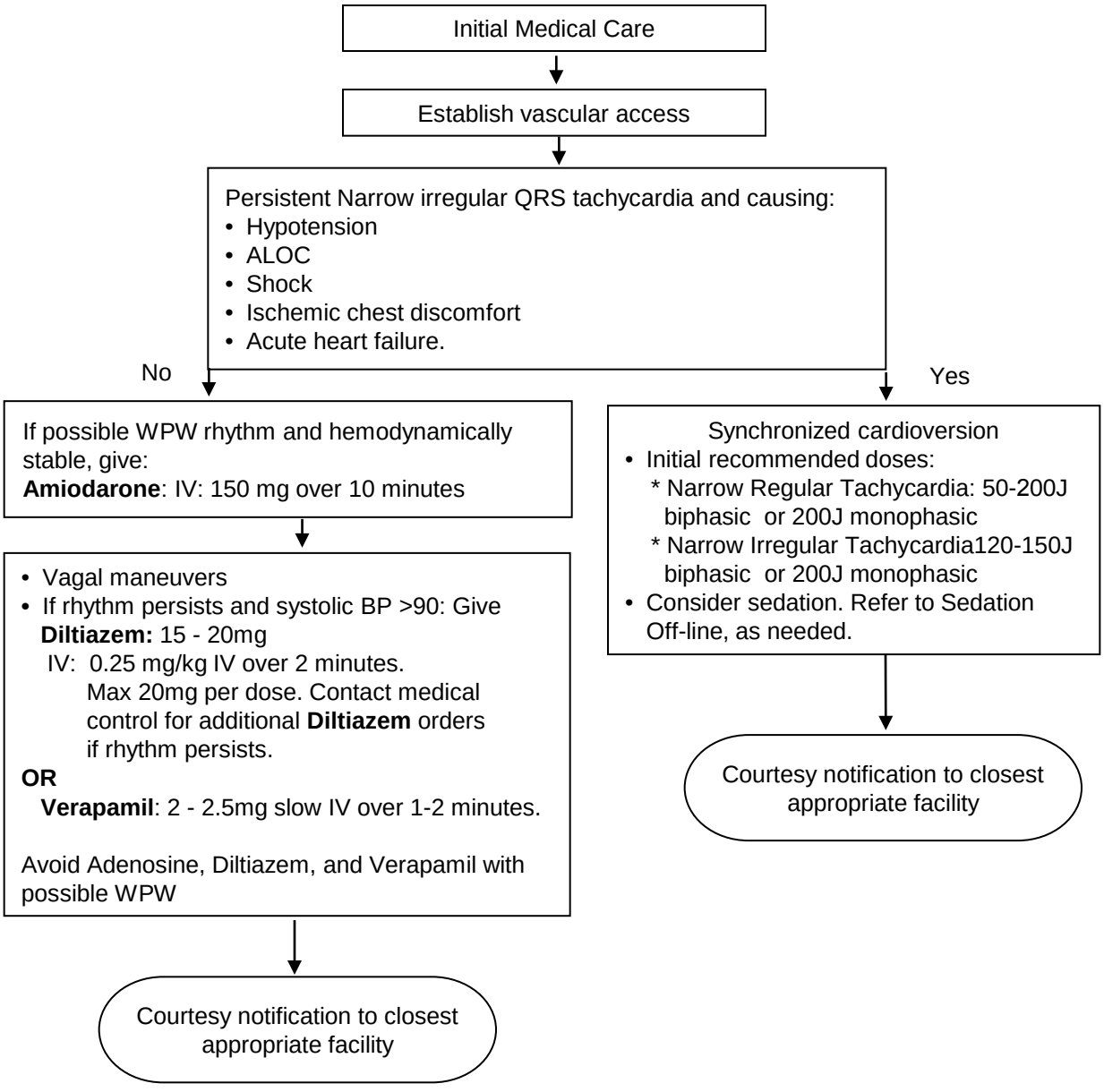


Narrow Regular QRS Tachycardia
Adult (≥ 15 y/o)



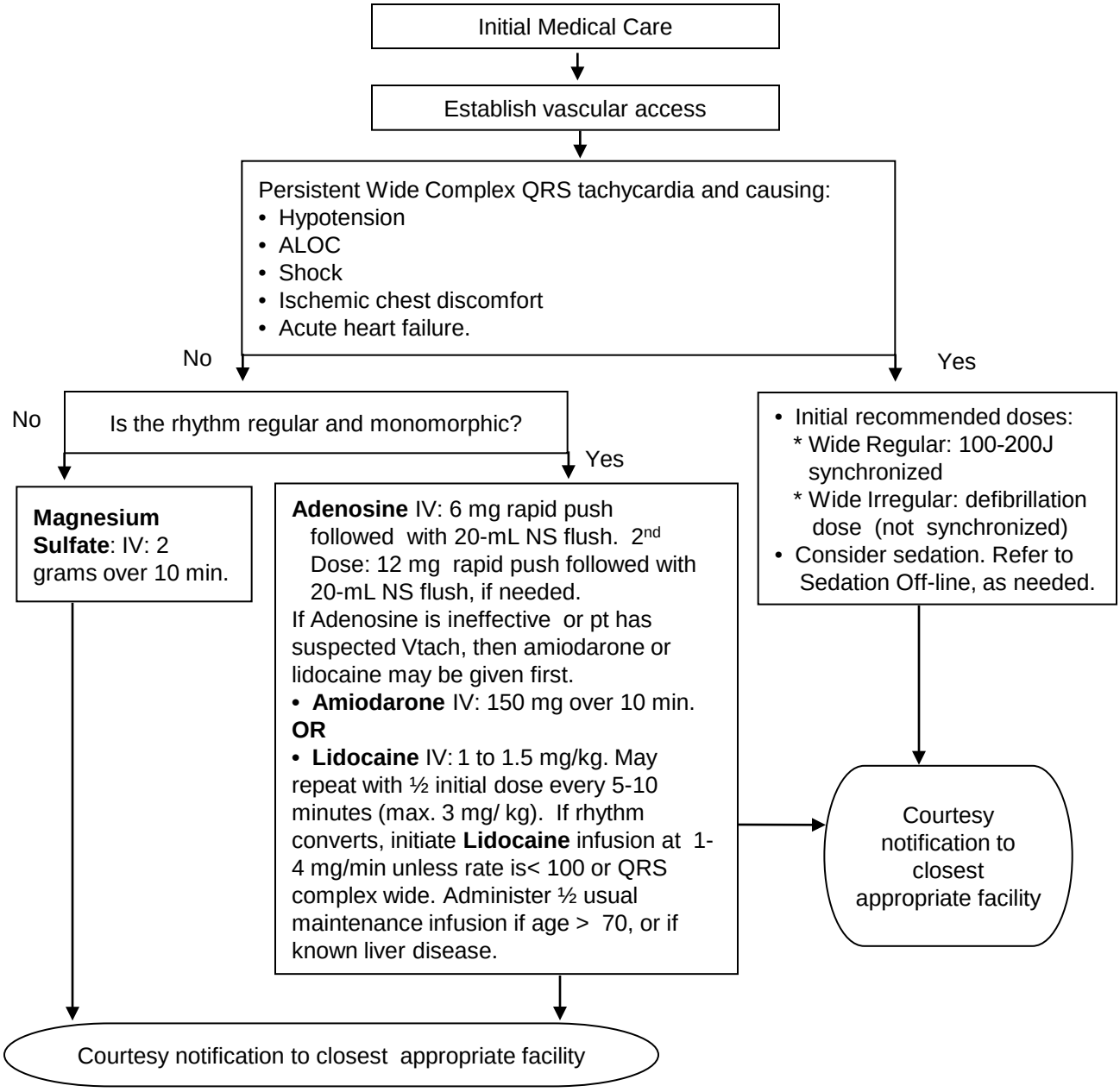
Atrial Fibrillation / Atrial Flutter

Adult (≥ 15 y/o)

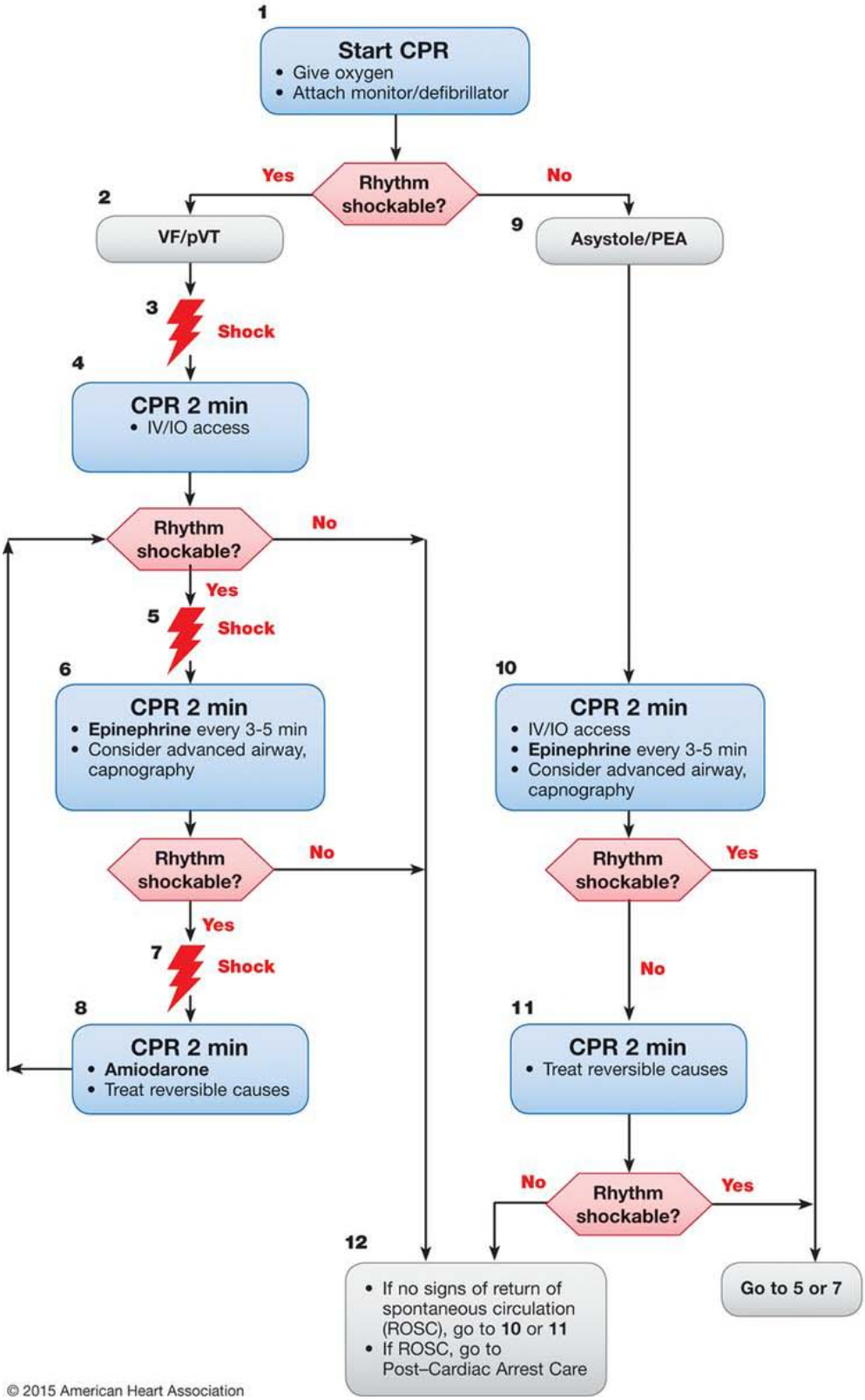


Wide Complex Tachycardia

Adult (≥ 15 y/o)



Adult Cardiac Arrest



CPR Quality
- Push hard (≥ 2 inches) and fast (≥ 100/minute) and allow complete chest recoil
- Minimize interruptions in compressions
- Avoid excessive ventilation
- Rotate compressor every 2 minutes
- If no advanced airway, 30:2 compression-ventilation ratio
- Quantitative waveform capnography. If <10, attempt to improve CPR quality

Return of Spontaneous Circulation (ROSC)
- Pulse and blood pressure
- Abrupt sustained increase in ETCO2 (typically >40)

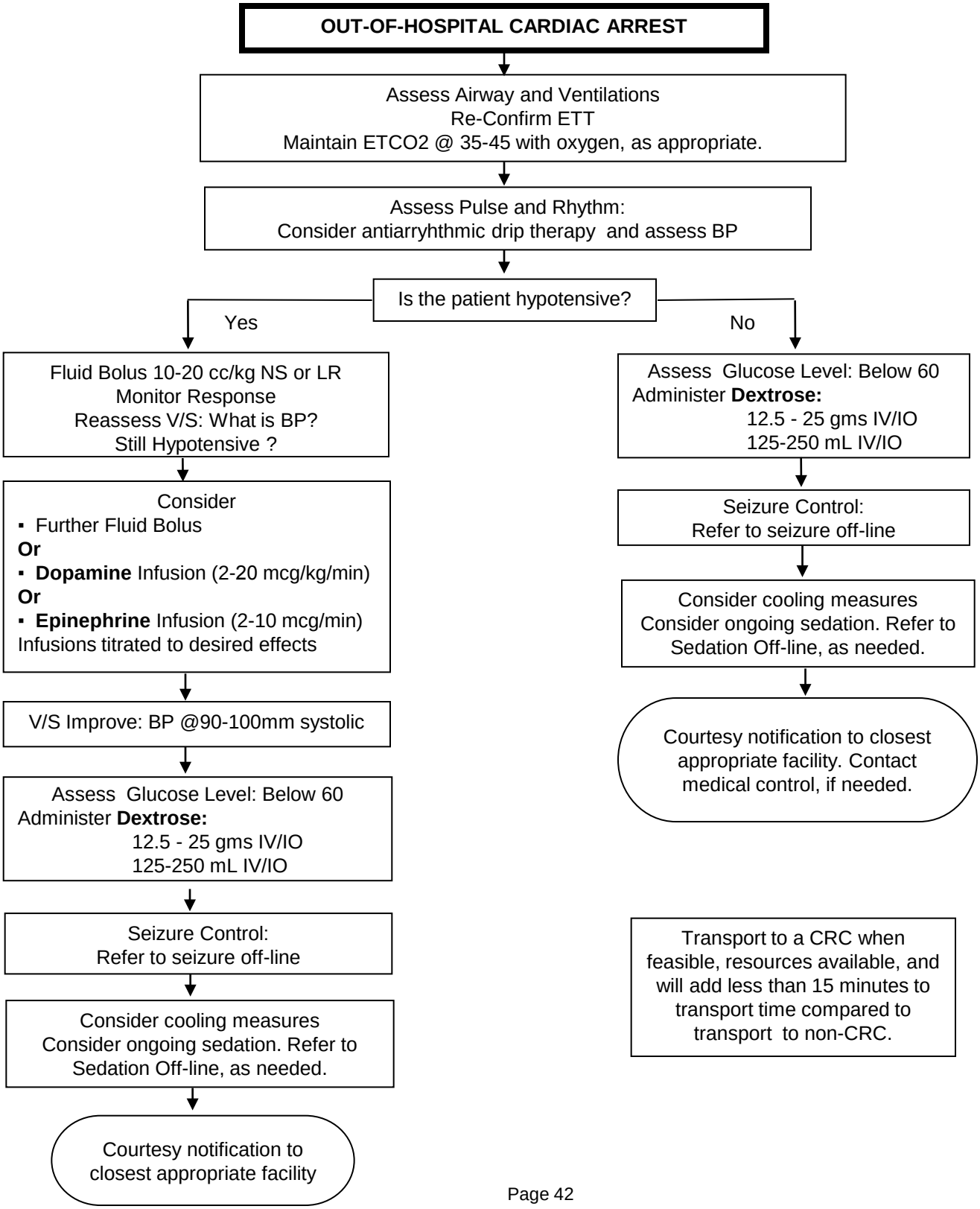
Shock Energy
- **Biphasic:** Manufacturer recommendation (120-200 J); If unknown, use maximum available. Second and subsequent doses should be equivalent, and higher doses may be considered.
- **Monophasic:** 360J

Drug Therapy
- **Epinephrine IV/IO Dose:** 1 mg (1:10,000) every 3-5 minutes
- **Amiodarone IV/IO Dose:** First dose 300 mg bolus. Second dose 150 mg bolus. If Amiodarone is unavailable, **Lidocaine IV/IO Dose:** 1-1.5 mg/kg, repeat 1/2 initial dose (0.5-0.75 mg/kg). Max 3 mg/kg

Advanced Airway
- Supraglottic advanced airway or endotracheal intubation
- Waveform capnography to confirm and monitor ET tube placement
- Once advanced airway is in place, give1 breath every 6 seconds, with continuous compressions.

Reversible Causes
- Hypovolemia
- Hypoxia
- Hydrogen ion (acidosis)
- Hypo-/hyperkalemia
- Hypothermia
- Tension pneumothorax
- Tamponade, cardiac
- Toxins
- Thrombosis, pulmonary
- Thrombosis, coronary

Post-Arrest Stabilization
Adult (≥ 15 y/o)



Pediatric Algorithms

Pediatric Assessment Triangle

Appearance
- Tone
- Interactiveness
- Consolability
- Look/gaze
- Speech/cry

Work of Breathing
- Abnormal airway sounds
- Abnormal positioning
- Retractions
- Flaring

Circulation
- Pallor
- Mottling
- Cyanosis

Neonatal Resuscitation

All situations:

- Consider immediate transport
- Assess and support the following:
  - Temperature (dry and warm)
  - Airway (position and suction)
  - Breathing (stimulate to cry)
  - Circulation (heart rate and color)
- What is the respiratory status and heart rate?

Stable Newborn

- Respirations are adequate, heart rate > 100/min, central color pink
- Continue assessment
- Observe, monitor vital signs, support, and transport
- Courtesy notification to receiving facility

Unstable Newborn	
Inadequate respirations, HR > 100/min, persistent cyanosis	• Administer blowby oxygen via oxygen tubing OR • Ventilate with 100% O2 via bag-valve-mask at a rate of 40-60/min • Reassess heart rate and respiratory rate every 30 sec en route • Courtesy notification to receiving facility
Apnea, gasping, HR 60-100, or central cyanosis	• Administer 100% oxygen • Ventilate with bag-valve-mask at a rate of 40-60/min • Reassess heart rate and respiratory rate every 30 sec en route • Courtesy notification to receiving facility
HR < 60 bpm (pulse present)	• Assist ventilations with 100% O2 at a rate of 40-60/min • If no improvement after 30 sec of ventilation with 100% O2, begin chest compressions at 120/min, (3 compressions:1 breath every 2 sec) • If no improvement in 30 seconds, intubate • Establish vascular access • Give Epinephrine 1:10,000 0.01-0.03 mg/kg IV/IO/ET q 3-5 min • Reassess heart rate and respiratory rate every 30 sec en route • Courtesy notification to receiving facility
HR > 60 bpm with signs of cardiopulmonary compromise	• Consider immediate transport • Assist ventilations with 100% O2 at a rate of 40-60/min • Establish vascular access. Administer 10 mL/kg NS over 5-10 min and reassess. • Check blood glucose. If < 40 mg/dL, administer 0.5-1 g/kg of D10 over 20 min. • Reassess heart rate and respiratory rate every 30 sec en route • Courtesy notification to receiving facility
HR > 60 bpm and increasing, signs and symptoms of cardiopulmonary compromise resolved	• Immediate transport • Observe • Monitor vital signs • Support en route to hospital • Courtesy notification to receiving facility

Neonatal Resuscitation

Dry, Warm, Position, Stimulate, Suction

Administer O2 as needed.

Apnea / gasping, HR < 100, or central cyanosis

Ventilate with BVM @ 40-60/min

HR < 60 after 30 BVM

Chest Compressions @ 120/min - Thumbs encircle chest
3:1 ratio

HR < 60

Intubate and Suction
Epinephrine 0.01-0.03mg/kg
IV/IO/ET q 3-5 min

Check Glucose – treat if < 40

Fluid bolus 10 mL/kg
X 1

Courtesy notification to
receiving facility

APGAR SCORE

	0	1	2
Appearance (Skin color)	Blue Pale	Body pink Blue extremities	Completely pink
Pulse rate	Absent	<100/minute	>100/minute
Grimace	No response (Irritability)	Grimace	Cough, sneeze, cry
Activity (Muscle tone)	Limp	Some flexion	Active motion
Respirations (Respiratory effort)	Absent	Slow Irregular	Good crying

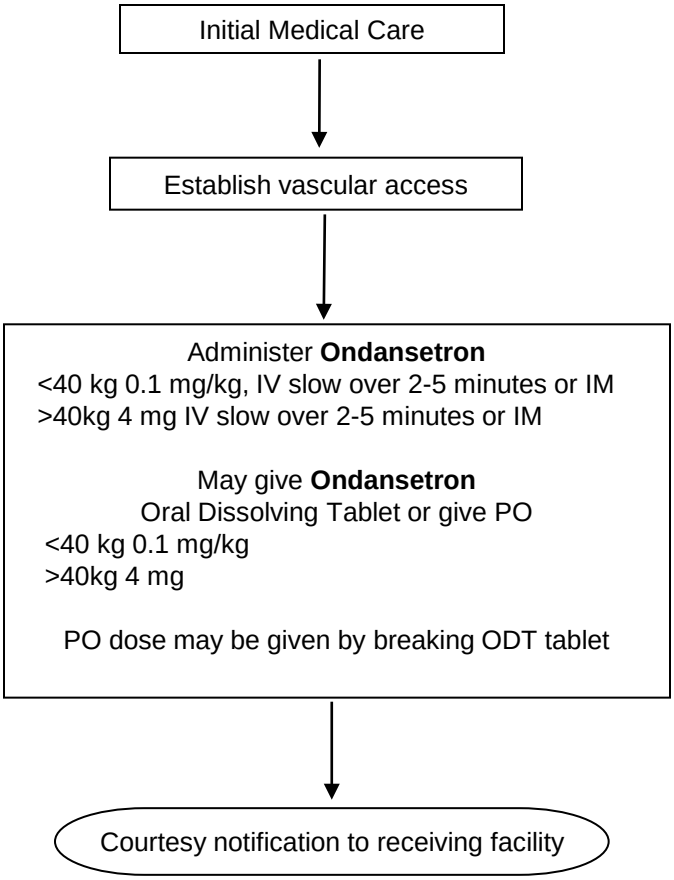
Pediatric Intubation & Vital Signs

PEDIATRIC INTUBATION AND VITAL SIGNS GUIDELINES						
AGE (YR)	WEIGHT (KG)	Lower Limit of Normal Systolic Blood Pressure	RESP	PULSE	ETT SIZE (mm)	ETT DEPTH
Preemie	1	MAP = gestational age	30-50	100-180	2.5-3.0	7 cm
	2	MAP = gestational age	30-50	100-180	2.5-3.0	8 cm
	3	MAP = gestational age	30-50	100-180	2.5-3.0	9 cm
Newly born	3.3-4	>60	30-40	100-180	3.5	10 cm
<1	5-8	>70	30-40	100-180	4.0	10 cm
1	10	>72	30-40	100-180	4.0	11 cm
2	12	>74	25-32	100-180	4.5	12 cm
3	14	>76	25-32	100-180	4.5	13 cm
4	16	>78	22-28	60-150	5.0	14 cm
5	18	>80	22-28	60-150	5.0	15 cm
6	20	>82	22-28	60-150	5.5	16 cm
7	22	>84	22-28	60-150	5.5	17 cm
8	24	>86	22-28	60-150	6.0	18 cm
9	26	>88	22-28	60-150	6.0	19 cm
10	28	>90	20-24	50-100	6.5	20 cm
11	30	>90	20-24	50-100	6.5	21 cm

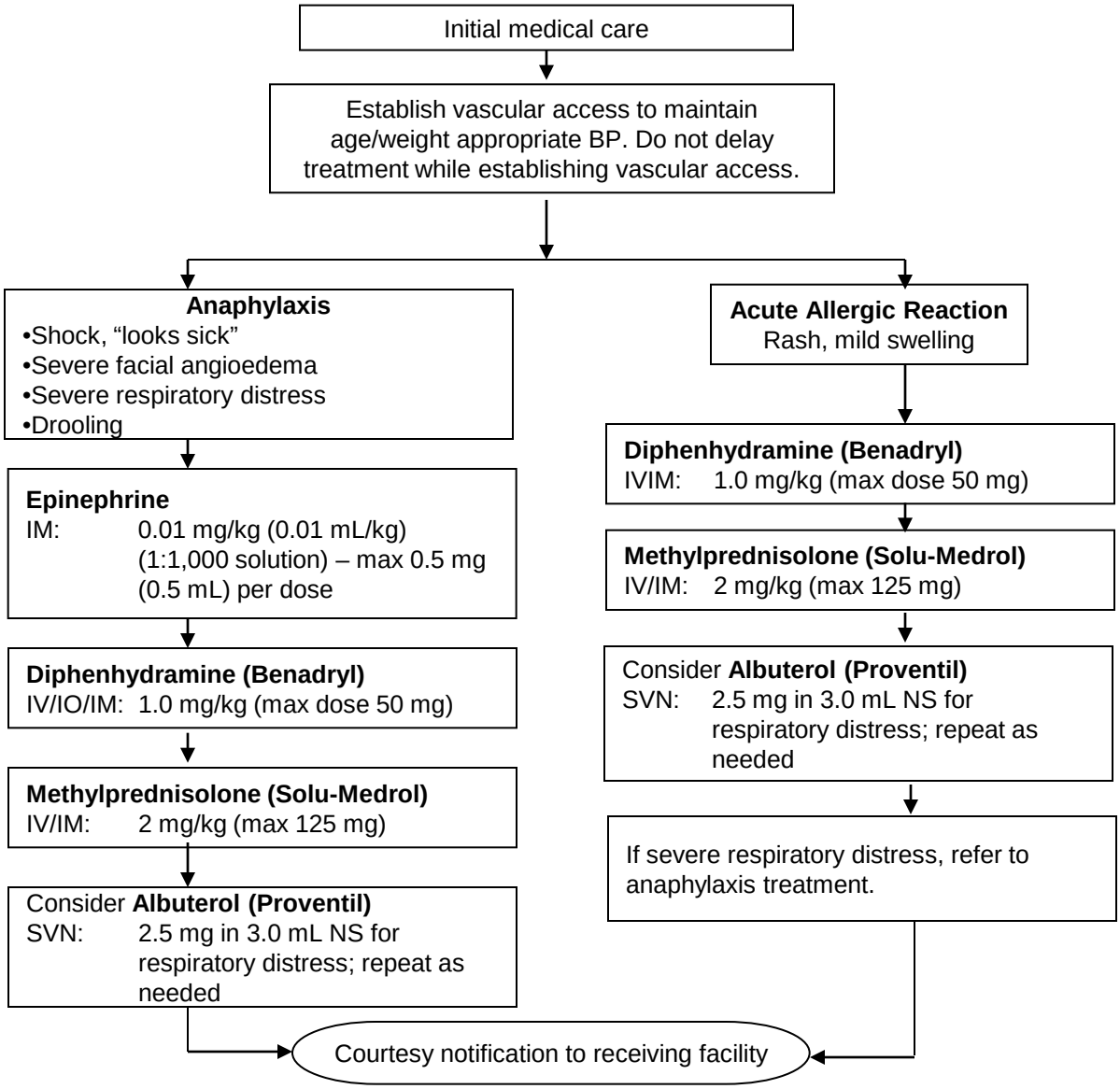
Formulas for weight, BP, ETT size, and ETT depth for ≥ 1 yr	
Weight = 8 + (2 x years)	ETT size = $\frac{16 + \text{years}}{4}$ May use cuffed or uncuffed ETT
BP = (2 x years) + 70 = minimum systolic	ETT depth = 10 + years = cm at lips

Probable sinus tachycardia	**Probable SVT**
• Compatible history consistent with known causes.	• Compatible history (vague, nonspecific); history of abrupt rate changes
• P waves present/normal	• P waves absent/abnormal
• Variable R-R; consistent PR	• HR not variable
• Infants: rate usually <220/min	• Infants: rate usually >220/min
• Children: rate usually <180/min	• Children: rate usually >180/min

Nausea / Vomiting
Pediatric (≤14 y/o)



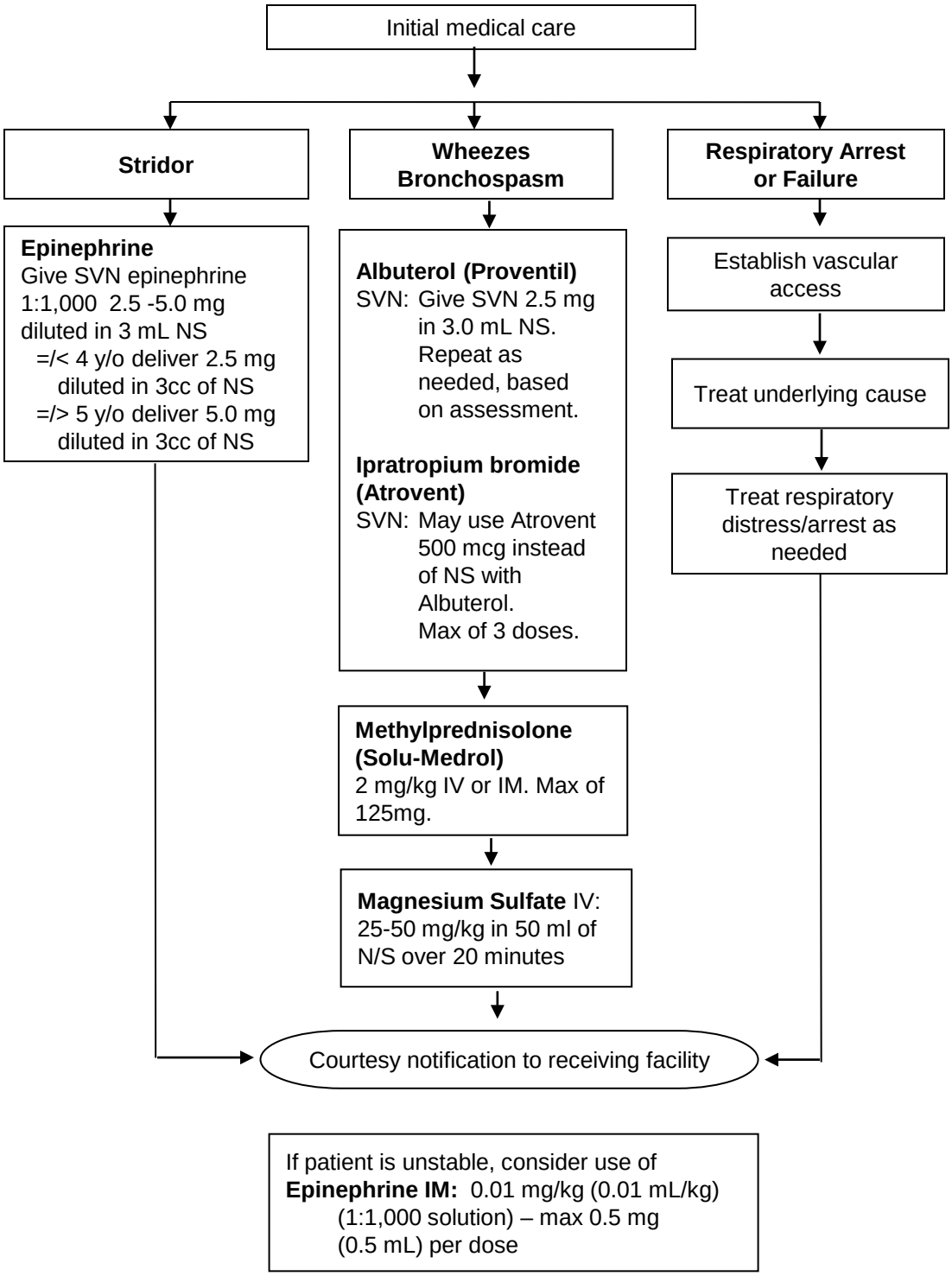
Allergic Reaction/Anaphylaxis
Pediatric (≤14 y/o)



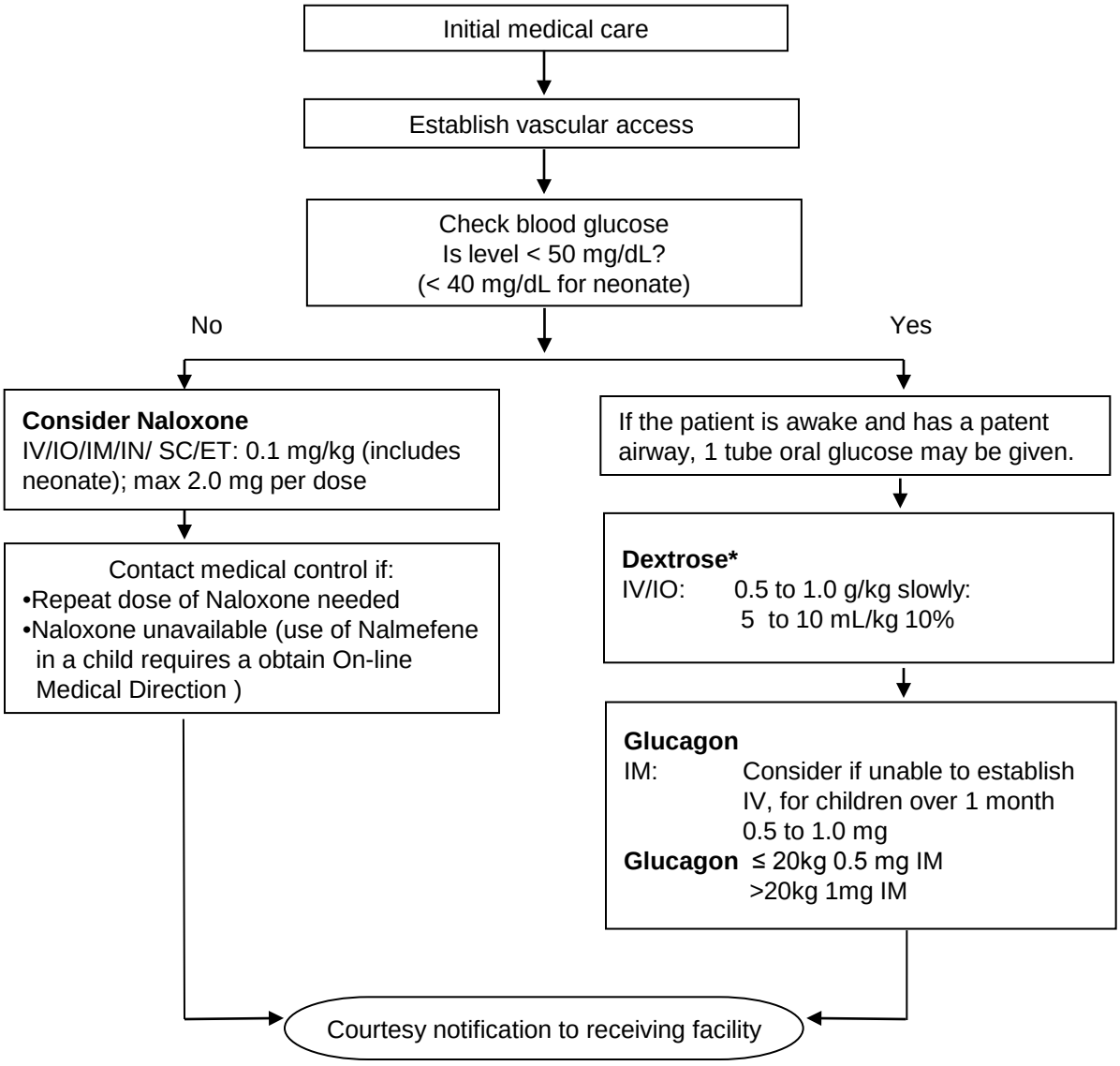
MILD DISTRESS:
Itching, isolated urticaria, nausea, no respiratory distress

SEVERE DISTRESS:
Stridor, bronchospasm, severe abdominal pain, respiratory distress, tachycardia, shock, generalized urticaria, edema of lips, tongue or face (angioedema)

Respiratory Distress
Pediatric (≤14 y/o)



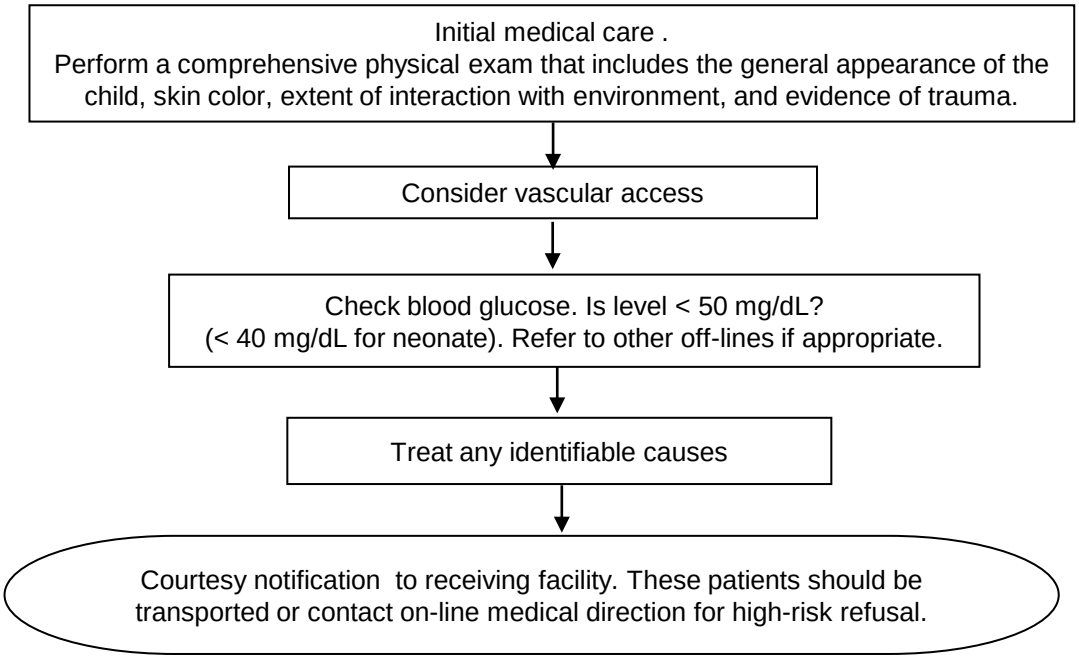
Altered Neurological Function
(Non-trauma) Pediatric (≤14 y/o)



*Dextrose 10% = 4:1 dilution of dextrose 50%

To prepare D10: Use a 250 mL IV bag of normal saline. Waste 50 mL and add 50 mL of dextrose 50%. The resulting solution is dextrose 10% in normal saline or 1 g/ 10 mL.

Apparent Life-Threatening Event
Pediatric (≤2 y/o)



DEFINITION:

1. An Apparent Life-Threatening Event (ALTE) was formally known as a "near-miss SIDS" episode.
2. An ALTE is an episode that is frightening to the observer (may think the infant has died) and involves some combination of:
    a. Apnea (central or obstructive)
    b. Color change (cyanosis, pallor, erythema, plethora)
    c. Marked change in muscle tone (limpness)
    d. Choking or gagging
3. **Usually occurs in infants < 12 months old, however, any child less than 2 years old who exhibits the symptoms above may be considered an ALTE.**
4. Most have a normal physical exam when assessed by responding field personnel
5. 50–60% have no known etiology
6. 40–50% have an identifiable etiology (e.g. Child abuse, SIDS, swallowing dysfunction, infection, bronchiolitis, seizures, CNS anomalies, tumors, cardiac disease, chronic respiratory disease, upper airway obstruction, metabolic disorders, or anemia)

DOCUMENTATION

1. Assume the description of the symptoms is accurate
2. Determine the severity, nature and duration of the episode was the patient awake or asleep at the time of the episode details of the resuscitation required
3. Obtain a medical history
    a. known chronic diseases
    b. evidence of seizure activity
    c. current or recent infections
    d. gastroesophageal reflux
    e. inappropriate mixture of formula
    f. recent trauma or suspected non-accidental trauma
    g. medication history (current and recent)

Seizures
Pediatric (≤14 y/o)

Document history:
- Type of seizure?
- Witnessed by crew?
- First seizure?
- History of seizures?
- Fever?
- Length of seizure?
- Usual mental status?

Initial medical care

Consider causes
If blood glucose level < 50 mg/dL, refer to altered neurological off-line.

Has vascular access been obtained?

No

****Midazolam (Versed) IM**

≤ 12 kg: administer 0.2 mg/kg IM . May repeat once in 10-15 minutes, if needed.
= 13-40 kg: administer 5 mg IM. May repeat once in 10-15 minutes, if needed.
≥ 40 kg: administer 10 mg IM. May repeat once in 10-15 minutes, if needed

Or

Midazolam (Versed) Intranasal:
IN: 0.2-0.3 mg/kg to a max of 10 mg. May repeat once if needed. Must use 5mg/ml concentration.

Or

Lorazapam (Ativan) IM
IM: 0.05-0.1 mg/kg over 2-5 minutes (maximum 4mg). May repeat in 10-15 minutes.

.

Establish vascular access

Yes

Lorazapam (Ativan) IV

≤ 12 kg: administer 0.05-0.1 mg/kg IV over 2-5 minutes (maximum 4mg). May repeat in 10-15 minutes .
= 13-40 kg: administer 2 mg IV. May repeat once in 10-15 minutes, if needed.
≥ 40 kg: administer 1-2 mg IV. May repeat once in 10-15 minutes, if needed

Or

Midazolam (Versed) IV
IV: 0.05 to 0.1 mg/kg slow

Or

Midazolam (Versed) Intranasal
Intranasal: 0.2-0.3 mg/kg. Max 10mg. May repeat once if needed. Must use 5mg/ml concentration.

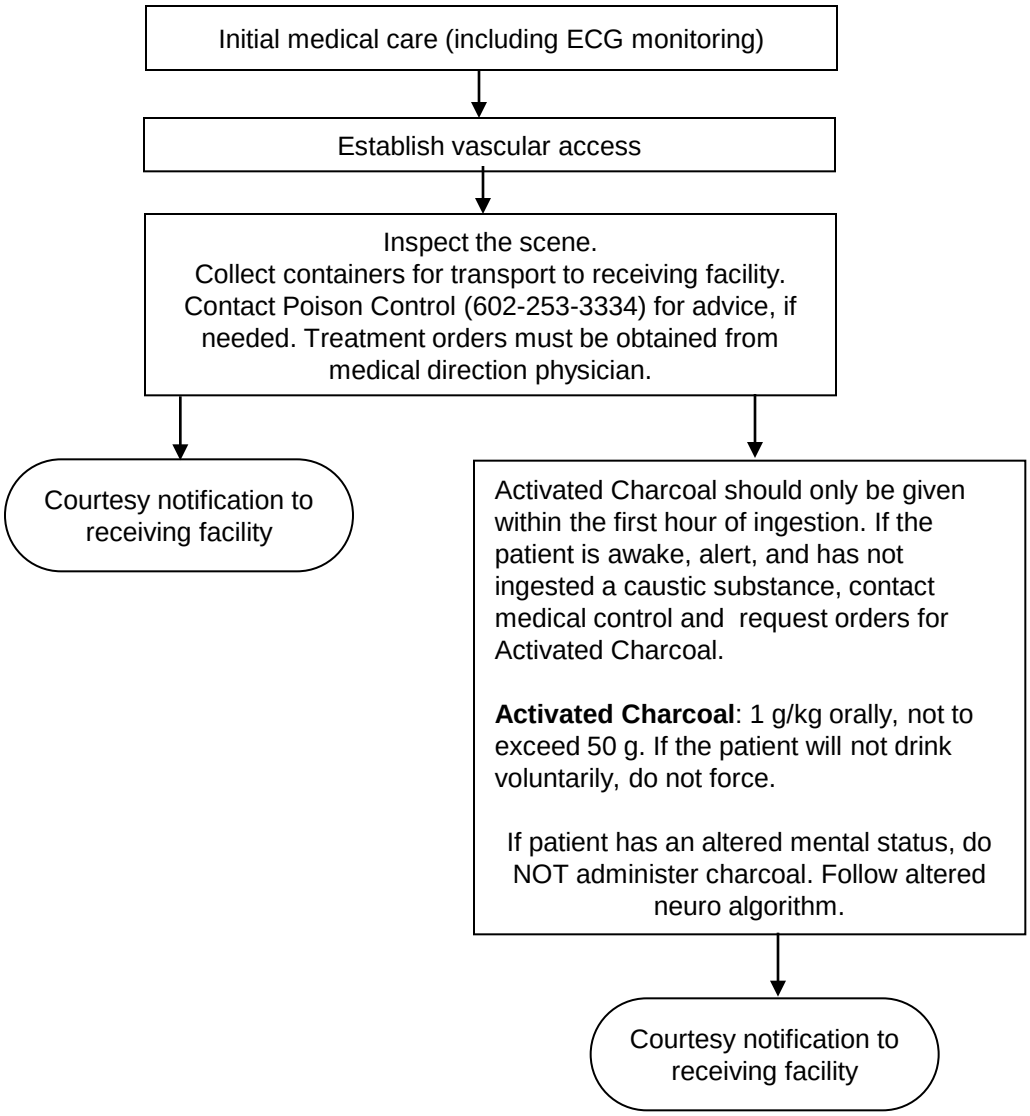
Or

Diazepam (Valium)
IV: 0.2-0.3 mg/kg every 15-30 minutes max of 1 mg/kg not to exceed 10 mg per dose; administer IV over at least 3 minutes or until seizure activity subsides.
IO: Consider IO if seizure activity lasts longer than 30 min

Courtesy notification to receiving facility

Note: Benzodiazapines administration applies to seizures that last > 5 minutes, more than two seizures in one hour, or status epilepticus. Febrile seizures typically occur in children between 6 months and 6 years of age. Febrile seizures are usually of short duration (lasting less than 15 minutes) and usually do not require anti-seizure medication therapy.

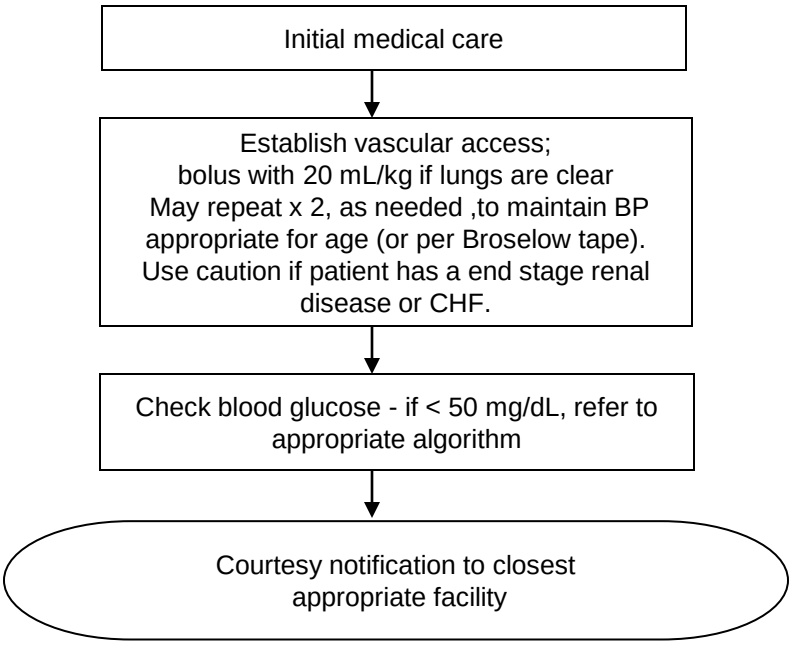
Poisoning/Overdose
Pediatric (≤14 y/o)



Document:
- Type of ingestion (What, when, how much)
- Past history (medications, suicide attempts)
- Action taken by bystanders (induced emesis? “Antidote” given?)

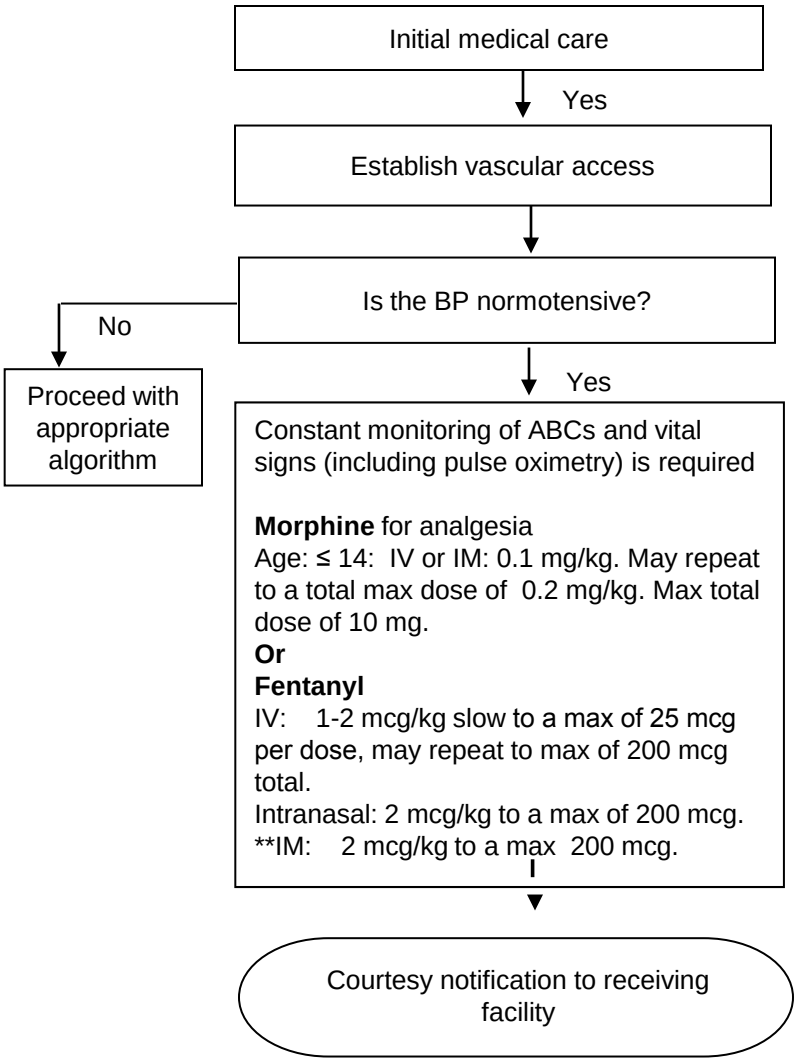
Notes regarding charcoal:
- Contraindications: Ingestion of caustics, ingestion of hydrocarbons (relative), oral administration to comatose patient, simultaneous administration of other oral medications.
- Ineffective for iron, lithium, heavy metals, and other ions.
- May reduce the effectiveness of other treatments (Mucomyst) in pure acetaminophen OD's.
- Since charcoal bonds with whatever it is mixed with, flavoring with drinks reduces effectiveness.
- Try to bring in info on substance ingested including packaging/pills to receiving center.

Shock/Hypotension
Pediatric (≤14 y/o)



Age	Lower Limit of Normal Systolic Blood Pressure
Term neonate (0 to 28 days)	>60 mm Hg or strong central pulse
Infant (1 to 12 months)	>70 mm Hg or strong central pulse
Child 1 to 10 years	>70 + (2 x age in years)
Child ≥ 10 years	>90 mm Hg

Pain Management
Pediatric (≤14 y/o)



Before administering meds for pain, ask the patient to quantify their pain on a 1 to 10 scale. Document this information and use it as a guide to measure the effectiveness of analgesia.

**IV route offers better means for titration of med. Absorption via IM route may be unpredictable and should be used as a last resort – use only if no vascular access. Documentation must reflect rationale for IM route, if used.

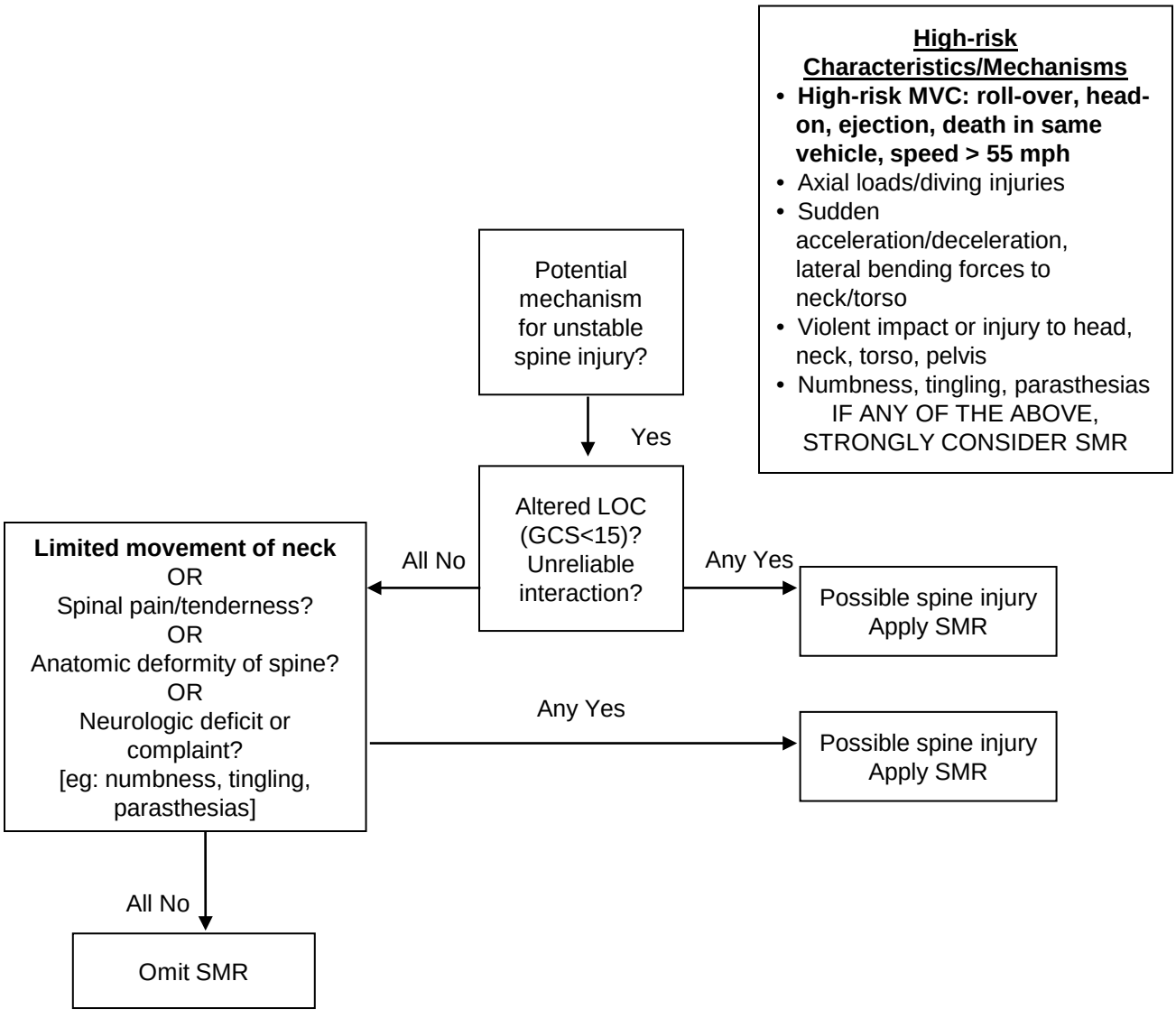
Sedation
Pediatric (≤14 y/o)

Sedation should only be administered when indicated in specific off-line.

Sedation

Lorazapam (Ativan)
0.05-0.1 mg/kg IV/IM over 2-5 minutes (maximum 4mg). May repeat in 10-15 minutes.
Or
Midazolam (Versed)
IV: 0.05 to 0.1 mg/kg slow IV push
IM: 0.2 mg/kg. Max of 10mg every 10 minutes up to total dose of 20 mg
Intranasal: 0.2-0.3 mg/kg. Max 10mg
Or
Diazepam (Valium)
IV: 0.2-0.3 mg/kg every 15-30 minutes max of 1 mg/kg not to exceed 10 mg per dose; administer IV over at least 3 minutes.

Spinal Motion Restriction
Pediatric (≤ 14 y/o) Blunt Trauma



Unreliable Patient Interactions

- Language barriers, inability to communicate, and age <2
- Lack of cooperation during exam
- Evidence of drug/alcohol intoxication
- Painful distracting injury such as long-bone fracture

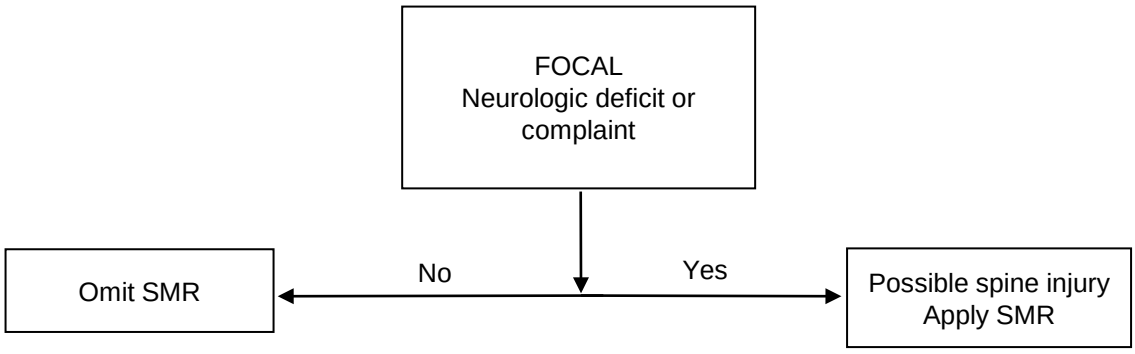
Spinal Motion Restriction (SMR)

Refer to SMR Procedures page for preferred packing methods and tools

Motor/Sensory Exam

- Wrist/hand extension bilaterally
- Foot plantarflexion bilaterally
- Foot dorsiflexion bilaterally
- Gross sensation in all extremities
- Check for parasthesias

Spinal Motion Restriction
Pediatric (≤ 14 y/o) Penetrating Trauma



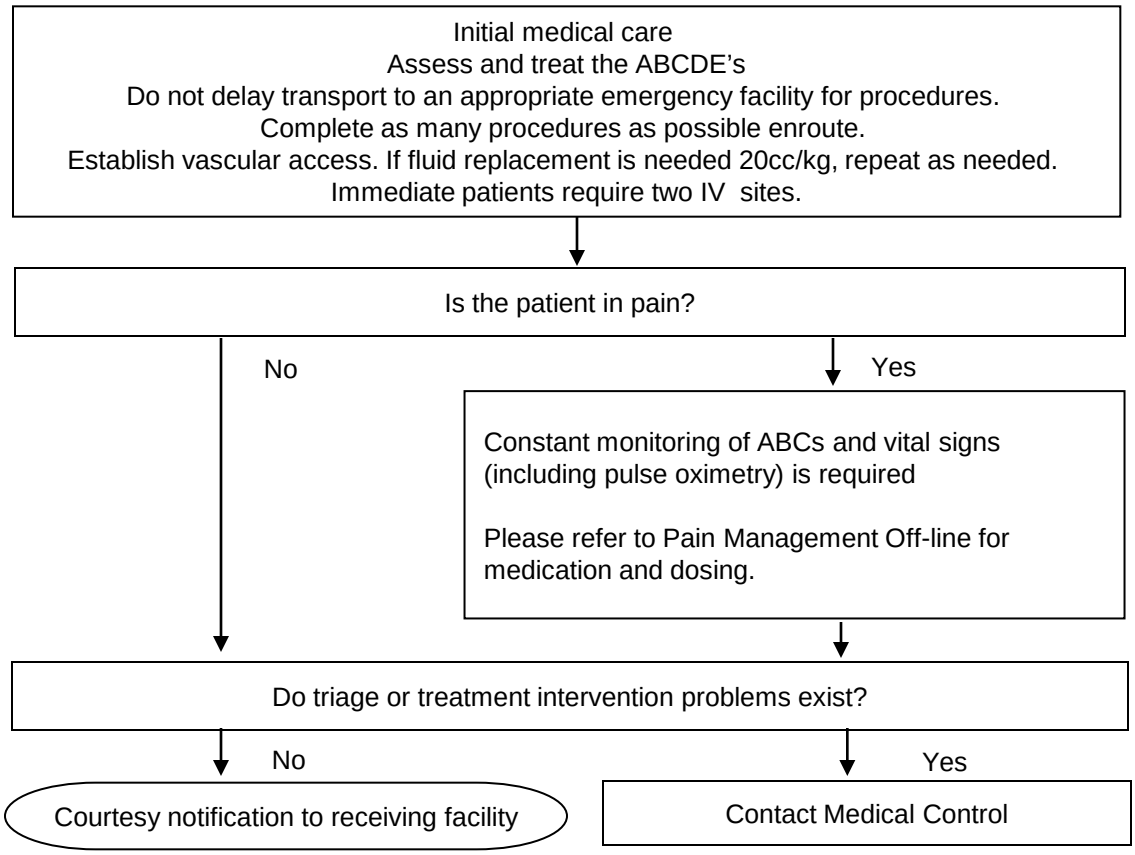
Notes

- Unstable spine fractures and spinal cord injury from penetrating head trauma are extremely rare
- Neuro deficits often present at moment of injury
- Life threatening conditions and evacuation from imminent threat take priority
- If history suggests combination penetrating *AND blunt trauma, revert to Blunt Trauma* SMR Algorithm
- Instructive information: Patients with global deficits do not require SMR

Spinal Motion Restriction (SMR)

- Refer to SMR Procedures page for preferred packing methods and tools

Trauma Management
Pediatric (≤14 y/o)



Head Injury

If patient has head injury:

1. Elevate the head of the board approximately 30 degrees.
2. Ensure pt ventilations adequate at age appropriate rate. (Assist with BVM if necessary)
3. Signs of severe traumatic brain injury (TBI) include unconsciousness and/or unresponsiveness; GCS < 9; pupils that are unequal, non-reactive, and/or dilated; oxygen saturation < 90%; and/or hypotension.
4. Signs of impending cerebral herniation include all symptoms of TBI plus unresponsiveness to painful stimuli; extensor posturing; and/or a decrease by 2 or more point in the GCS. Other signs include Cushing's Triad: bradycardia, hypertension, and irregular respirations.

EPIC Trauma Management
Pediatric (≤14 y/o)

Suspicion of a Traumatic Brain Injury (TBI) by mechanism, GCS, or Exam, then provide O2 15 L/min by NRB, establish IV access and monitor the patient's O2, BP, and HR every 3-5 minutes.

Airway/Breathing
O2 sat<90 &/or hypoventilation (despite NRB)

Circulation
Hypotension or other signs of shock

Disability
Evaluate Mental Status/GCS

O2 sat<90 &/or hypoventilation (despite NRB)

- BLS airway maneuvers
- BVM:
  Infants: (0-24 months): 25 bpm
  Children: (2-14 yr): 20 bpm
  Adolescents: (15-17): 10 bpm
- Careful monitoring of O2 sat and airway
- If O2 sat <90, despite BLS consider ALS airway.
- Maintain ETCO2 between 35-45 mmHg

Hypotension or other signs of shock

- 20ml/kg bolus NS
- Repeat until hypotension resolves
- Continue careful monitoring BP/HR
- Pay attention for early signs of shock:
  - Tachycardia
  - Dropping SBP

Identifying Hypotension
0-9 yrs: 70 + (age x 2)
≥10 yrs: < 90mmHg

Evaluate Mental Status/GCS

Always evaluate for hypoglycemia.
- It can mimic or cause a TBI.
- Check blood glucose. If <70 mg/dl:
  - Newborn: 5ml /kg D10
  - 3mo-3yrs: 2ml/kg D25 (max 50ml)
  - ≥4yrs: 1ml/kg D50 (max 50ml)
  - Repeat BG @ 10 min. Repeat previous dose X 1 if still <70 mg/dl

Consider impending herniation if:
- Dilated and unresponsive pupils
- GCS <9 or rapid deterioration in GCS by >2 points
- Extensor posturing
- Asymmetric pupils (one or both non-reactive to light)
- Re-evaluate every 3-5 minutes

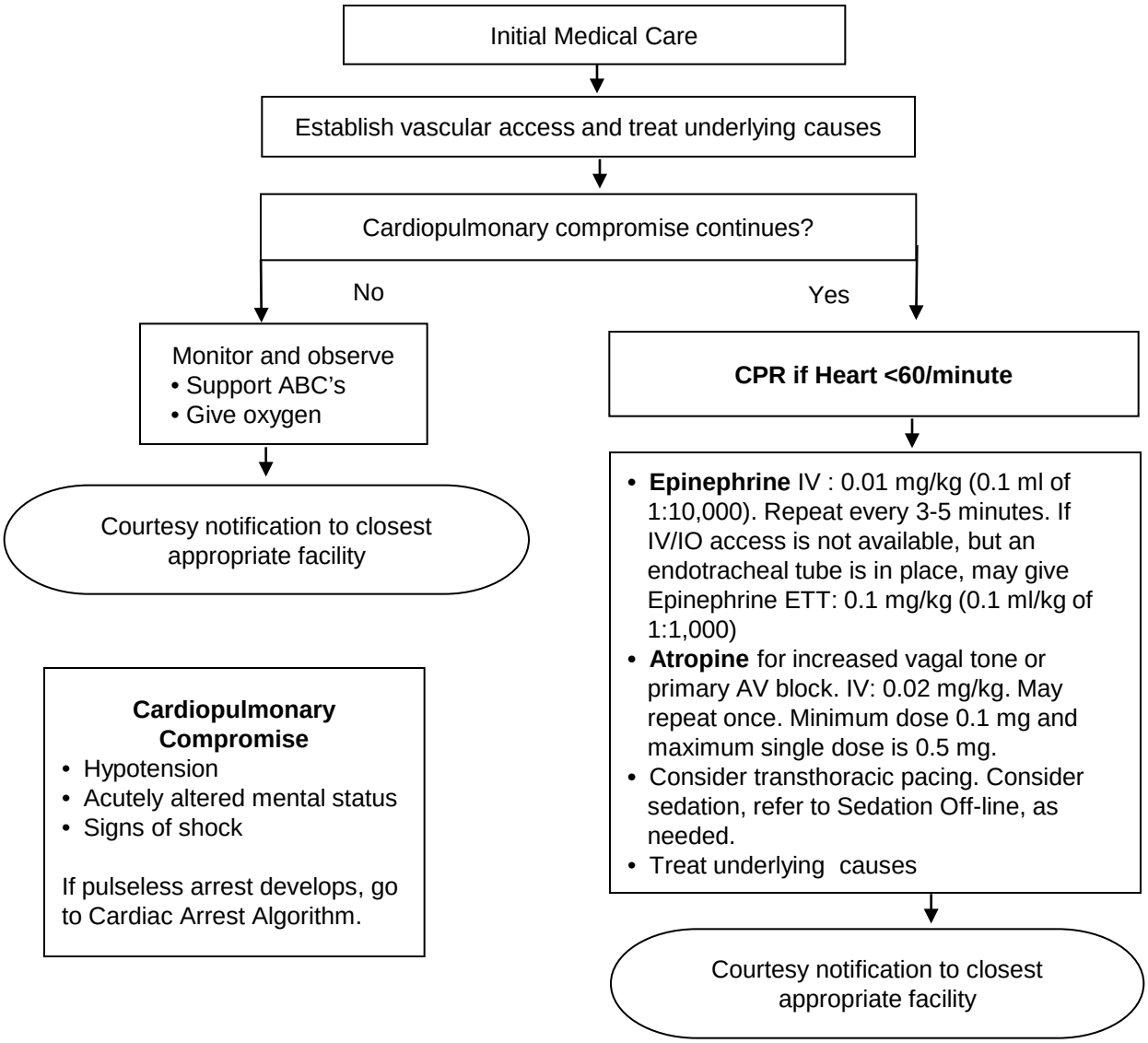
If patient has signs of impending herniation.
- Elevate head of gurney 30˚

DO NOT hyperventilate

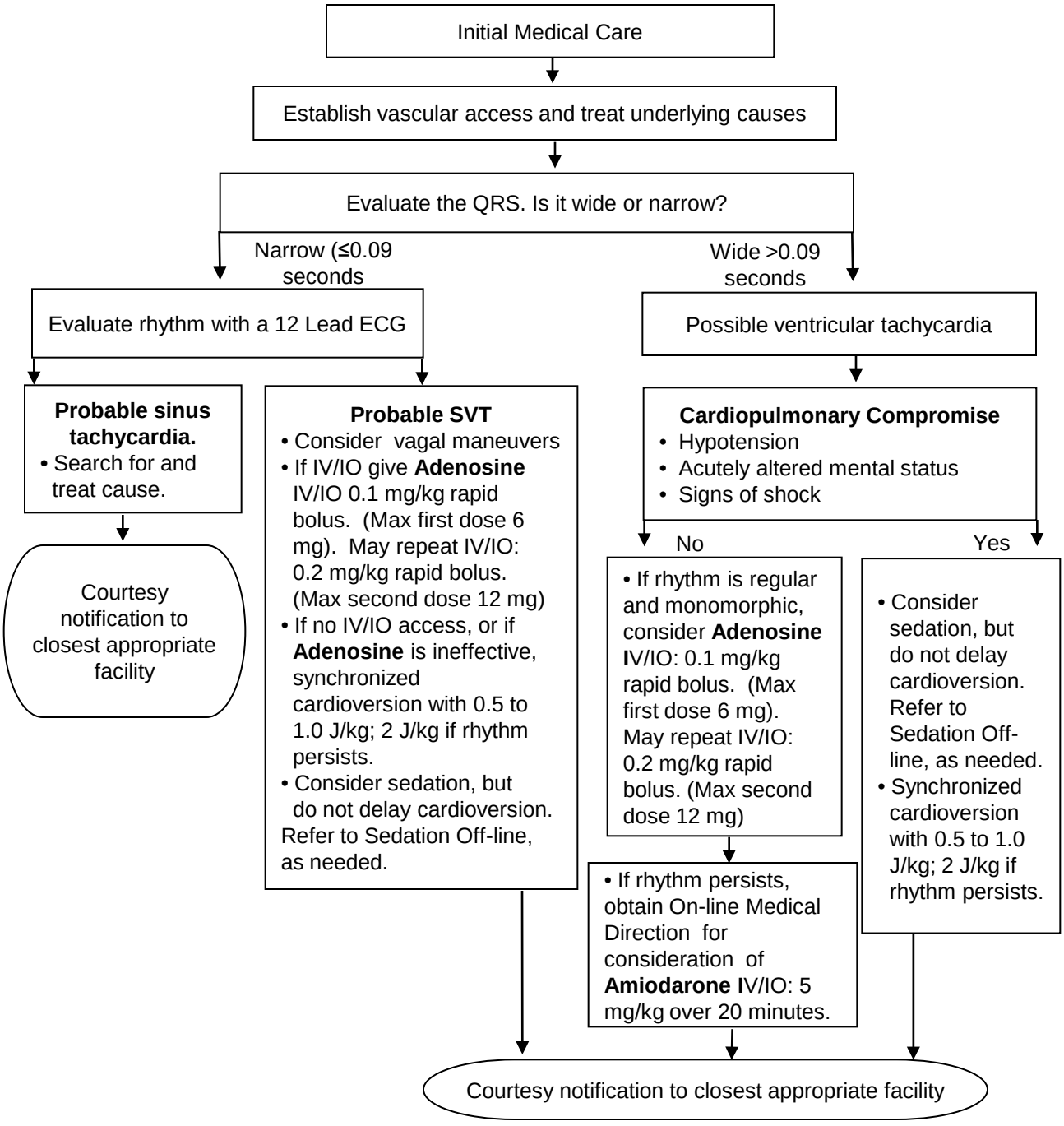
If O2 sat <90, despite BLS consider ALS airway

- Place advanced airway
  - Pre-oxygenate: BVM with 100% O2 @ age-appropriate rate
  - Check placement using ETCO2 detector and/or monitor
- Avoid even moderate hyperventilation
  - Control ventilatory rate:
    - ETCO2 available: maintain ETCO2 between 35-45 mmHg
    - ETCO2 not available: utilize cadence device for rate
  - Control ventilatory volume:
    - Ventilator available: utilize as soon as possible (Tidal volume = 7cc/kg)
    - Ventilator not available: utilize pressure controlled bag
- Monitor O2 sat and airway every 3-5 minutes
  - If O2 sat <90, despite above interventions, consider:
    - Tension pneumothorax and needle thorocostomy
- Meds that can rapidly drop BP and rapidly reduce blood flow to brain: Morphine, Fentanyl, Midazolam (Versed), Diazepam (Valium), Lorazepam (Ativan). Use with caution and watch SBP carefully. Don't give if patient's B/P is already low or falling. Start with VERY low doses- (20-25% of usual dose.)

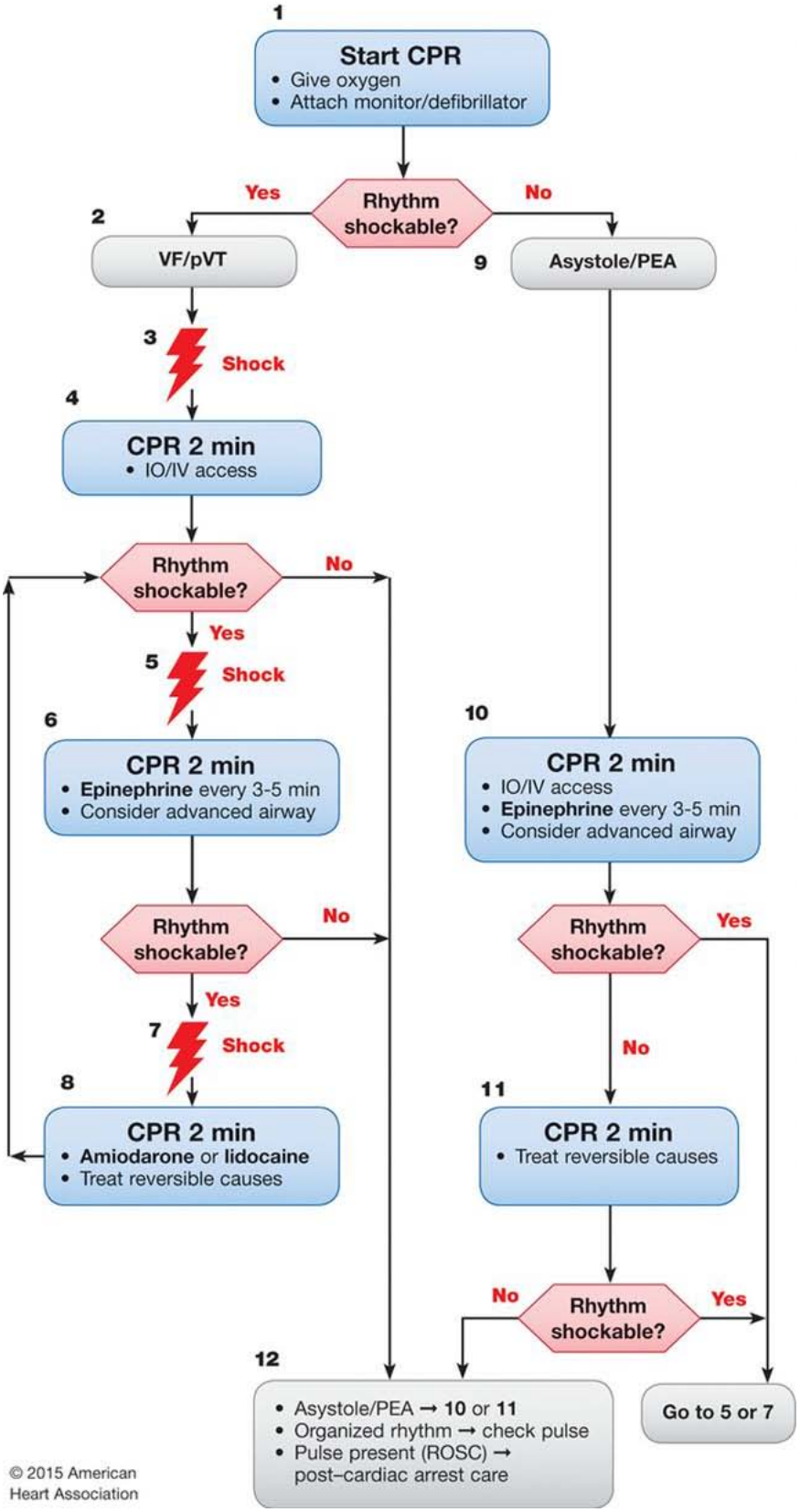
Symptomatic Bradycardia
Pediatric (≤14 y/o)
With a Pulse and Poor Perfusion



Tachycardia
Pediatric (≤14 y/o)
With a Pulse and Poor Perfusion



Pediatric Cardiac Arrest



CPR Quality
- Push hard (≥ 1/3 of anterior-posterior diameter of chest) and fast (100-120/minute) and allow complete chest recoil
- Minimize interruptions in compressions
- Avoid excessive ventilation
- Rotate compressor every 2 minutes, sooner if fatigued
- If no advanced airway, 15:2 compression-ventilation ratio
- Quantitative waveform capnography. If <10, attempt to improve CPR quality

Shock Energy for defibrillation
- First shock2 J/kg, second shock 4 J/kg, subsequent shocks ≥ 4 J/kg, maximum 10 J/kg or adult dose.

Drug Therapy
- **Epinephrine IV/IO Dose:** 0.01 mg/kg (0.1 mL/kg) of 1:10,0000. Repeat every 3-5 minutes If no IV/IO access, may give Epinephrine ETT: 0.1 mg/kg (0.1 ml/kg of 1:1,000)
- **Amiodarone IV/IO Dose:** 5 mg/kg bolus during cardiac arrest. May repeat up to 2 times for refractory VF/ pulseless VT.

If Amiodarone is unavailable, **Lidocaine IV/IO Dose:** 1mg/kg.

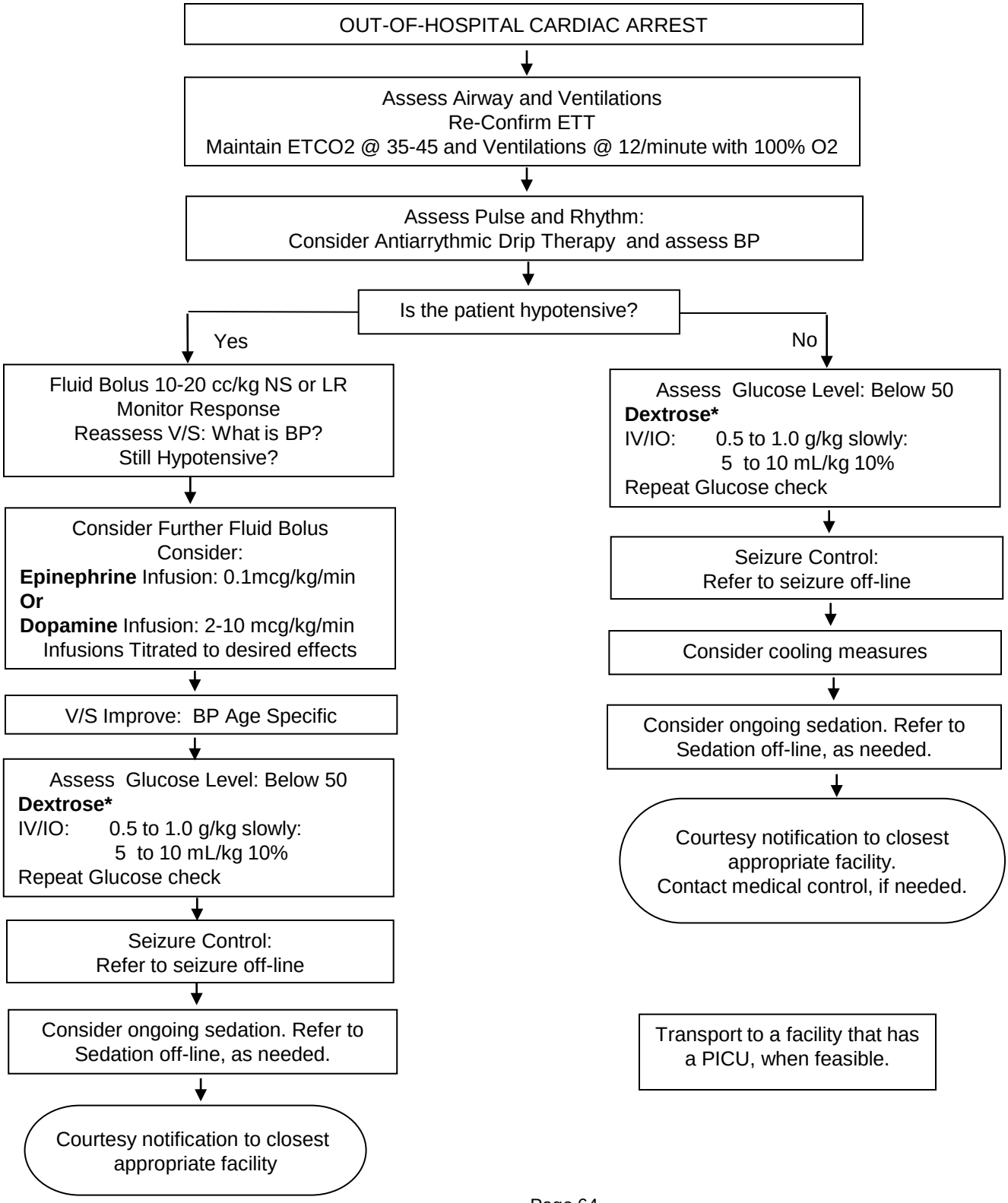
Advanced Airway
- Endotracheal intubation or supraglottic advanced airway
- Waveform capnography to confirm and monitor ET tube placement
- Once an advanced airway is in place, give 1 breath every 6 seconds (10 breaths/ minute) with continuous chest compressions

Return of Spontaneous Circulation (ROSC)
- Pulse and blood pressure

Reversible Causes
- Hypovolemia
- Hypoxia
- Hydrogen ion (acidosis)
- Hypo-/hyperkalemia
- Hypothermia
- Tension pneumothorax
- Tamponade, cardiac
- Toxins
- Thrombosis, pulmonary
- Thrombosis, coronary

Post-Arrest Stabilization

Pediatric (≤14 y/o)



Trauma Triage

Step 1

Measure vital signs and level of consciousness

Glasgow Coma Scale: ≤13

Systolic Blood Pressure (mmHg)

Respiratory Rate : <10 or >29 breaths per minute, or need for ventilatory support (<20 in infant aged <1 year)

Yes →

Transport to a Level 1 Trauma Center. Steps 1 and 2 attempt to identify the most seriously injured patients. These patients should be transported preferentially to the highest level of care within the defined trauma system.

Step 2

Assess anatomy of injury

- All penetrating injuries to head, neck, torso, and extremities proximal to elbow or knee
- Chest wall instability or deformity (e.g. flail chest)
- Two or more proximal long-bone fractures
- Crushed, degloved, mangled, or pulseless extremity
- Amputation proximal to wrist or ankle
- Pelvic fractures
- Open or depressed skull fracture
- Paralysis

→ Transport to a Level 1 Trauma Center. Steps 1 and 2 attempt to identify the most seriously injured patients. These patients should be transported preferentially to the highest level of care within the defined trauma system.

Step 3a

- Ejection (partial or complete) from automobile
- Motorcycle crash >20 mph
- Patient run over, or with significant impact (>20 mph)

Step 3b

- Falls
  - -Adults: >20 feet (one story is equal to 10 feet)
  - -Children: >10 feet or 2-3 times the height of the child
- High-risk auto crash
  - -Intrusion, including roof: >12in. occupant site; >18in any site
  - -Death in same passenger compartment
- Auto vs. pedestrian/bicyclist (NOT run over or thrown, with less than 20mph impact)

→ Consider Transport to a Level 1 or 3 Trauma Center. Consider age, co-morbidities, and special considerations. obtain On-line Medical Direction with receiving facility if Level 3, or CN to Level 1.

Step 4

Assess special patient or system considerations

- Older Adults
  - -Risk of injury/death increases after age 55 years
  - -SBP <110 may represent shock after age 65
  - -Low impact mechanisms (e.g. ground level falls) may result in severe injury
- Children
  - -Should be triaged preferentially to pediatric capable trauma centers
- Anticoagulants and bleeding disorders
  - -Patients with head injury are at high risk for rapid deterioration
- Bums
  - -Without other trauma mechanism: triage to burn facility
  - -With trauma mechanism: triage to trauma center
- Pregnancy >20 weeks
- EMS provider judgment

→ Consider transport to a Trauma Center. Obtain On-line Medical Direction to Base Hospital for any questions regarding destination decisions.

- When in doubt, transport to a Level 1 trauma center.
- Pediatric trauma patients, requiring Level 1 trauma care, are to be triaged preferentially to pediatric capable trauma centers.

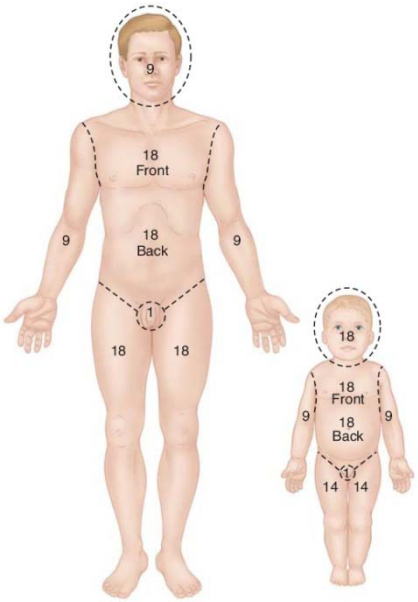
Burn Triage

Does The Patient Have Any Of The Following?

1. Partial thickness burns > 10% TBSA
2. Any full thickness burns of any age group
3. Burns that involve the face, hands, feet, genitalia, perineum, or major joints
4. Electrical burns including lightning injury
5. Chemical burns
6. Inhalation injury
7. Burn injury with pre-existing medical disorders: CHF, ESRD, COPD, or cardiac that could complicate management, prolong recovery, and affect mortality
8. Burns with concomitant trauma (such as fractures)
9. Pediatric burns, especially requiring ICU care
10. Burn injury in patients who will require special social, emotional or long tern rehabilitation
11. Circumferential Burns

No

Courtesy notification to receiving facility of patient's choice.



Yes

Prepare patient for transport to burn center

1. Estimate total body surface area (TBSA) burned using "Rule of Nines"
2. Give fluid replacement: Parkland Formula (Lactated Ringers preferred) 4cc/LR X Kg/wgt X TBSA=fluids required for 24 hour period Administer ½ total volume in the first 8 hour.
3. Airway 100 % oxygen for all burn patients 2 large bore IV's
4. Dress patient in dry dressings and keep patient warm
5. Pain Management Morphine Sulfate IV (per protocols)

Courtesy notification to Maricopa Medical Center

Identifying Priority Patients (MAPP)

"A map won't show you every bump in the road, but it will get you there."

Mechanism

- Fall injury
- Entrapment
- Explosion
- Electrocution
- MVA (ROS, seatbelt, intrusion, airbag deploy, car size, rollover, steering wheel, impact site, glass intact)
- Burn (thermal, chemical)
- Poisoning/overdose
- Water-related incident
- Choking / FBAO
- Ejection from motor vehicle (including motorcycles, mopeds, ATV's, or the open bed of pick-up trucks, etc.),

Anatomy

- Penetrating trauma
- Blunt trauma
- Fracture
- Burns
- Major soft tissue injury
- Gross deformity
- Injury to eyes, hands, feet, genitalia

Physiology

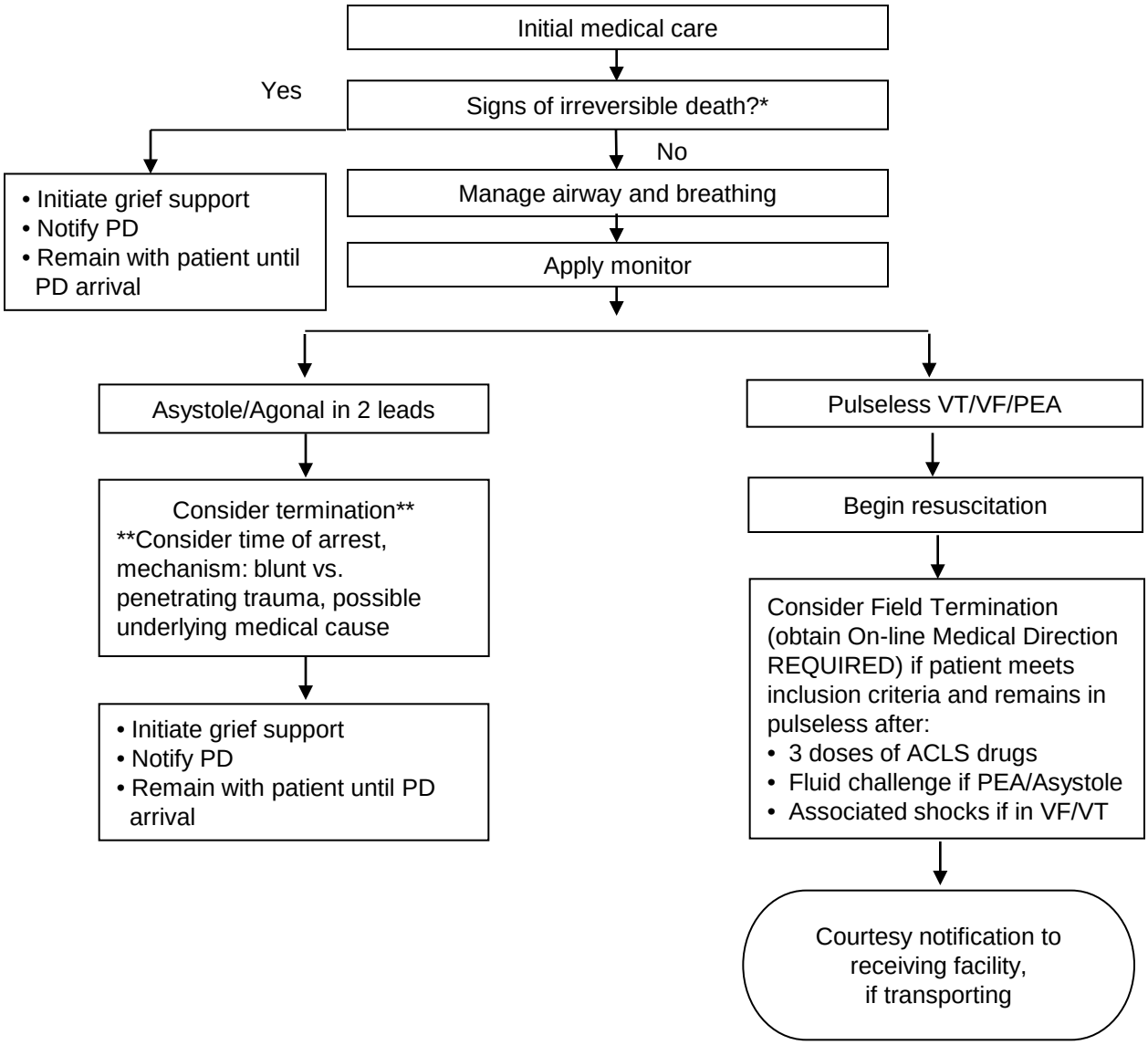
- Altered mental status
- Bradycardia, tachycardia
- Nausea/vomiting
- Sweating
- Shortness of breath
- Chest pain
- Headache
- Severe pain
- Hypotension
- Respirations < 10 or > 40
- Fever > 101
- Abdominal pain
- Inability to walk

Patient Factors

- Age <5 or >55
- Cardiac disease
- Respiratory disease
- Seizure disorder
- Insulin-dependent diabetes
- Cirrhosis
- Morbid obesity
- Pregnancy
- Immunosuppressed patients
- Patients with bleeding disorder or patient on anticoagulants
- + use of alcohol/drugs
- Recent surgery/illness

Cardiopulmonary Arrest - Blunt Trauma

Adult (≥ 18 y/o)



Signs of Irreversible Death

- Decapitation
- Decomposition
- Dependent lividity
- Rigor mortis
- Pulseless and apneic with extrusion of brain matter
- Pulseless and apneic with removal of the lower half of the body
- Pulseless and apneic with full thickness burns over 90% total body surface area

Glasgow Coma Scale
Adult and Pediatric

Adult Glasgow Coma Scale
Eye Opening
4=Spontaneous 3=To voice 2=To pain 1=None
Verbal Response
5=Normal conversation 4=Disoriented conversation 3=Words, but not coherent 2=No words.....only sounds 1=None
Motor Response
6=Normal 5=Localizes to pain 4=Withdraws to pain 3= Abnormal flexion to pain (Decorticate) 2= Extensor response to pain (Decerebrate) 1=None
Total = E+V+M

Pediatric Glasgow Coma Scale
Eye Opening
4=Spontaneous 3=To voice 2=To pain 1=None
Verbal Response
5= Oriented (Infant coos or babbles) 4= Confused (Infant irritable/cries) 3= Inappropriate words (Infant cries to pain) 2=Incomprehensible sounds (Infant moans to pain) 1=None
Motor Response
6= Obeys (Infant moves spontaneously / purposefully) 5= Localizes to pain (infant withdraws to touch) 4=Withdraws to pain 3= Abnormal flexion to pain (Decorticate) 2= Extensor response to pain (Decerebrate) 1=None
Total = E+V+M

Universal Toxicological Response

Determine Product or Agent Involved.
If unknown, determine symptoms of those exposed.
Provide for safety of responding providers, patients, and bystanders

↓

- Document findings and contact Poison Control.
- Document recommendations from Poison Control

↓

- Contact Medical Control as soon as possible.
- Advise of Poison Control's Recommendations and treatment rendered.
- Document Medical Direction's Orders.
- Recommend dispatch of additional Tox Medic resources to Command, if necessary.

↓

As new information is obtained, update:
Poison Control
Medical Direction
Receiving Hospitals

Poison Control
602-253-3334
(Refer to Toxicology Report)

Refer to specific Guidelines for exposures to:

- Methemoglobinemia
- CO Poisoning
- Cyanide Poisoning
- Sulfide Poisoning
- Organophosphate / N-Methylcarbamate Poisoning (Insecticide-Nerve Agent)
- Eye Contamination

Product Concentration
Types of Exposure
Length of Exposure
Initial Signs and Symptoms
Present Signs and Symptoms

Eye Decontamination

Assure Scene Safety
Perform appropriate decontamination if able.
Confirm exposure, amount, and duration.

↓

- Maintain Airway, Breathing, Circulation.
- Establish vascular access (Do not delay Decontamination for vascular access

↓

Begin eye decontamination immediately
After initial 5 minutes of irrigation or if patient can not open eyes for irrigation then give:
Proparacaine Eye Drops: 1-2 drops in affected eye(s)
Wait 30-60 seconds for anesthetic effect.

↓

Consider the use of Morgan Lens to facilitate decontamination

↓

Continue irrigation until directed to stop by Medical Direction

↓

Contact Poison for further recommendation.
Contact Medical Direction

Poison Control
602-253-3334

Notes

- Irrigate with copious amounts of LR, NS, or water. (LR is preferred with the Morgan Lens.)
- Do not use neutralizing agents.
- Transport for evaluation.
- Refer to Pain Management off-line to treat pain.
- Use of Proparacaine and/or Morgan Lens for substances other than hazardous materials requires on-line medical control. Ex. Soot, dust, corneal scratches, or abrasions.

Cyanide Poisoning Option 1
Cyano-Kit, optional agent
Special Training Required

Assure Scene Safety
Perform appropriate decontamination if able.
Confirm exposure, amount, and duration.

↓

- Maintain Airway, Breathing, Circulation.
- Administer High Flow O2.
- Treat dysrhythmias (common with cyanide toxicity).
- Establish vascular access..

↓

Establish dedicated large bore IV with tubing provided in Cyano-kit (Regular IV tubing will not work for Cyano-kit administration)

↓

Administer **Hydroxocobalamin** (Cyano-kit)

Adult: 5g IV over 15 min
(both 2.5g vials-7.5 min / vial or 15mL / min)
Second Dose: 5g for a total of 10g over 15 min – 2 HRS titrated to patient condition

↓

Contact Poison Control for further recommendation
Contact Medical Direction

Poison Control
602-253-3334

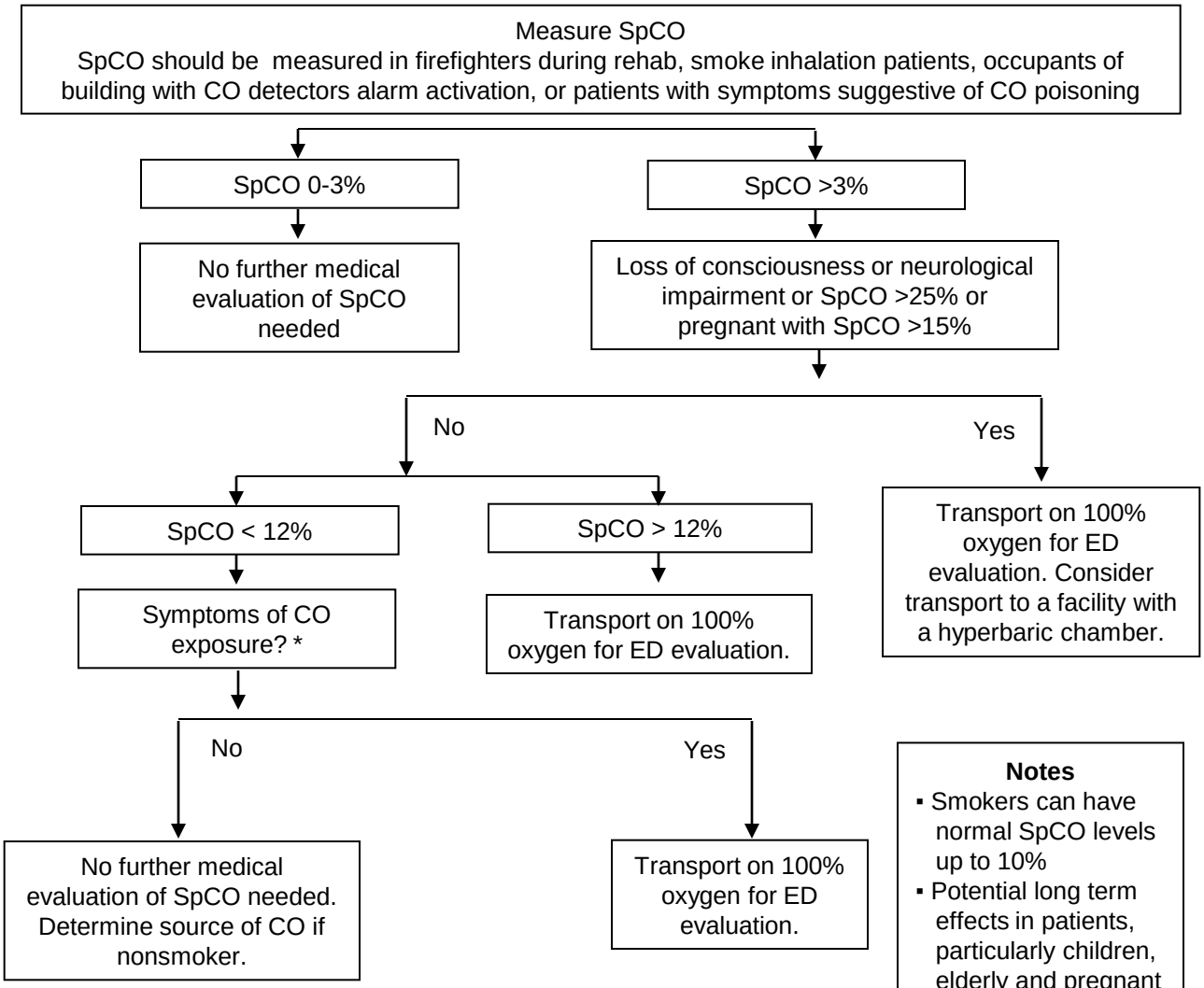
Signs and Symptoms

- Abrupt onset of profound effects
- Headache / Altered LOC
- Loss of Consciousness
- Nausea
- Dyspnea / Agonal Respirations
- Seizures
- Cardiovascular Collapse
- Hypotension
- Cardiac Arrhythmias

Notes

- Reconstitute each vial with 100mL of NS. ▪Use LR or D5W if NS not available.
- Chemical Asphyxiant
- Almost never smells like almonds
- Sources: Products of combustion/smoke inhalation and fumigants
- Same IV Line Incompatibilities
  - Diazepam
  - Dopamine
  - NTG
  - Dobutamine
  - Propofol
  - Pentobarbitol
  - Sodium Nitrite
  - Sodium Thiosulfate

Carbon Monoxide Poisoning



COHb	Severity	Signs and Symptoms
<20%	Mild	Headache, nausea, vomiting, dizziness, blurred vision
21-40%	Moderate	Confusion, syncope, chest pain, dyspnea, tachycardia, tachypnea, weakness
41-59%	Severe	Dysrhythmias, hypotension, cardiac ischemia, palpitations, respiratory arrest, pulmonary edema, seizures, coma, cardiac arrest
>60%	Fatal	Death

Notes

- Smokers can have normal SpCO levels up to 10%
- Potential long term effects in patients, particularly children, elderly and pregnant patients with exposure
- This is a high risk refusal. Providers should contact Poison Control at 602-253-3334 for medical advice, then obtain On-line Medical Direction to Medical Control for Medical Direction
- Consider transport to facility with a hyperbaric chamber
  -Scottsdale Osborn
  -St Joes

Cyanide Poisoning Option 2

Assure Scene Safety
Perform appropriate decontamination if able.
Confirm exposure, amount, and duration.

↓

Maintain Airway, Breathing, Circulation.
Establish vascular access

↓

Administer **Amyl Nitrite**.
Break Amyl Nitrite Pearl and hold over face of breathing patient or over air intake of BVM for 30 seconds of every minute while IV is being established. If IV is established go directly to IV Sodium Nitrite.

↓

Administer **Sodium Nitrite**

Adult: 300mg IV over 5-10 minutes
(Can give faster during cardiac arrest)
Pediatric: 0.33 ml/kg of 3% solution over 5-10 minutes.
May repeat if no response in 15 to 30 minutes.

↓

Administer **Sodium Thiosulfate** (25%)

Adult: 12.5g (50ml of 25%) IV over 5 minutes.
(Can be faster during codes)
Pediatric: 1.65ml/kg of 25% solution over 5 minutes.

↓

Contact Poison for further recommendation.
Contact Medical Direction

Poison Control
602-253-3334

Signs and Symptoms

- Abrupt onset of profound effects
- Headache / Altered LOC
- Loss of Consciousness
- Nausea
- Dyspnea / Agonal Respirations
- Seizures
- Cardiovascular Collapse
- Hypotension
- Cardiac Arrhythmias

Notes

- Chemical Asphyxiant
- Almost never smells like almonds
- Sources:
  - Apricot Pits
  - Combustion of plastics, synthetics, or wool
- If smoke inhalation or suspected carbon monoxide poisoning present, then do not give Nitrites unless carboxyhemoglobin fraction is known to be less than 10%

Methemoglobinemia

Assure Scene Safety
Perform appropriate decontamination if able.
Confirm exposure, amount, and duration.

↓

- Maintain Airway, Breathing, Circulation.
- Establish vascular access (Do not delay Decontamination for vascular access

↓

Administer **Methylene Blue**:
Mix in 100cc bag of NS
Dose: 2mg/kg IV over 5-10 minutes
May repeat at: 1mg/kg if no change within 10- 20 minutes

↓

Note:
Do not use when known G-6-PD deficiency

↓

Contact Poison for further recommendation.
Contact Medical Direction

Poison Control
602-253-3334

Signs and Symptoms

- Headache/Dizziness
- Altered LOC
- Nausea
- Dyspnea
- Seizures
- Coma
- Generalized Skin Discoloration
  "Chocolate Cyanosis"
- Chocolate Brown Blood

Notes

- Causative Agents
  - Local Anesthetics
  - Analgesics
  - Anti-microbials
  - Nitrates/Nitrites
  - Amyl Nitrite/Butyl Nitrite
  - Aniline Dyes
  - Chlorates
  - Nitrobenzenes
  - Aminophenol
- May occur with the use of Amyl Nitrite for Cyanide and Sulfide poisonings

Organophosphate/ N-Methylcarbamate/ Nerve Agent Exposure

Assure Scene Safety
Perform appropriate decontamination if able.
Confirm exposure, amount, and duration.

↓

- Maintain Airway, Breathing, Circulation.
- Establish vascular access

↓

Administer **Atropine Sulfate**

Adult Dose: 2-5 mg IV every 2-5 minutes
Ped Dose: 0.05 mg/kg IV every 2-5 minutes

↓

Continue to repeat dosing until atropinization:
- No wheezing
- No bronchorrhea
- No diaphoresis
- No bradycardia
- No diarrhea
- No vomiting

↓

Administer Pralidoxime Chloride (2 PAM)
Reconstitute with 20cc of sterile water
Adult dose: 1-2 grams IV over 10-15 minutes
Peds dose: 30-50mg/kg over 10-15 minutes

Note: Sudden onset apnea may occur in infants, usually after the second dose.

↓

Consider 2-PAM drip for severe cases after initial dose.

↓

Contact Poison for further recommendation.
Contact Medical Direction

Poison Control
602-253-3334

Signs and Symptoms
- SLUDGE Syndrome
- Fasciculations / Seizures
- Loss of Consciousness
- Dyspnea / Apnea

Notes
- Exposure- Vapor or absorbed
- Will penetrate clothing
- Mark 1 Kit appropriate for mass casualty situation
- Causative Agents
  - Local Anesthetics
  - Analgesics
  - Anti-microbials
  - Nitrates/Nitrites
  - Amyl Nitrite/Butyl Nitrite
  - Aniline Dyes
  - Chlorates
  - Nitrobenzenes
  - Aminophenol
- May occur with the use of Amyl Nitrite for Cyanide and Sulfide poisonings
- If the patient begins to Seize, please refer to the Seizure off-line.

Sulfide Poisoning

Assure Scene Safety
Perform appropriate decontamination if able.
Confirm exposure, amount, and duration.

↓

- Maintain Airway, Breathing, Circulation.
- Establish vascular access

↓

Administer **Amyl Nitrite.**
Break Amyl Nitrite Pearl and hold over face of breathing patient or over air intake of BVM for 30 seconds of every minute while IV is being established. If IV is established go directly to IV Sodium Nitrite.

↓

Administer **Sodium Nitrite**
Adult: 300mg IV over 5-10 minutes (Can give faster during cardiac arrest)
Pediatric: 0.33 ml/kg of 3% solution IV over 5-10 minutes.
May repeat if no response in 15 to 30 minutes.

↓

Contact Poison for further recommendation.
Contact Medical Direction

Poison Control
602-253-3334

Signs and Symptoms

- May report "rotten egg" odor
- Upper airway irritation
- Non-Cardiogenic Pulmonary Edema (late onset)
- Rapid collapse

Notes

- Cellular Asphyxiant
- Rapid olfactory overload- may not report rotten egg odor
- Sources:
  - Decaying organic matter
  - Petroleum refining
  - Mining
  - Pulp/Paper factories
  - Sewage
  - Hot Asphalt fumes
  - Septic systems

- "Rotten egg" odor may be present with as little as 0.025 PPM

EZ IO / or equivalent
Adult and Pediatric

Indications:

- Immediate vascular access in emergencies.
- Intravenous fluids or medications are urgently needed and a peripheral IV cannot be established in 2 attempts or 90 seconds **AND** the patient exhibits one or more of the following:
- An altered mental status (GCS of 8 or less)
- Respiratory compromise (SaO2 <90% after appropriate oxygen therapy, respiratory rate <10 or >40 min)
- Hemodynamic instability

Contraindications:

- Fracture of the bone selected for IO infusion (*consider alternate site*)
- Excessive tissue at insertion site with the absence of anatomical landmarks (relative contraindication)
- Previous significant orthopedic procedures (*IO within 24 hours, prosthesis)*
- Infection at the site selected for insertion

Procedure:

1. If the patient is conscious, advise of EMERGENT NEED for this procedure and obtain informed consent.
2. Wear approved BSI equipment
3. Determine indications and rule out contraindications
4. Locate appropriate insertion site
5. Prepare insertion site using aseptic technique.
6. Prepare the EZ-IO driver and appropriate needle set
7. Stabilize site and insert appropriate needle set.
8. Remove EZ-IO® driver from needle set while stabilizing catheter hub.
9. Remove stylet from catheter and place stylet in shuttle or approved sharps container.
10. Confirm placement and patency.
11. Connect primed EZ-Connect®.
12. Slowly administer **Lidocaine** 2% (Preservative Free) IO to conscious patients (after ensuring patient has no allergy or sensitivity to **Lidocaine**.)
    - Adults: 20-40mg; Peds: 0.5mg/kg to a max of 20 mg
13. Rapid syringe bolus (flush) the EZ-IO PD® with 10 ml of normal saline (5 ml for pediatric).
14. Utilize pressure bags for continuous infusion
15. Dress site, secure tubing, and apply wristband as directed.
16. Monitor EZ-IO® site and patient condition

Notes:

1. EZ-IO AD (adult) to be used for patients 40 Kg. and over. EZ-IO PD (pediatric) to be used for patients 3-39 Kg.
2. Due to the anatomy of the IO space, flow rates may appear to be slower than those achieved with an IV catheter.
3. Insertion of the EZ-IO in conscious patients has been noted to cause mild to moderate discomfort, however, IO infusion in conscious patients has been noted to cause severe discomfort.
4. EZ-IO catheter should be removed within 24 hours

Rapid Sequence Intubation (RSI)

Adult (≥ 15 y/o)

Pre-oxygenate the patient for 4- 5 minutes with 100% oxygen

↓

Apply and maintain cricoid pressure until tube placement is confirmed

↓

Sedate the patient
Etomidate (Amidate)
0.3 mg/ kg IV over 30- 60 seconds
Or
Ketamine 1.5 mg/kg IV over 30- 60 seconds

↓

Paralyze the patient
Succinylcholine (Anectine) 1.5 mg/ kg

↓

Intubate and confirm tube placement
(End-tidal CO2 detector required)
In-line capnography recommended. Reading should be maintained between 35-45.

↓

Successful?

Yes ↓

Post-intubation Sedation.
Refer to Sedation Off-line, as needed.

↓

Pain Management
Refer to Pain Management Off-line, as needed.

↓

Place NG/OG tube if indicated

→ Courtesy notification to receiving facility

No →

1. Sedation with **Etomidate (Amidate)** should occur in 30-50 seconds
2. Paralysis with **Succinylcholine (Anectine)** should occur in < 1 min
3. If unable to ventilate adequately, assess need for rescue airway device.
4. If unable to ventilate patient with BVM or rescue airway device, perform surgical cricothyrotomy.

↓

Courtesy notification to receiving facility

Indications for RSI

-Respiratory failure
-Loss of gag or protective airway reflexes
-GCS < 8
-Severe head trauma
-Spinal cord injuries
-Facial and/ or airway burns
-Asthma or respiratory illnesses

Contraindications for RSI

-Cardiac Arrest is a contraindication for RSI
-History of malignant hyperthermia

Signs/ Symptoms of ICP

-Altered LOC
-Headache
-Nausea/ vomiting
-Increased systolic pressure
-Decreased pulse
-Widened pulse pressure
-Irregular respiratory pattern

CPAP

Adult (≥ 15 y/o)

Procedure:

1. Explain the procedure to the patient
2. Ensure adequate oxygen supply to the ventilation device
3. Monitor pulse oximetry, ETCO2 (if available), and ECG continuously
4. Place patient in seated position with head of bed >45 degrees
5. Connect CPAP device to suitable oxygen supply
    1. Attach breathing circuit to CPAP device and ensure device is functioning properly
    2. Apply and secure appropriate size breathing circuit mask to patient
    3. Set CPAP at 5 cm H2O and titrate positive airway pressure until improvement in patient pulse oximetry and symptoms.

    WARNING: Do not exceed pressures of 10 cm H2O.
6. Refer to Respiratory Distress Off-line, as needed
7. Refer to Sedation Off-line, as needed.
8. Contact Medical Control.

Indications for CPAP:

Severe respiratory distress due to suspected pulmonary edema, pneumonia, or COPD exacerbation (bronchitis, emphysema).

Contraindications:

1. Age <14
2. Patient is in respiratory arrest or unable to maintain own airway
3. Facial trauma preventing an adequate face to mask seal
4. Tracheotomy
5. Suspected pneumothorax
6. Active upper GI bleed or recent gastric surgery (2 weeks).

Relative Contraindications

1. Altered mental status, inability to follow commands
2. Systolic BP <100 mmHg
3. Excessive secretions
4. Nausea or vomiting

Special Notes:

1. CPAP therapy needs to be continuous and should not be removed unless the patient cannot tolerate the mask, experiences respiratory arrest, or begins to vomit.
2. Intermittent positive pressure ventilation with a BVM, placement of an OPA/NPA and/or intubation should be considered if the patient is removed from CPAP
3. Advise receiving ED of CPAP use ASAP so they can arrange for respiratory therapy
4. CPAP is only to be removed in the ED when the RT is present and ready to transfer the patient to their equipment, or at the discretion of the receiving physician who is present.
5. Watch patient for gastric distention
6. CPAP may be performed on a patient with a DNR
7. Due to changes in preload and afterload of the heart during CPAP therapy, a complete set of vital signs must be obtained every 5 minutes

12 Lead Indications

Does the patient have one or more complaints from the following list:

Arm numbness or tingling
Chest pressure/heaviness
Unexplained diaphoresis
Unexplained general weakness
Syncope
Shortness of Breath
Nausea
Vomiting
Dizziness
Not feeling well
Impending Doom
Suspected diabetic ketoacidosis
Suspected drug overdose
Unconscious patient
Palpitations
Heart Rate <50 or >150
Metabolic derangement
Examples include: dialysis patients
liver impairment

New onset of abnormal pain for the patient
Examples include: jaw pain
shoulder pain
back pain

No

Consider doing a Pre-hospital 12 lead on this patient.

Yes

A Pre-hospital 12 lead needs to be done on this patient.

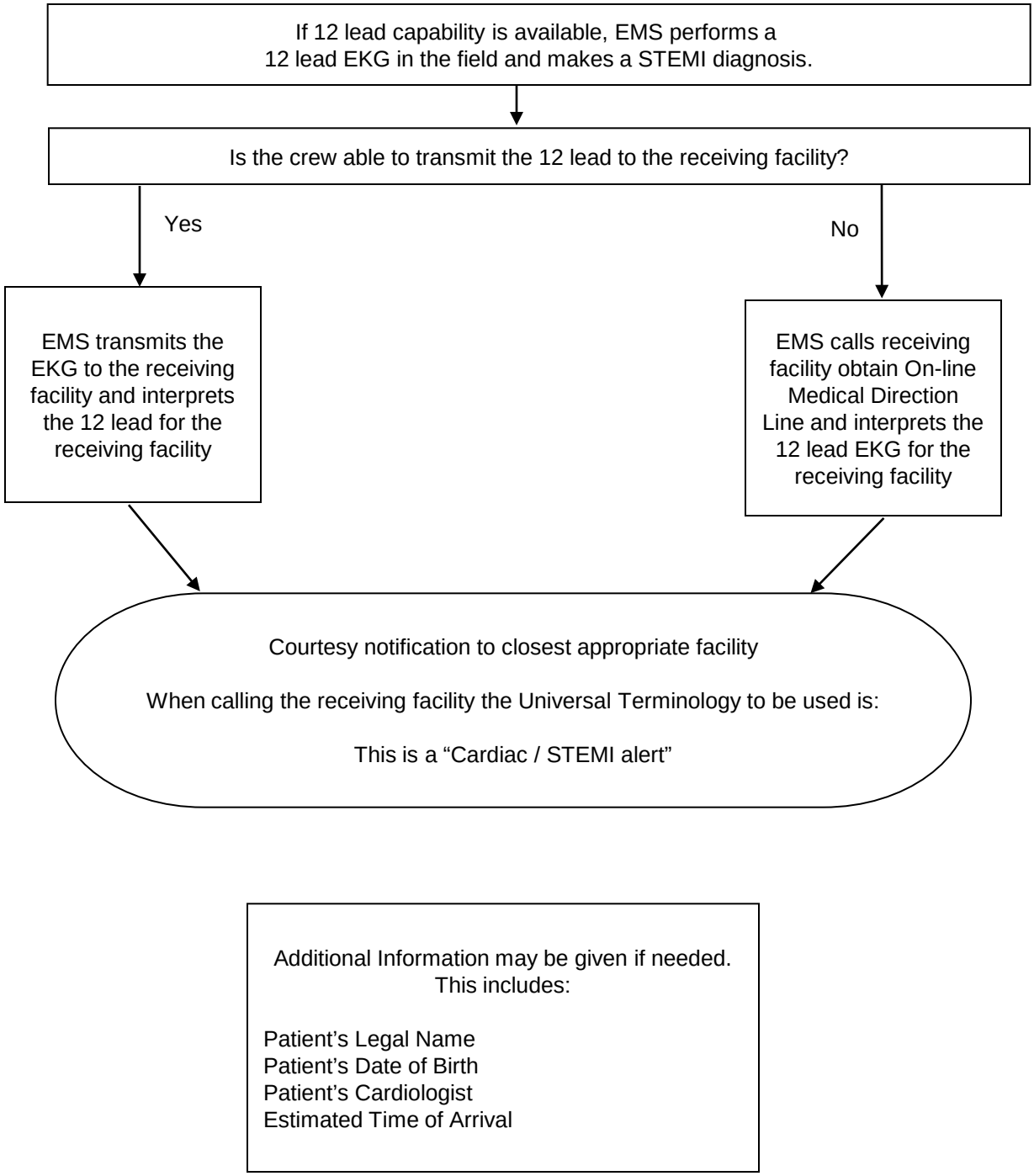
Risk Factors for Acute Coronary Syndromes include, but are not limited to:

Family History
Hypertension
High Cholesterol
Diabetes
Obesity
High Stress
Sedentary Lifestyle
>65 years old or older.
Male sex (gender)
Alcohol intake
Heredity (including Race) —
African Americans
Mexican Americans
American Indians
Native Hawaiians
Some Asian Americans.
Tobacco smoke — Exposure to other people's smoke

Females, diabetic, and elderly patients often present with atypical chest pain or anginal equivalents.

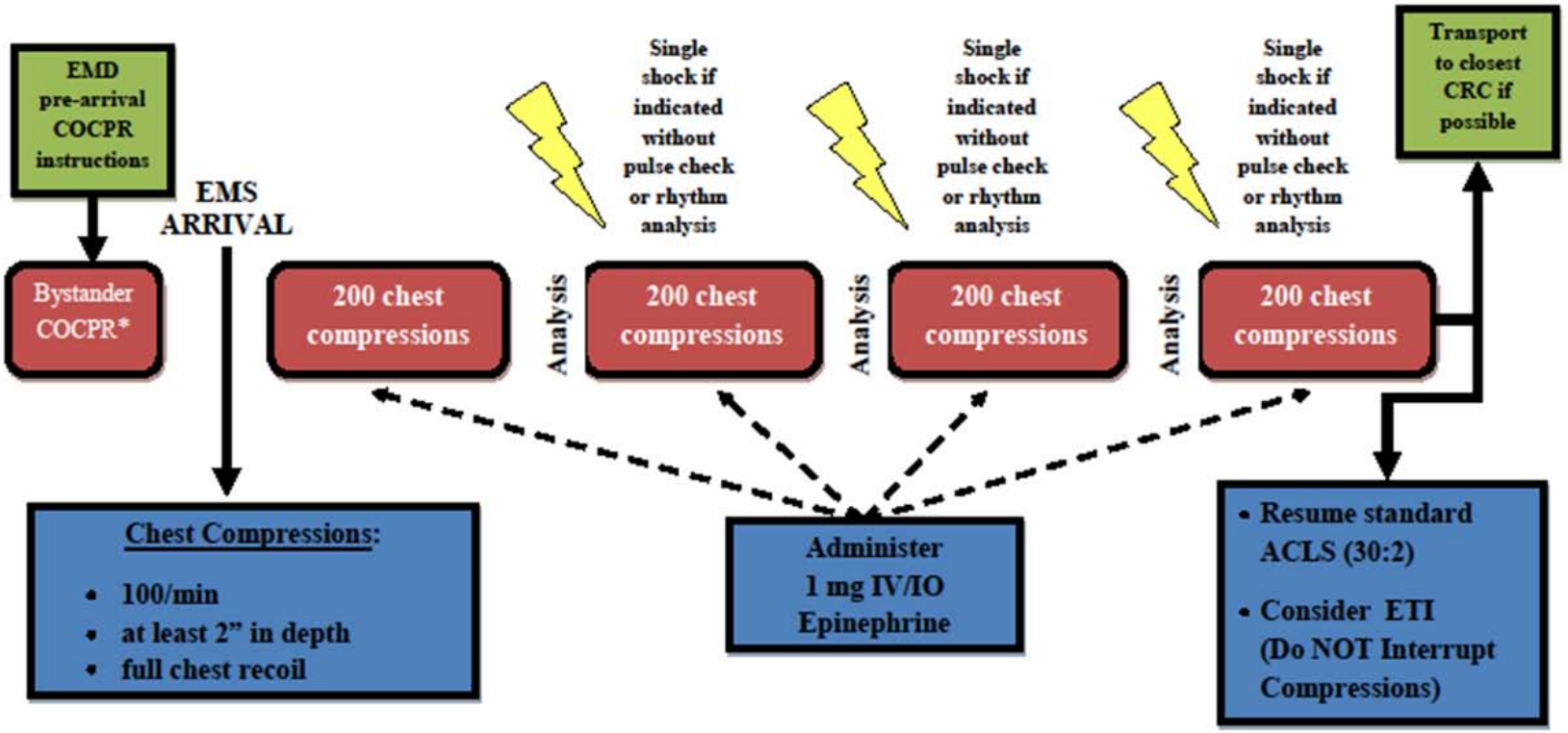
When a 12 Lead is done on a patient, a copy must be provided when transferring care.

Notification Process for EMS STEMI Patients



CARDIOCEREBRAL RESUSCITATION (CCR)

(aka Minimally Interrupted Cardiac Resuscitation)



*If adequate uninterrupted bystander chest compressions are provided, EMS providers perform immediate rhythm analysis

COCPR=compression-only CPR CRC=cardiac receiving center EMD=emergency medical dispatch

Cardiocerebral Resuscitation (CCR)

Adult (>8y/o)

Inadequate or no bystander CPR prior to arrival

Adequate bystander CPR prior to arrival

200 chest compressions
Establish vascular access
Insert an OPA and apply a non-rebreather with 100% O2
Epinephrine 1 mg 1:10,000

Rhythm analysis – single shock at 360* if indicated without pulse check

200 chest compressions
Epinephrine 1 mg 1:10,000

Rhythm analysis – single shock at 360* if indicated without pulse check

200 chest compressions
Epinephrine 1 mg 1:10,000

Rhythm analysis – single shock at 360* if indicated without pulse check

200 chest compressions
Epinephrine 1 mg 1:10,000

Rhythm analysis – single shock at 360* if indicated without pulse check

Endotracheal intubation
Resume standard ALCS procedures.

Notes:

1. *Recommended defibrillation dose varies by device used. For biphasic defibrillator follow manufacturer's recommendation.
2. Perform chest compressions at a rate of at least 100/minute.
3. If a potentially perfusing rhythm returns, finish current round of 200 compressions prior to pulse check.
4. If a return of spontaneous pulse occurs, proceed with supportive care.
5. Do not attempt ventilation/intubation until after the fourth set of 200 compressions.

Contraindications:

- Children < 8 years old
- Known/suspected overdose
- Respiratory cause of arrest
- Known/suspected hypothermia
- Near Drowning
- Traumatic arrest
- Burned beyond recognition.

Documentation:

- Was bystander CPR in progress?
- If bystander CPR, who was performing CPR; i.e.,family, friends, law enforcement, etc.
- Estimated time of collapse.
- AED use prior to arrival?
- Was patient gasping prior to arrival?
- Specify that CCR protocol was utilized.
- Time and dosages of all defibrillations and medications.
- All monitored cardiac rhythms.

Cardiac Arrest Center/ Cardiac Arrest Post Resuscitation (AZ DHS BEMS Guideline)

Inclusion Criteria:
1. Non-traumatic OHCA with return of palpable central pulses or other evidence of spontaneous circulation
2. GCS less than 8 after ROSC
3. Transport to CAC when feasible, resources available, and will add less than 15 minutes to transport time compared to transport to non-CAC
4. Less than 30 minutes CPR prior to arrival of EMS
5. Female patients not pregnant
6. No uncontrolled hemorrhage
7. No persistent unstable arrhythmia
8. Patient does not appear to have severe environmental hypothermia related arrhythmia
9. No DNR paperwork identified during resuscitation

No

Follow local/regional Transport guidelines

Yes

Courtesy Notification to closest appropriate facility as soon as possible

Post resuscitation care

1. Control airway as necessary
2. Maintain PCO2 between the range of 35-45. SPO2 of >95% should be maintained. Maintain ventilation rate of 8-10 breaths per minute, adjust as needed to ensure proper oxygenation.
3. Consider anti-arrhythmic medication
4. If available administer 2000 mL cold (4°C/39.2°F) NS IV fluid bolus to the adult patient
5. Apply cold/ice packs to groin/axillae/neck
6. Consider dopamine for persistent hypotension
7. Perform 12-lead ECG to check for STEMI (ST elevation MI) and pre-notify ED
8. Do not warm patient

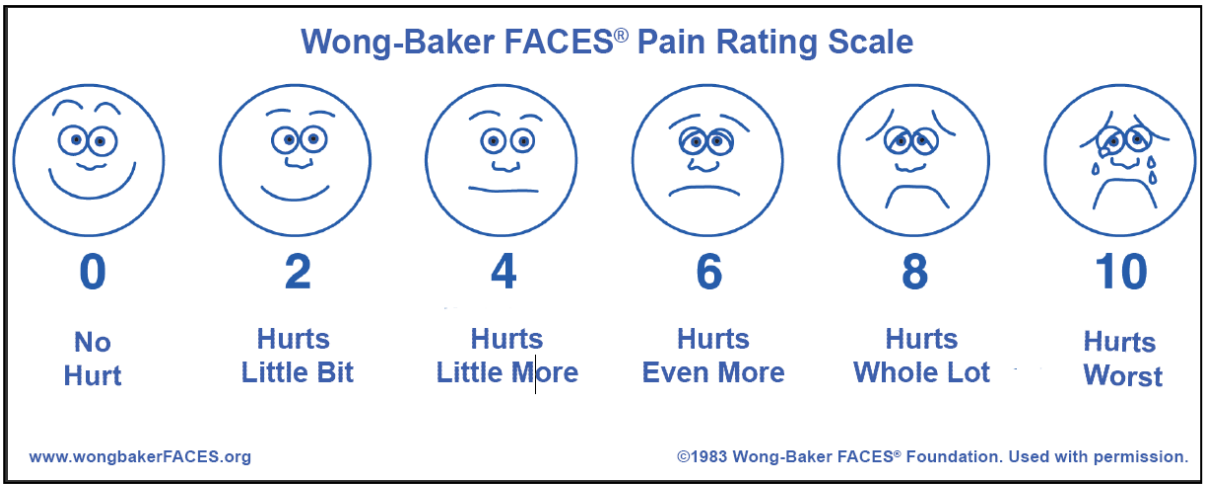
Blood Thinners

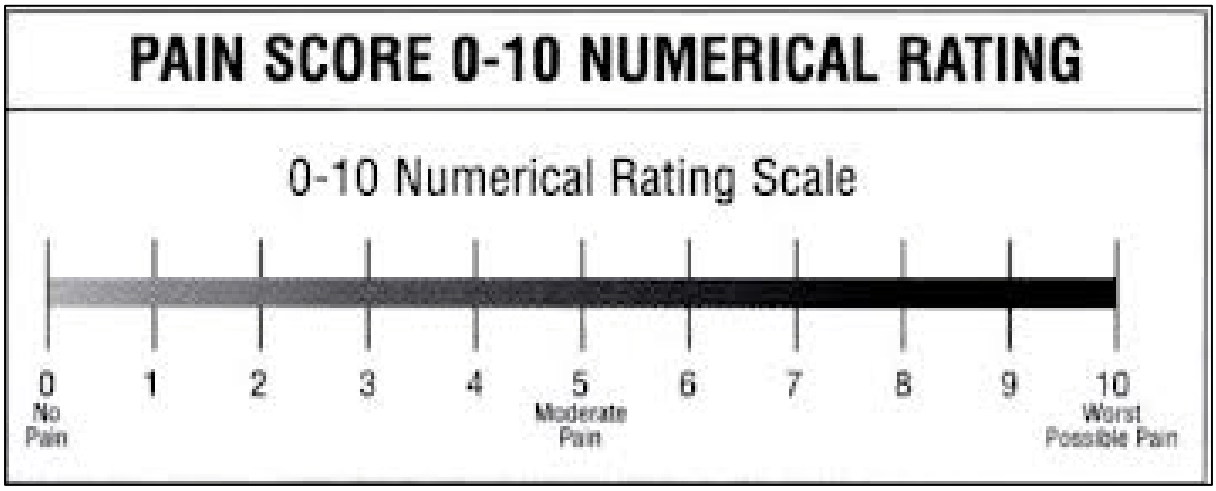
Antiplatelets	Anticoagulants
• Salicylate (Aspirin)	• Enoxaparin (Lovenox)
• Clopidogrel (Plavix)	• Dabigatran (Pradaxa)
• Prasugrel (Effient)	• Rivaroxaban (Xarelto)
• Ticagrelor (Brilinta)	• Warfarin (Coumadin)
• Dipyridamole (Persantine)	• Heparin
• Dipyridamole/Aspirin (Aggrenox)	• Fondaparinux (Arixtra)

FYI: The most common new drugs you will see patients on are Xarelto and Pradaxa. Several cardiologists are starting to use these for patients with A-fib instead of Coumadin. Aggrenox is used for a lot of stroke/TIA patients.

Drug category	Brand **Names of Blood Thinners**	Chemical **Names of Blood Thinners**
Vitamin K antagonists	Coumadin	Warfarin
	Dicumarol	Dicumarol
	Miradon	Anisinidione
Heparin (carbohydrate) drugs	Clexane, Lovenox	Enoxaparin
	Hep-Lock, Hep-Pak	Heparin
	Fragmin	Dalteparin
	Arixtra	Fondaparinux
	Orgaran	Danaparoid
	Innohep	Tinzaparin
Thrombin (enzyme) inhibitors	Argatroban	Argatroban
	Refludan	Lepirudin
	Angiomax, Angiox	Bivalirudin
	Pradaxa	Dabigatran
Salicylate	Aspirin	Acetylsalicylic acid
P2Y (platelet receptor) inhibitor	Plavix	Clopidogrel bisulphate
Thromboxane (specialized small molecule) inhibitor	Persantine Aggrenox	Dipyramidole Aspirin dipyramidole

Pain Scales





FLACC Behavioral Pain Assessment Scale

CATEGORIES	SCORING 0	1	2
Face	No particular expression or smile	Occasional grimace or frown; withdrawn, disinterested	Frequent to constant frown, clenched jaw, quivering chin
Legs	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 (awake or asleep)	Moans or whimpers, occasional complaint	Crying steadily, screams or sobs; frequent complaints
Consolability	Content, relaxed	Reassured by occasional touching, hugging, or being talked to; distractable	Difficult to console or comfort

How to Use the FLACC

In patients who are awake: observe for 1 to 5 minutes or longer. Observe legs and body uncovered. Reposition patient or observe activity. Assess body for tenseness and tone. Initiate consoling interventions if needed.

In patients who are asleep: observe for 5 minutes or longer. Observe body and legs uncovered. If possible, reposition the patient. Touch the body and assess for tenseness and tone.

Activated Charcoal	
Indications	Poisoning/Overdose, should only be given within the first hour of ingestion
Contraindications	Do not give before or together with Ipecac, protect airway
Side Effects	None for the field
Dosage, route	**Adult: 30-60 Gm (1-2 Gm/kg); if not in pre-mixed slurry, mix one part charcoal with four parts water.** **Pediatric: 0.5 -1.0 Gm/kg; if not in pre-mixed slurry, mix one part charcoal with four parts water.**
Adenosine	
Indications	PSVT
Contraindications	Do not give if second or third degree heart block or sick sinus syndrome, or known WPW
Side Effects	Transient dysrhythmias, facial flushing, dyspnea, chest pressure, hypotension, headache, nausea, bronchospasm
Dosage, route	**Adult: 6mg IV rapidly over 1-3 sec with a 20ml N/S flush. If no effect after 1-2 minutes give 12mg IV rapidly with a 20ml N/S flush. May repeat 12mg dose in 1-2 min.** **Pediatric: 0.1mg/kg IV rapidly with a 2-3ml N/S flush. If no effect after 2 min give 0.2mg/kg rapidly with a 2-3ml N/S flush. May repeat 0.2mg/kg dose in 1-2 minutes. Max dose should not exceed 12mg.**
Albuterol	
Indications	Treatment of brochospasm
Contraindications	Do not use with MAO inhibitors, cyclics, or when tachycardia or hypertension is present
Side Effects	Muscle tremors, tachycardia, heartburn, nausea/vomiting
Dosage, route	**Adult: 2.5mg/3ml NS via SVN or inline. (Use 0.083% solution) May mix with atrovent up to 3times, if needed** **Pediatric: 2.5mg/3ml NS via SVN or inline. (Use 0.083% solution) May mix with atrovent up to 3 times, if needed**
Amiodarone	
Indications	Treatment of: shock-refractory VF/pulseless VT, polymorphic VT, and wide complex tachycardia of uncertain origin. Control hemodynamically stable ventricular tachycardia when cardioversion unsuccessful. Adjunct to cardioversion of SVT and PSVT. Rate control in atrial fibrillation or flutter.
Contraindications	Bradycardia. Second or third degree heart block. Cardiogenic shock. Hypotension. Pulmonary congestion
Side Effects	Cardiovascular: bradycardia, hypotension, asystole/cardiac arrest, atrio-ventricular block, Torsades de Pointes, congestive heart failure. GI & Hepatic: nausea, vomiting, abnormal liver function tests. Skin: slate-blue pigmentation. Other: fever, headache, dizziness, flushing, abnormal salivation, photophobia.
Dosage, route	**Adult V-Fib/Pulseless V-Tach: 300mg IV Push.** May repeat once in 3-5 minutes with 150mg IV push. **Adult wide complex tachycardias, A-flutter, A-fib, SVT with cardioversion: 150mg IV over 10 minutes. May repeat every 10 minutes.** **Pediatric V-fib/Pulseless V-tach: 5mg/kg IV push (max 300 mg dose). May repeat every 5 minutes two times to a total max dose of 15mg/kg/day.** **Pediatric probable V-tach with a pulse: 5mg/kg IV push over 20 minutes. May repeat every 5 minutes two times to a total max dose of 15mg/kg/day.**

Aspirin (Chewable)	
Indication	Chest pain of cardiac origin
Contraindications	Known allergy, bleeding disorders such hemophilia
Side Effects	None for the field
Dosage, route	**Adult: 2-4 chewable 81 mg tablets** PO chew and swallow **Pediatric: None**
Atropine Sulfate	
Indication	Sinus bradycardia, AV Blocks
Contraindications	A-fib or flutter with rapid ventricular response, myocardial infarction, glaucoma
Side Effects	Blurred vision, dry mouth, flushing, urinary retention, headache, dilated pupils
Dosage, route	**Adult IV: 0.5 mg rapid IVP q 3-5 minutes. MAX Dose 3mg** **Pediatric: IV: .02 mg/kg. Min dose 0.1 mg. Max. single dose 0.5 mg. May repeat x1 in 5 minutes.** Maximum single doses: 0.5 mg
Atrovent	
Indication	Treatment of brochospasm
Contraindications	It should not be used in patients with hypersensitivity to Atrovent or Atropine
Side Effects	Coughing, sputum increase, dizziness, insomnia, tremor, nervousness, nausea
Dosage, route	**Adult and Pediatric dose: 500 mcg in 2.5 NS (single bullet) SVN. May be mixed with Albuterol to a max of 3 times**
Calcium Chloride	
Indications	Acute hypocalcaemia, calcium channel blocker and magnesium overdoses, acute hyperkalemia
Contraindications	Incompatible with all drugs, flush the line before and after administration. Use cautiously on digitalis pts
Side Effects	Brady-asystolic arrest, sever tissue necrosis if extravastates, serious arrhythmias in digitalis patients
Dosage, route	**Adult: IV bolus 5-10 ml of a 10% solution. May repeat in 10 minutes. Pre-treatment for IV Verapamil: 3ml of 10%, may repeat once.** **Pediatric: IV bolus 0.2-0.25 ml/kg of a 10% solution infused slowly. Should not be repeated.**
Dextrose 50% (D-50)	
Indications	Adult hypoglycemia, unconscious diabetic, coma, or seizure of unknown etiology.
Contraindications	Pediatrics: use D25 or D10; head injury pts; incompatible with $NaHCO_3$, diazepam will precipitate if not flushed
Side Effects	Tissue necrosis if infiltrated
Dosage, route	**Adult: 25-50cc of 50% solution IV push, may repeat one time.** **Pediatric: See D-25 and D-10.**
Dextrose 25% (D-25) and Dextrose 10% (D-10) **See Next Page**	

Dextrose 25% (D-25) and Dextrose 10% (D-10)	
Indications	Pediatric and infant hypoglycemia, unconscious diabetic, coma or seizure of unknown etiology
Contraindications	Incompatible with $NaHCO_3$, diazepam will precipitate if given concurrently without flushing
Side Effects	Tissue necrosis if infiltrated
Dosage, route	**Pediatric: 0.5-1 Gm/kg 25% solution slow IV push or 2-4 ml/kg of D-25** To prepare D-25, mix in 50ml syringe 25ml D-50 with 25ml NS. Produces 50ml D-25 **Newborn: 0.5-1 Gm/kg 10% solution slow IV push (usually over a 20 minute period) or 5-10 ml/kg of D-10** To prepare D-10, obtain a 250ml bag of NS for IV use, waste 50ml, and add 50ml of Dextrose 50%
Diazepam (Valium)	
Indications	Seizure, sedation prior to cardioversion, sedation post RSI
Contraindications	Pregnancy, when patient has ingested other sedatives, respiratory depression, hypotension
Side Effects	Hypotension, confusion/stupor, respiratory depression or arrest if given too rapidly, vertigo, ataxia
Dosage, route	**Adult IV: 2-10 mg at 2 mg/min. Do not mix with any other drug, have respiratory support equip available** **Pediatric IV: 0.2 -0.3 mg/kg every 15--30 min (Max of 1 mg/kg); administer slowly over at least 3 minutes**
Diltiazem (Cardizem)	
Indications	Rapid ventricular rates associated with A-fib and A-flutter, and for PSVT refractory to adenosine
Contraindications	Hypotension, Acute MI, Cardiogenic Shock, V-Tach of unknown origin, 2nd or 3rd degree AV block, WPW syndrome, Sick Sinus Syndrome, or Beta blocker use.
Side Effects	Hypotension, bradycardia, heart block, chest pain, asystole, nausea, vomiting, headache, fatigue, drowsiness
Dosage, route	**Adult: 0.25mg/kg administered IV over 2 minutes. If no response in 15 minutes, may repeat 0.35mg/kg IVP over 2 minutes. Max of 20mg per dose**. **Pediatric: None**
Diphenhydramine (Benadryl)	
Indications	Allergic reactions, anaphylaxis, acute dystonic reaction
Contraindications	Glaucoma, presence of alcohol and/or other depressants
Side Effects	Decreased LOC, hypotension, blurred vision, dry mouth, wheezing, OD may cause convulsions, coma
Dosage, route	**Adult: 50 mg slow IV push or deep IM** **Pediatric: 1 mg/kg slow IV push or deep IM. Max of 50mg.**

Dopamine (Intropin)	
Indication	Cardiogenic shock, hypotension, or unresolved bradycardia after pacing
Contraindications	Tachyarrhythmias, V-Fib, do not give with $NaHCO_3$, hypotension due to hypovolemia until fluid replaced
Side Effects	Nausea/vomiting, htn, infiltration will cause local necrosis, tachycardia, angina, palpitations
Dosage, route	**Adult: 1600 mcg/ml pre-mixed. Begin at 2-5 mcg/kg/min. Max of 10mcg/kg/min. See Table.** **Pediatric: 2-10 mcg/kg/min. Begin at 2mcg/kg/min.**
Epinephrine 1:1,000	
Indications	Anaphylaxis, cardiac arrest, asthma, croup, unresolved bradycardia after pacing and dopamine
Contraindications	Use with caution in pts >35 y/o, w/angina, hypertension, pregnancy, tachycardia. None in cardiac arrest
Side Effects	Palpitations, tachycardia, increased blood pressure
Dosage, route	Anaphylaxis and asthma – **Adult: 0.3mg -0.5mg. Preferred route is IM.** **Pediatric: 0.01 mg/kg up to a max of 0.5mg. Preferred route is IM.** Cardiac arrest: **Adult:** Cardiac Arrest IV/IO dose . See 1:10,000 concentration below **Adult ETT: 2-2.5 mg in 10cc of saline** **Pediatric:** IV cardiac IV doses. See 1:10,000 concentration below **Ped ETT: 0.1 mg/kg q 3--5 minutes diluted in 3-5 ml saline** Croup/Strido**r** **Peds SVN for croup: =/< 4 y/o deliver 2.5 mg diluted in 3cc of NS** **=/> 5 y/o deliver 5.0 mg diluted in 3cc of NS** Bradycardia IV Infusion **Adult: IV infusion: 2-10 mcg/min**
Epinephrine 1:10,000	
Indications	Cardiac arrest
Contraindications	None in cardiac arrest
Side Effects	Palpitations, tachycardia, increased blood pressure
Dosage, route	**Adult: 1.0 mg IV push every 3--5 minutes with a 20cc flush.** **Pediatric: 0.01 mg/kg of 1:10,000. IV/IO push** **Pediatric ETT:** (See 1:1,000 concentration above)
Etomidate (Amidate)	
Indication	Sedation for rapid sequence intubation
Contraindications	Patient must be >14 years of age, hypersensitivity to the medication
Side Effects	CNS depression, anesthesia, transient muscle movements, apnea
Dosage, route	**Adult dose: 0.3 mg/kg IV over 30--60 seconds.** **Pediatric: None**

Fentanyl	
Indications	Pain analgesic
Contraindications	Hypersensitivity, fetal acidosis/non-reassuring fetal tracing
Side Effects	Bradycardia, hypotension, cardiac arrest, respiratory depression, chest tightness, and laryngospasm
Dosage, route	**Adult: IV: 50-100 mcg slow , may repeat to max of 200 mcg total.** **IM: 2mcg/kg to a max of 200 mcg. Intranasal: 2mcg/kg to a max of 200 mcg** **Pediatric: IV: 1-2 mcg/kg slow , may repeat to max of 200 mcg total.** **IM: 2mcg/kg to a max 200 mcg. Intranasal: 2mcg/kg to a max of 200 mcg**
Furosemide (Lasix)	
Indications	Congestive heart failure, pulmonary edema
Contraindications	Pregnancy, hypokalemia, digitalis toxicity
Side Effects	Nausea/vomiting, potassium depletion, dehydration
Dosage, route	**Adult: 0.5-1.0 mg/kg slow IV push.** Or double the patient's daily dose if on Lasix and compliant with medications **Pediatric: 1mg/kg IV slowly.**
Glucagon	
Indications	Blood sugar less than 80 mg/dL and unable to start an IV
Contraindications	Contraindicated in patients with known hypersensitivity to glucagon, beef or pork protein
Side Effects	Occasional nausea/vomiting or generalized allergic reaction
Dosage, route	**Adult: 1 mg IM.** **Pediatric: >20kg: 1mg IM** **<20kg: 0.5 mg IM.**
Ketamine	
Indications	RSI, Excited Delirium
Contraindications	Angina, CHF, Symptomatic Hyperthyroidism, Pregnancy-Relative (Category B)
Side Effects	An emergence reaction (in approximately 12% of patients) may occur near end of medication half-life, when patient is awakening, that may require Versed 1-5 mg IV/IM/IO to calm patient.
Dosage, route	**RSI: Adult: 1.5 mg/kg** **Excited Delirium: Adult: 2 mg/kg IV or 4 mg/kg IM**
Lidocaine (if Amiodarone is unavailable)	
Indications	Cardiac arrest, suppression of ventricular arrhythmias
Contraindications	Patients with conduction disturbances (2nd and 3rd degree blocks). Don't treat ectopic beats if rate <60
Side Effects	SA nodal depression or conduction problems and hypotension in large doses, or if given too rapidly. Drowsiness, disorientation, paresthesia, decreased hearing acuity, muscle twitching, seizures, agitation
Dosage, route	**Adult: Pulseless VF/VT:** 1.0-1.5 mg/kg IV push. Repeat boluses 0.5-0.75 mg/kg every 5-10 min. Max: 3mg/kg. Hang a drip at 1-4 mg/min after conversion. **Pediatric: 1mg/kg may repeat x1 for VF/Pulseless V-tach, and unstable V-tach**

Lorazepam	
Indications	Status epilepticus, seizures, sedation
Contraindications	Known sensitivity to benzodiazepines, hypersensitivity to polyethylene glycol, propylene glycol, benzyl alcohol, pregnancy, acute narrow angle glaucoma
Side Effects	Sedation, transient amnesia, memory impairment, confusion, hypotension, dizziness, headache, respiratory depression
Dosage, route	**Adult: Status epilepticus 2-4 mg Slow IV. May give IV/IO if no IV access. May repeat in 10-15 minutes.** **Pediatric: Status epilepticus 0.05-0.1 mg/kg Slow IV. May give IO if no IV access. Max dose 4mg. May repeat in 10-15 minutes.**
Magnesium Sulfate	
Indications	Torsades de Pointes, VF/Pulseless VT refractory to Lidocaine, Pre-eclampsia, Eclampsia, Pregnancy Inducted Hypertension, Pre Term Labor, severe asthma
Contraindications	Renal disease, heart block, recent MI
Side Effects	Respiratory and CNS depression, hypotension
Dosage, route	Torsades **Adult: Torsades with a pulse: 2 Gm in 100 ml NS over 10 min.** **Torsades without a pulse 1-2 Gm in 10ml of N/S Fast IV.** **Pediatric Torsades without a pulse 25-50 mg/kg. Max of 2 Grams rapid IV push.** Eclamptic, Pre-eclamptic, and PIH **Adult: 4-6 G IV bolus over 10-15 min (Add 4 Gms to 100 ml of NS, D5W, LR. Resulting concentration is 30-60 mg/mL).** Pre Term labor **Adult: 4-6 G IV bolus over 10-15 min (Add 4 Gms to 100 ml of NS, D5W, LR. Resulting concentration is 30-60 mg/mL).** Asthma **Adult: 2 Grams in 50Ml of N/S given over 5 minutes.** **Pediatric: 25-50 mg/kg in 50 ml of N/S over 20 minutes.**
Methylprednisolone Sodium Succinate (Solu-Medrol)	
Indications	Reactive airway disease (acute exacerbation of emphysema, chronic bronchitis, asthma, anaphylaxis
Contraindications	Do not use in preterm infants
Side Effects	None from a single dose
Dosage, route	**Adult: 125 mg slow IV bolus or IM** **Pediatric: 2 mg/kg slow IV bolus or IM**
Midazolam (Versed)	
Indications	Sedation, post rapid sequence intubation (RSI)
Contraindications	Hypotensive, hypoxia
Side Effects	CNS and respiratory depression
Dosage, route	**Adult: 14-60 years: 1 -5 mg IV push over 30 seconds. 2-5 mg IM. 0.2mg/kg for status seizures if no IV access.** **Age >60: Reduce by half.** **Pediatric: 0.05 to 0.1 mg/kg slow IV push. 0.2 mg/kg IM for status seizures if no IV access** Intranasal for Adult and Peds: 0.2-0.3 mg/kg to a max of 10mg. May repeat once if needed. Must use 5mg/ml concentration

Morphine Sulfate	
Indications	Analgesia, sedation post RSI
Contraindications	Head injury, exacerbated COPD, depressed respiratory drive, hypotension, acute abdomen pain, altered LOC
Side Effects	Respiratory depression, decreased BP, decreased LOC, decreased HR, nausea/vomiting
Dosage, route	**Adult: IV 1-20mg in 2-4mg increments. 5-10 mg IM** **Pediatric: 0.1 mg/kg IV or IM. May repeat to a max dose of 0.2 mg/kg.**
Naloxone (Narcan)	
Indication	Opiate overdose, coma of unknown etiology
Contraindications	Withdrawal symptoms in the addicted patient
Side Effects	Precipitous vomiting, ventricular dysrhythmias, acute withdrawal
Dosage, route	**Adult: 2mg IV, IM, inject SL, SC, ETT. May repeat in 2 minutes.** **Intranasal: 1 mg in each nostril using a mucosal atomizer device for a total of 2 mg. may repeat every 2 minutes.** **Pediatric: 0.1 mg/kg IV, IM, IN, or ETT** Titrate to respiratory improvement -- not necessary to wake patient up in the field
Neo-Synephrine	
Indication	Facilitation of nasotracheal intubation
Contraindications	No known contraindications
Side Effects	Hypertension, palpitations, tremors
Dosage, route	**Adult: 2-4 sprays in each nostril before attempting ETT insertion.** **Pediatric: none**
Nitroglycerin	
Indications	Angina, myocardial infarction, CHF with pulmonary edema
Contraindications	Hypovolemia, increased intra cranial pressure
Side Effects	Hypotension, temporary pulsating headache, flushing
Dosage, route	**Adult: 0.4 mg (either by tablet or spray) SL. May repeat q 5 minutes for a total of 3 doses.** **Pediatric: none**

Ondansetron	
Indications	Nausea, vomiting
Contraindications	Hypersensitivity. Use with caution in patients with hepatic impairment
Side Effects	CNS: Headache, malaise, fatigue, dizziness, fever, sedation, extrapyramidal syndrome Cardiovascular: Chest pain, arrhythmias. Respiratory: Hypoxia. GI & Hepatic: Diarrhea, constipation, abdominal pain, xerostomia, decreased appetite. Skin: Rash
Dosage, route	**Adult: 4– 8 mg IV slow push over 2 – 5 minutes. Or 8 mg PO ODT or tablet** **Pediatric: <40 kg 0.1 mg/kg, slow over 2-5 minutes.** **>40kg 4 mg slow over 2-5 minutes. 4-12 years old 4 mg PO or ODT** **May be given IM if no IV access**
Sodium Bicarbonate	
Indications	Metabolic acidosis, cardiac arrest with a down time >10 minutes, tricyclic antidepressant overdose
Contraindications	Low serum potassium, patient unable to tolerate salt load (i.e., CHF)
Side Effects	Alkalosis, precipitates when mixed with calcium chloride
Dosage, route	**Adult: 1 mEq/kg IV initially then 0.5 mEq/kg every 10 minutes** **Pediatric: 1mEq/kg IV or IO slowly. Neonate dose 1 mEq/kg IV or IO of 4.2% solution**
Succinylcholine (Anectine)	
Indication	Endotracheal intubation requiring paralysis
Contraindications	Muscle disorders and personal or family history of malignant hyperthermia
Side Effects	Vagal stimulation leading to bradycardia or asystole. Will cause muscle paralysis
Dosage, route	**Adult: 1.5 mg/kg IVP.** **Pediatric: None**
Thiamine	
Indications	Coma of unknown origin, use prior to D50 administration
Contraindications	Hypotension
Side Effects	Restlessness, nausea, diarrhea, anaphylactic reaction, pulmonary edema
Dosage, route	**Adult: 100 mg slow IV or IM** **Pediatric: none**

Toxicology Paramedic Drug Profiles	
Amyl Nitrite	
Description	Used in the initial step of antidotal treatment of cyanide and hydrogen sulfide poisoning. Amyl nitrate converted in body to nitrite, which then forms methemoglobin.
Indications	Treatment of severe symptomatic cyanide and hydrogen sulfide poisoning.
Contraindications	None
Side Effects	Dizziness, fatigue, dyspnea, nausea, vomiting, hypotension, headache, tachy or bradycardia.
Dosage, route	One ampule over patients mouth and nose or into ambu bag. Leave on 30 seconds then 30 second rest. Once IV established Sodium nitrite IV is the treatment of choice.
Amount carried	4 boxes 12 ampules per box NOTE: Amyl nitrite does not need to be used if IV is in place since IV sodium nitrite is much more effective.
Atropine	
Description	Atropine affects the muscarinic receptors of the autonomic nervous system by Inhibiting their effects. At higher doses it also has a similar effect on the nicotinic receptors.
Indications	Treatment of organophosphate and carbamate poisoning.
Contraindications	There are no contraindications to administration of atropine. Note: Tachycardia is not a contraindication
Side Effects	Dry mouth, decreased bronchial secretions, mydriasis, flushing, tachycardia, urinary retention, ileus, confusion, ataxia, hallucinations, psychosis, seizures.
Dosage, route	**Adult: 2 – 5 mg IV push q 5 – 10 minutes until atropinization.** **Pediatric: 0.05 mg / kg IV push q 5 – 10 minutes until atropinization.** **Continue dosing until: no wheezing, no bradycardia, no diarrhea, no brochorrhea, no diaphoresis**
Amount carried	16 - 8mg / 20ml vials (0.4 mg / ml)
Hydroxocobalamin	
Description	Used in the treatment of acute cyanide poisoning. Detoxifies cyanide by forming cyanocobalamin which is excreted in the urine.
Indications	Treatment of suspected or known cyanide poisoning
Contraindications	None
Side Effects	Rash, chest tightness, edema, urticaria, pruritus, dyspnea, and rash. Most common adverse reactions (>5%) are transient and include chromaturia (red-colored urine), erythema (skin redness), rash, increased blood pressure, nausea, headache, decreased lymphocyte percent, and injection site reactions.
Dosage, route	2.5 grams in a vial. Add 100cc N/S. Mix by rocking or rotating vial. Do not shake. Infuse. Repeat with second vial
Amount carried	2.5 grams in a vial. Add 100cc N/S. Mix by rocking or rotating vial. Do not shake. Infuse. Repeat with second vial

Toxicology Paramedic Drug Profiles	
Methylene Blue	
Description	Dark blue crystalline powder in solution with water or alcohol. Used in in the treatment of methemoglobin toxicity. Acts as reducing agent to convert iron in methemoglobin from Fe +++ to Fe++, regenerating normal hemoglobin.
Indications	Treatment of severe symptomatic methemoglobinemia.
Contraindications	Known Glucose-6-phosphate dehydrogenase deficiency.
Side Effects	Nausea, vomiting, abdominal and chest pain, headache, dizziness, confusion, dyspnea, hypertension.
Dosage, route	7ml (0.1ml/kg of 1% soln) IV over 2-3 minutes with NaCl running at 200-300ml/hr. May repeat in 10 minutes if not improved. Mix in 100cc bag N.S 2.0 mg / kg IV over 5 – 10 minutes, May repeat at 1.0 mg / kg if no change within 10 – 20 minutes.
Amount carried	8 - 100mg / 10ml vials.
Proparacaine (Opthetic)	
Description	Proparacaine is a topical ocular local anesthetic of the ester class producing anesthesia lasting approximately 15 minutes.
Indications	Topical anesthesia of the eye when preparing to insert Morgan Lens for Irrigation.
Contraindications	Contraindicated in known hypersensitivity to the drug or benzalkonium chloride (preservative).
Side Effects	Temporary burning, redness, stinging of conjunctiva may occur.
Dosage, route	**Adult and Pediatric: 1-2 gtt into affected eye. May repeat q 5–10 minutes**
Amount carried	4 Eye drop bottles (0.5%) **Keep cool.**
Protopam Chloride (Pralidoxime Chloride, 2-Pam)	
Description	Protopam is an odorless white powder used to reactivate Cholinesterase enzymes, which have been inactivated by phosphorylation by organophosphates.
Indications	Treatment of organophosphate poisoning.
Contraindications	No absolute contraindications. Known hypersensitivity to drug is a relative contraindication to administration.
Side Effects	Local pain, blurred vision, dizziness, headache, nausea, tachycardia, increased BP, hyperventilation.
Dosage, route	2gms diluted in 20cc sterile water per gram. **Adults: 1 – 2 gms IV over 10 – 15 minutes.** **Pediatric: 30 –50 mg /kg over 10 – 15 minutes.**
Amount carried	12 - 1 gram powered vials.

Toxicology Paramedic Drug Profiles	
Sodium Nitrite	
Description	White or slightly yellow powder soluble in water. When used in cyanide poisoning acts with hemoglobin to form methemoglobin. The methemoglobin then forms complexes with the cyanide inactivating it. In hydrogen sulfide poisoning reacts with hemoglobin to form sulfmethemoglobin.
Indications	Indicated in the treatment of severe symptomatic cyanide and hydrogen sulfide poisoning.
Contraindications	None
Side Effects	Nausea, vomiting, abdominal pain, dizziness, headache, flushing, cyanosis, tachypnea, vasodilatation, syncope, hypotension, tachycardia.
Dosage, route	Administer 300mg of Na Nitrite (10ml of 3% solution) IV over 5 -10 minutes. If symptoms not improved in 15 to 30 minutes may repeat dose. **Adults: 10 ml (300 mg; 1 amp) IV over 5 – 10 minutes. Can be give faster during cardiac arrest.** **Pediatric: 0.33 ml / kg of 3% solution IV over similar time period.**
Amount carried	8 – 300mg / 10ml Ampules
Sodium Thiosulfate	
Description	Used in the treatment of cyanide poisoning. Reacts with cyanide-methemoglobin complex to form stable thiocyanate, which is then excreted by kidneys.
Indications	Treatment of severe symptomatic cyanide poisoning.
Contraindications	Don't give for Sulfide poisoning
Side Effects	Relatively nontoxic.
Dosage, route	12.5gm (50ml of 25% solution) IV over 5 minutes. **Adults: 50ml (12.5 gms) IV over 5 minutes. Give fast during cardiac arrest.** **Pediatric: 1.65 ml / kg of 25% solution IV over similar time period.**
Amount carried	8 - 12.5 gms in 50 ml (250 mg / ml)

Approved Substitutes	
Dexamethasone (Decadron) -- substitute for Solu-Medrol	
Indications	Reactive Airway Disease, Anaphylaxis
Contraindications	Preterm infants, Systemic fungal infections
Side Effects	None from a single dose
Dosage, route	**Adult: 8-24 mg slow IV bolus or IM. (20mg approx. equal to 125mg Solu-Medrol)** **Pediatric: 0.25-0.5 mg/kg**
Nalmefene HCl (Revex) -- substitute for Narcan	
Indication	Opiate overdose, Coma of unknown origin
Contraindications	Withdrawal symptoms in the addicted patient
Side Effects	Precipitous vomiting, Dysrhythmias, acute withdrawal
Dosage, route	**Adult: 0.5 mg IV, IM, or SC to a max of 1.5 mg or 1.5 mg/70kg.** May give additional 0 .5-1.0 mg in 2--5 minutes **Pediatric: None**
Bumetanide -- substitute for Furosemide	
Indications	Congestive heart failure, pulmonary edema
Contraindications	Pregnancy, hypokalemia, not indicated for use on patients less than 18 years of age
Side Effects	Nausea/vomiting, potassium depletion, dehydration
Dosage, route	**Adult: 0.5-1.0 mg IV push (slowly over 1-2 minutes).** May give IM. (bumetanide can be substituted at approx a 1:40 ratio of bumetanide to Furosemide) **Pediatric: None**
Verapamil- substitute for Cardizem	
Indications	SVT, atrial fibrillation and atrial flutter with rapid ventricular response
Contraindications	Do not use in patients with shock, severe CHF, AV block, sick sinus syndrome or any wide complex tachycardia, including WPW
Side Effects	Extreme bradycardia, asystole, AV block, hypotension, congestive heart failure
Dosage, route	**Adult: 2.5-5.0 mg IV push over 2--3 minutes. May rebolus in 15-30 minutes with 5-10 mg IV push until a maximum dose of 20 mg is given.** **Pediatric: None**

Lidocaine/Bretylium Infusion Chart Mix 2 Gm in 500 mL of NS (4/mg/ml)		**Epinephrine** Infusion Chart Mix 2 mg of 1:1,000 (2000mcg) in 250 mL of NS (8/mcg/ml)	
Dose ordered in mg/min	Amount to infuse in mcgtts/min or ml/hr	Dose ordered in mcg/min	Amount to infuse in mcgtts/min or ml/hr
1	15	2	15
2	30	4	30
3	45	6	45
4	60	8	60
5	75	10	75

Dopamine Infusion Chart
Mix 400mg in 250 mL of NS (1600mcg/ml)

Dose in mcg/kg/min	Body Weight (lbs on top, kg on bottom)												
	99	110	121	132	143	154	165	176	187	198	209	220	231
	45	50	55	60	65	70	75	80	85	90	95	100	105
2.5	4	5	5	6	6	7	7	8	8	8	9	9	10
5	8	9	10	11	12	13	14	15	16	17	18	19	20
7.5	13	14	15	17	18	20	21	23	24	25	27	28	30
10	17	19	21	23	24	26	28	30	32	34	36	38	39
12.5	21	23	26	28	30	33	35	38	40	42	45	47	49
15	25	28	31	34	37	39	42	45	48	51	53	56	59
20	34	38	41	45	49	53	56	60	64	68	71	75	79

Dopamine Infusion Chart
Mix 400mg in 250 mL of NS (1600mcg/ml)

Dose ordered in mcg/min	Amount to infuse in mcgtts/min or ml/hr
400	15
800	30
1200	45
1600	60

	Monophasic				ZOLL Biphasic Anything below 75 Jules is equivalent to a monophasic energy setting.			
Synchronized Cardioversion	100J	200J	300J	360J	75J	120J	150J	200J
Defibrillation	200J	300J	360J	360J	120J	150J	200J	200J
Pediatric Defibrillation	2J/kg 4J/kg 4J/kg				2J/kg 4J/kg 4J/kg			

Trauma Center Locations

Level 1 Trauma Centers as of 8/12/2015

	Adult ≥15y/o	Pediatric ≤ 14y/o	Burns (any age)	OB >20 weeks
Banner-University Medical Center *Phoenix*	X			
Dignity Health Chandler Regional	X			
HonorHealth John C. Lincoln	X			
Maricopa Medical Center	X	X	X	X
Phoenix Children's		X		
St. Joseph's	X			X
HonorHealth Scottsdale Osborn	X			
Abrazo West Campus	X			

Level 3 Trauma Centers as of 8/12/2015

Banner Baywood Medical Center
HonorHealth John C. Lincoln
Mountain Vista Medical Center

Pediatric Intensive Care Units

Current as of 8/12/2015

Banner Desert Medical Center / Cardon Children's Medical Center
Banner Thunderbird Medical Center
Maricopa Medical Center
Phoenix Children's Hospital
HonorHealth Scottsdale Shea

Primary Stroke Centers

The Arizona Stroke Consortium has identified 18 hospitals as Primary Stroke Centers (PSC) for the Phoenix Metropolitan area. The following hospitals have provisionally met the criteria to become a Primary Stroke Center:

Abrazo Arrowhead Campus
Abrazo Maryvale Hospital*
Abrazo West Campus
Banner Baywood Medical Center
Banner Boswell Medical Center
Banner-University Medical Center *Phoenix*
Banner Del Webb Medical Center
Banner Desert Medical Center
Banner Estrella Medical Center*
Banner Thunderbird Medical Center
Dignity Health Chandler Regional Medical Center
Dignity Health Mercy Gilbert Medical Center
HonorHealth John C. Lincoln
HonorHealth Scottsdale Osborn
HonorHealth Deer Valley Medical Center
Mayo Clinic Hospital
Mountain Vista Medical Center
Phoenix Baptist Hospital
St Joseph's Hospital and Medical Center

*This hospital has provisionally met the criteria to become a Primary Stroke Center and can accept stroke patients

Candidates for Stroke Alert:

Any patient with acute onset of focal neurological deficit(s) such as facial asymmetry, arm drift, or slurred speech, known to have had an onset within 5 hours (or longer time period as specified by Primary Stroke Center).

Level III Perinatal Facilities

Current as of
8/12/2015

Banner Desert Medical Center
Banner Thunderbird Medical Center
Maricopa Medical Center
Banner-University Medical Center Phoenix
HonorHealth Scottsdale Shea
St. Joseph's Hospital

High risk pregnancies include: prematurity (<32 weeks), any bleeding in third trimester, pre-eclampsia/eclampsia (seizures), no prenatal care, twins or >, premature rupture of membranes, ante-partum hemorrhage (abruptio placenta, placenta previa, and uterine rupture), or other complications of labor (breech position, prolapsed cord, ect.), or recent drug use. These patients need transport to Level III perinatal facility.

All OB patients should be transported to the ED if the L&D department does not have a ground floor direct entrance. The patient should be rapidly assessed in the ED. If the patient needs to go to L&D without further delay, a hospital provider will accompany the patient and EMS crew to L&D, according to hospital policy.

Cardiac Receiving Centers

Current as of 8/24/2015

Abrazo Arizona Heart Hospital – Phoenix
Abrazo Arrowhead Hospital Campus– Glendale
Abrazo Central Campus – Phoenix
Abrazo Scottsdale Campus – Phoenix
Abrazo West Campus – Goodyear
Banner Del E Webb Medical Center – Sun City West
Banner Desert Medical Center – Mesa
Banner Estrella Medical Center – Phoenix
Banner Heart Hospital – Mesa
Banner Thunderbird Medical Center – Glendale
Banner-University Medical Center Phoenix
Banner-University Medical Center South – South Tucson
Banner-University of Arizona Medical Center Tucson – Tucson
Carondelet St. Joseph's Hospital – Tucson
Carondelet St. Mary's Hospital – Tucson
Dignity Health Chandler Regional Medical Center – Chandler
Dignity Health Mercy Gilbert Medical Center – Gilbert
Flagstaff Medical Center – Flagstaff
Havasu Regional Medical Center – Lake Havasu City
HonorHealth Deer Valley Hospital – Phoenix
HonorHealth John C. Lincoln – Phoenix
HonorHealth Scottsdale Osborn Medical Center – Scottsdale
HonorHealth Scottsdale Shea Medical Center – Scottsdale
Kingman Regional Medical Center – Kingman
Maricopa Medical Center – Phoenix
Mayo Clinic Hospital – Phoenix
Mountain Vista Medical Center – Mesa
Northwest Medical Center – Tucson
Oro Valley Hospital – Oro Valley
Phoenix Children's Hospital – Phoenix
St. Joseph's Hospital – Phoenix
St. Luke's Medical Center – Phoenix
Tucson Medical Center – Tucson
Verde Valley Medical Center – Cottonwood
Western Arizona Regional Medical Center – Bullhead City
Yavapai Regional Medical Center, West Campus – Prescott
Yuma Regional Medical Center – Yuma

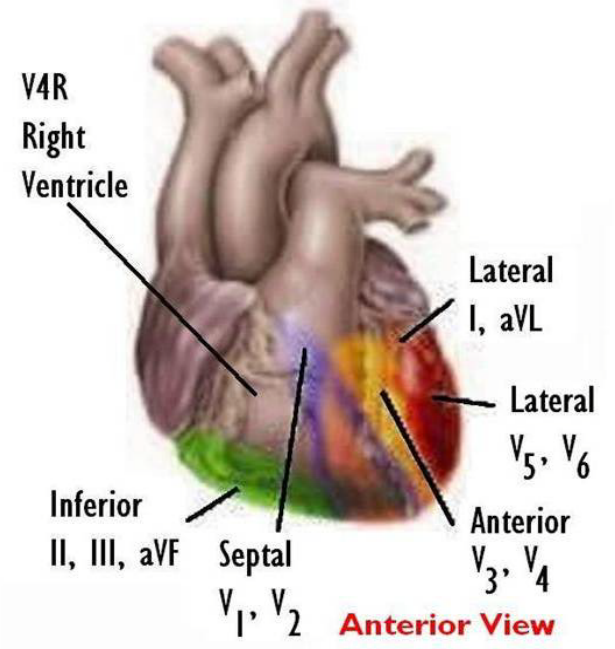
STEPS FOR 12 LEAD ECG INTERPRETATION

A Step by Step Analysis of 12 lead ECG's
RULE #1 – NEVER RELY ON THE INTE-PRATIVE STATEMENT PRINTED ON THE 12 LEAD ECG !!!

Step #1 = Check Rate and Rhythm
Treat life threatening arrhythmias.

Step #2 = Evaluate ECG Measurements & Heart Rate
QRS Duration = ≤ .12sec or ≤ 120ms
PRI Duration = ≤ .20sec or ≤ 200ms
Is the heart rate slow, normal or fast?

Step #3= Evaluate Leads II and V1
What is the ECG rhythm?
Calculate the rate, does it match the computers calculation?



Step #4 = Group the ECG Leads Into Where They Are "Looking"
II, III, AVF – Inferior
I, AVL, V5, V6 – Lateral
V1, V2 – Septal
V3, V4 – Anterior
Ask Yourself:
Are there Q-waves? Pathologic or Physiologic?
Is the S-T segment depressed, elevated or normal when compared to the T-P segment?
Are the T-waves inverted?

Step #5 = Ask a Few Additional Questions???
Is there a presence of indicative changes?
Can it be localized to a specific area?
What coronary artery is involved?

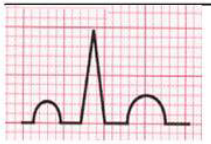
Step #6 = Miscellaneous Conditions
LBBB
Ventricular Rhythms
Left Ventricular Hypertrophy (LVH)
Pericarditis
Early Repolarization

Step #7 = Clinical Presentation
Maintain a high index of suspicion, especially in those patients with significant cardiac risk factors (i.e. diabetes, HTN, obese, hereditary, elderly) Be a good detective:

Remember Anginal Equivalents and Atypical Presentations

Step #8 = If There Is Acute Infarction
Notify the receiving ER or Cardiac Catheterization Lab early on!
Anticipate possible complications.
Develop a customized treatment plan.
Be deliberate, fast and professional.

Remember Time is Muscle !!!



Normal
- Non-diagnostic or baseline with no abnormalities

Ischemia
- Suspicious for ischemia—ST segment depressed, T wave may invert or be peaked
- Digitalis can cause depressed ST segments, but will be seen in all leads
- May be reciprocal, look for ST elevation in opposing leads

Injury
- Suspicious for injury or infarction– ST segment elevated, T wave may invert, T wave may be tall and peaked
- Signifies an acute injury process

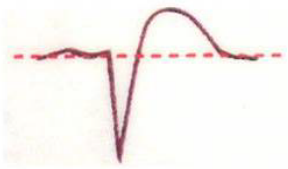
Injury or Infarct
- Suspicious for injury or infarction–
ST segment elevated, T wave may invert, abnormal Q wave may be present
- Signifies an acute injury process

Suspicious for Injury
- Suspicious for injury– new onset bundle branch block

Location	Indicative	Reciprocal changes	Affected coronary artery
Lateral	I, aVL, V5, V6	V1, V2, V3	LCA—circumflex branch
Inferior	II, III, aVF	I, aVL	RCA—posterior descending branch
Septal	V1, V2	No specific leads directly view, look for indicative changes	LCA—LADA, septal branch
Anterior	V3, V4	II, III, aVF	LCA—LADA,
Posterior	No specific leads directly view, look for reciprocal changes	V1, V2, V3, V4	RCA or left Cx artery
Right	V1R—V6R		RCA—proximal branches

(LAD) Left anterior descending artery
(RCA) Right Coronary Artery
(Cx) Circumflex artery
*There may be an overlap in blood supply by the RCA and Cx artery depending on which artery is dominant.

Ischemia Pattern	Inverted T-waves or S-T segment depression >1mm (one small box) in two automatically contiguous leads
***Ischemia**: a decreased supply of oxygenated blood to tissue*	
Injury Pattern	S-T segment elevation >1mm (one small box) in two anatomically contiguous leads
***Injury**: damage to tissue, may be irreversible*	
Infarct Pattern	Wide pathologic Q-waves wider than .04 sec. or 40 ms (one small box) in two anatomically contiguous leads
***Infarct**: Death to tissue, usually due to lack of oxygenate bloodflow*	

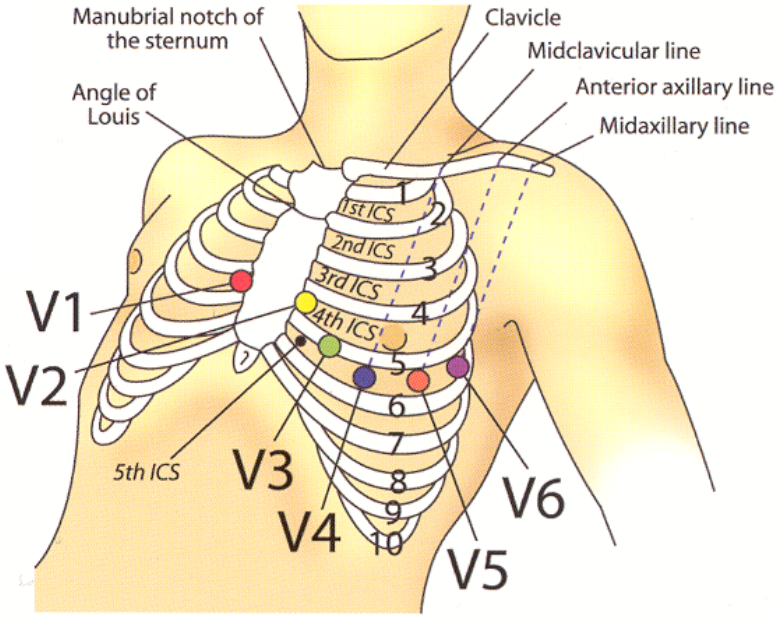


LEADS VR4 in a Right-sided ECG
RIGHT VENTRICULAR INFARCTION

Accompanies inferior MI 40% of time. If patients presents with changes in Leads II, III, and/or aVF, V3R and V4R (Right-sided chest lead) should be checked. Or run a full right-sided 12 lead (though V3R—V4R is adequate in most studies).

RV infarct (RVI) is an important cause of hypotension in inferior MI and is recognized by JVD with clear lung fields. Use extreme caution with nitrates and morphine in RVI, as both reduce right heart filling (preload) and thus compromise diastole (coronary perfusion pressure).

Appearance therapy is indicated—reperfusion strategies. IV fluids for right heart filling pressure and pacing to maintain rate. Overall mortality is high in RVI accompanying inferior Wall MI, mostly related to a lack of recognition of RV involvement: failure to run V4R chest leads.

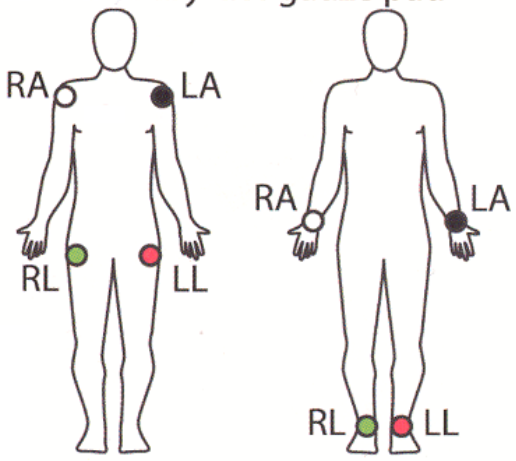


V1 = Right side of sternum, 4th intercostal space
V2 = Left side of sternum, 4th intercostal space
V3 = Midway between V2 and V4
V4 = Left midclavicular line, 5th intercostal space
V5 = Left anterior axillary line, same level as V4
V6 = Left midaxillary line, same level as V4
V4R = Right midclavicular line, 5th intercostal space

Skin Preparation To Reduce Artifact

- Use newly opened electrodes, check expiration dates
- Shave application area with razor (if needed)
- Rub application area with a dry 4x4 gauze pad

RA Right Arm
LA Left Arm
RL Right Leg
LL Left Leg



Spinal Motion Restriction (SMR) Procedures

Introduction

Spinal motion restriction includes reduction of gross movement by the patient and prevention of duplicating the damaging mechanism to the spine. Several patient packaging methods can be utilized along with regular reassessment of motor/sensory function. Research has shown that many traditional forms of patient packaging can be harmful without contributing benefit. Long backboards cause pain, pressure sores, impair breathing, and the procedure used to secure a patient to a backboard could result in more spine movement than intended. It is rare than any given spine injury is so unstable that traditional patient packaging with a collar and long board will make a difference between permanent paralysis and complete recovery.

Purpose

The purpose of this algorithm is to reduce the incidence of negative effects caused by traditional spinal immobilization while continuing to provide appropriate care to patients with possible spinal injury by implementing various methods to achieve SMR. This algorithm does not seek to avoid appropriate patient packaging or trivialize patient assessment. Proper use of this algorithm should result in a more thorough patient assessment. Your evaluation should help you decide if possible benefits of applying SMR outweigh the known risks associated with the procedure and equipment. THIS SELECTIVE SPINAL MOTION RESTRICTION ALGORITHM IS A SCREENING TOOL DERIVED FROM WIDELY ACCEPTED MEDICAL RESEARCH, CURRENT PRACTICE, AND EXPERT CONSENSUS. IT IS DESIGNED TO IDENTIFY A SUBSET OF PATIENTS THAT MAY BE SAFELY TRANSPORTED TO THE EMERGENCY DEPARTMENT FOR DEFINITIVE EVALUATION WITHOUT APPLICATION OF CERTAIN SPINAL IMMOBILIZATION EQUIPMENT. THIS ALGORITHM DOES NOT CONSTITUTE “CLEARING” OF THE SPINE.

Indications

Apply spinal motion restriction to any patient identified by the SMR algorithm to have a potential spine injury that might benefit from splinting and packaging. A complete patient assessment should be performed prior to application of SMR.

Procedure

The following are acceptable methods and tools that achieve spinal motion restriction. This list is arranged from the least invasive to the most invasive:

- Fowler’s, semi-fowler’s, or supine positioning on gurney with cervical collar only
- Supine position with vacuum mattress device splinting from head to toe
- Child car seat with appropriate supplemental padding
- Supine positioning on scoop stretcher, secured with strap system and appropriate padding including head blocks - avoiding log roll movement adds benefit
- Supine positioning with long backboard, secured with strap system and appropriate padding including head blocks

Procedure, cont.

1. Provide manual stabilization to restrict gross head movement. Alert, cooperative, sober patients may be allowed to self-limit movement with or without collar, especially if already ambulating before your arrival.
2. Place appropriately sized cervical collar.
3. Obtain history and perform careful examination to evaluate for complaints of pain, numbness, or tingling as well as GCS, neurologic deficits, spine tenderness, deformity, or painful distracting injury.
4. Extricate patient while limiting flexion, extension, rotation, and distraction of the spine. Tools such as pull sheets, scoop stretchers, and other flexible devices may be used as needed. Long backboards have low friction surfaces and may result in more spine movement from torso and head slippage. <u>These should have limited utilization.</u>
5. If the patient is to be transported on a hard device, apply adequate padding to prevent tissue ischemia and increase patient comfort.
6. Place the patient in the best position suited to protect the airway.
7. Repeat your neurologic examination and regularly reassess motor/sensory function.
8. Consider the use of SpO2 and ETCO2 to monitor respiratory function.
9. Carefully document your exam findings from before and after patient movement and packaging.

<u>If the patient experiences negative effects from a particular SMR method, alternative measures should be implemented.</u>

Special Considerations

-Patients with acute or chronic difficulty breathing: SMR is known to reduce respiratory function by as much as 20%. Respiratory compromise is experienced most by geriatric and pediatric patients secured to a long backboard.

EXERCISE CAUTION WHEN APPLYING SMR TO PATIENTS WITH DIFFICULTY BREATHING AND POSITION APPROPRIATELY.

-Pediatric patients: avoid movements that provoke increased spinal motion. If you choose to apply SMR using a car seat, ensure that proper assessment of the patient's back is performed. Patients with mental delay are considered unreliable.

-Combative patients: avoid methods or interactions that provoke increased spinal motion or agitation.

GD-111-PHS-EMS: Utilization of Over-the-Counter Medications by Arizona EMS Agencies MDC Approved: 5/21/15 Adopted August 1, 2015

STATE OF ARIZONA ● EMERGENCY MEDICAL SERVICES AND TRAUMA SYSTEM

Utilization of Over-the-Counter Medications by Arizona EMS Agencies

Background

Over-the-counter (OTC) medications are FDA-regulated substances that are readily available to the general public. Although regulated by the FDA, the general public may access and self-administer these medications without the advice or prescription from a licensed physician or other licensed healthcare professional.

The Bureau of Emergency Medical Services and Trauma System (BEMSTS) does not currently regulate the administration of OTC medications by Emergency Medical Care Technicians (EMCTs). In the absence of regulation, OTC medications should be treated like other FDA-approved products that are not regulated by BEMSTS, but are used in EMS operations.

Process

The Medical Direction Commission recommends that the following clinical guidelines be met by EMS agencies that supply, carry, or distribute OTC medications:

1. EMCTs may distribute OTC medications while involved in wildfire operations, special events, search and rescue, or when performing disaster relief.
2. OTC medications may be distributed by EMCTs at the request of an individual and for the individual's self-administration only.
3. EMCTs should only carry OTC medications approved by their medical directors.
4. Medical directors should ensure EMCTs have appropriate knowledge of available OTC medications and the common contraindications of those OTC medications.
5. Medical directors should develop a policy that outlines the types of OTC medications and circumstances in which those medications can be made available for self-administration.
6. OTC medications should be distributed in single dose packaging with instructions on the appropriate use of the medication kept on hand.

Useful Phone Numbers	
Adult Protective Services	1-877-767-2385
Child Protective Services	1-888-767-2445
Mesa Alarm Room	480-644-2400
Phoenix Fire Alarm Room	480-312-8911
Poison Control	1-800-222-1222
Translation Line (charges may apply)	1-800-523-1786

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