

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
 - Take appropriate Body Substance Isolation (BSI) precautions
 - Initial assessment
 - Stabilize cervical, thoracic, and lumbosacral spine as patient condition dictates
 - Open and maintain airway
 - Administer oxygen using cannula or mask, or provide ventilatory support as appropriate
 - Control obvious bleeding as needed
 - Position patient appropriately
 - Loosen or remove clothing, as appropriate
 - Initiate CPR as indicated
 - Stabilize fractures and dress soft tissue injuries
 - Keep patient warm in cases of shock and/or hypothermia
 - Obtain history related to the event
 - SAMPLE History - **S**igns and symptoms, **A**llergies, **M**edications, **P**ertinent medical history, **L**ast oral intake, **E**vents leading to the call
 - OPQRST History – **O**nset, **P**rovokes/Palliates, **Q**uality, **R**adiation, **S**everity, **T**ime
 - Document exceptions to survey, pertinent negatives
 - Vital signs (to include pulse, respirations, BP, pulse oximetry, and skin temperature)
 - Repeated at least every 10 minutes for non-critical patients and every 5 minutes for critical patients
- **Paramedic Only**
 - Establish and/or maintain a patent airway
 - If nasotracheal intubation is necessary, administer 2-3 sprays of Neo-Synephrine as needed.
 - Attach ECG monitor. Attach ECG strip to patient care report as indicated with patient condition.
 - Obtain 12 Lead ECG, when indicated. When a 12 Lead ECG is obtained, a copy must be provided when transferring care.
 - Establish vascular access, either IV or IO
 - Any IV medication may be administered IO
 - Administer medications as outlined in the Valley Fire Agency Treatment Algorithms or as directed by on-line medical control
 - Consider placing a gastric tube when the patient has been ventilated > 2 minutes
- **EMT and Paramedic**
 - Transmit required information to receiving facility; notify receiving facility of significant changes
 - See appropriate algorithm for continued care

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. Follow-up with the patient to the receiving facility is encouraged.
- Clearly state at the beginning of an on-line communication if you are making a “courtesy notification” or a “patch.” If you are seeking orders, you are making a patch.
- An ALS Courtesy Notification (CN) should include the following patient-related information:
 - Case (incident) number and/or patient name if requested
 - Age
 - Chief complaint
 - Treatments rendered
 - ETA
 - Vital signs (complete set)
 - Mechanism of injury (trauma)
- Notification is required on BLS transports. Notification may be done by phone or pager.
- If a facility refuses to accept a patient during phone notification, contact on-line medical direction.

Determination of Death Guideline

- Prehospital providers respond to victims 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 victim meets the criteria listed below, no resuscitative efforts need to be initiated. On-line medical direction is necessary. Contact PD and initiate grief support. An EMS provider must remain with the victim 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

Please refer to the Field Termination Guidelines as needed.

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 need not be honored. (A.R.S.36-3205)
 - On-line medical direction is required.

Field Termination Guidelines

- Medical Patients

Purpose

- 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.
- Consider field termination of resuscitative efforts for any cardiopulmonary arrest victim that has not responded to resuscitative efforts as outlined in the appropriate algorithm.
- **On-line medical direction is required for all medical field terminations.**
- Inclusion criteria:
 - Cardiopulmonary arrest is of medical etiology and is not associated with a condition potentially responsive to hospital treatment. Examples include hypothermia, drug overdose, or toxic exposure.
 - Airway management has been successfully accomplished and maintained.
 - ACLS or Agency appropriate measures have been applied throughout the resuscitative effort. Such as Continuous Compressions.
 - Prehospital ACLS resuscitation efforts have been sustained throughout three doses of appropriate ACLS drugs.
 - The victim remains pulseless, apneic, and shows no signs of life.
 - There is no on-scene request to resuscitate.
- 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.

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.**
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- 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 on Pages 3 and 4 as needed.

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.

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, legal guardian, or law enforcement personnel
 - Is oriented to person, place, time, and event.
 - Exhibits no evidence of:
 - Altered level of consciousness
 - Alcohol or drug ingestion that impairs judgment
 - Understands the nature of his/her medical condition, as well as the risks, and consequences of refusing care.
- An adult accepting care for a minor must sign the refusal form.
- Has vital signs within acceptable range.

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.
 - Persons that have been stunned/stopped by means of an electro-muscular disruption weapon (i.e., TASER) Note: an ECG monitor strip must be evaluated and attached to the chart for any patient situation involving the use of a TASER.
 - Persons that have been drinking alcohol or have a drug ingestion (by exam or history).
 - Persons with a head injury (by exam or history)
 - Pediatric patient with reported (does not have to be observed) ALTE (Apparent Life-Threatening Event). These events can involve any of the following: apnea, color change (cyanosis, pallor, erythema), marked change in muscle tone (limpness), choking or gagging.
 - Persons that have been administered medications (including oxygen) by ALS Providers with or without relief of symptoms and now wish to refuse care
 - Persons that are postictal
 - Persons that cannot understand the consequences of their refusal
 - Persons that do not speak/understand English (unless an interpreter is present)
 - Persons that have, or appear to have, mental illness or mental retardation
 - Minors that wish to be released to anyone other than parent or guardian. An adult accepting care for a minor must sign the refusal form.
 - Persons with any of the mechanisms or conditions listed as “high risk patients” in the Arizona Trauma Patient Identification & Field Triage Decision Standard (and refusing treatment and/or transportation):
 - Falls
 - Adults: >20 ft. (one story is equal to 10 ft.)
 - Children: >10 ft. or 2-3 times the height of the child
 - High –risk auto crash Intrusion:
 - > 12 in. occupant site; > 18 in. any site
 - Ejection (partial or complete) from automobile
 - Death in same passenger compartment
 - Vehicle telemetry data consistent with high risk of injury
 - Auto v. pedestrian/bicycle thrown, run over, or with significant (>20 mph) impact
 - Motorcycle crash >20 mph
 - Persons that have any characteristics or complaints:

<ul style="list-style-type: none"> • Abdominal pain • Altered mental status (altered for patient) • Any acute cardiac dysrhythmia • Chest pain • Electrocutation • Foreign body ingestion • Inability to walk (not normal for patient) • Pediatric patients 	<ul style="list-style-type: none"> • Overdose or poisoning • Patient volunteers high-risk condition • Pregnancy-related complaint • Seizures • Syncope or near syncope • TASER • Water-related incidents
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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

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

Paramedic Follow-Up (Ride in) Guidelines

PURPOSE

The purpose of this document is to provide guidance in recognizing patient care situations that may require follow-up with a patient by an ALS provider.

GUIDELINES

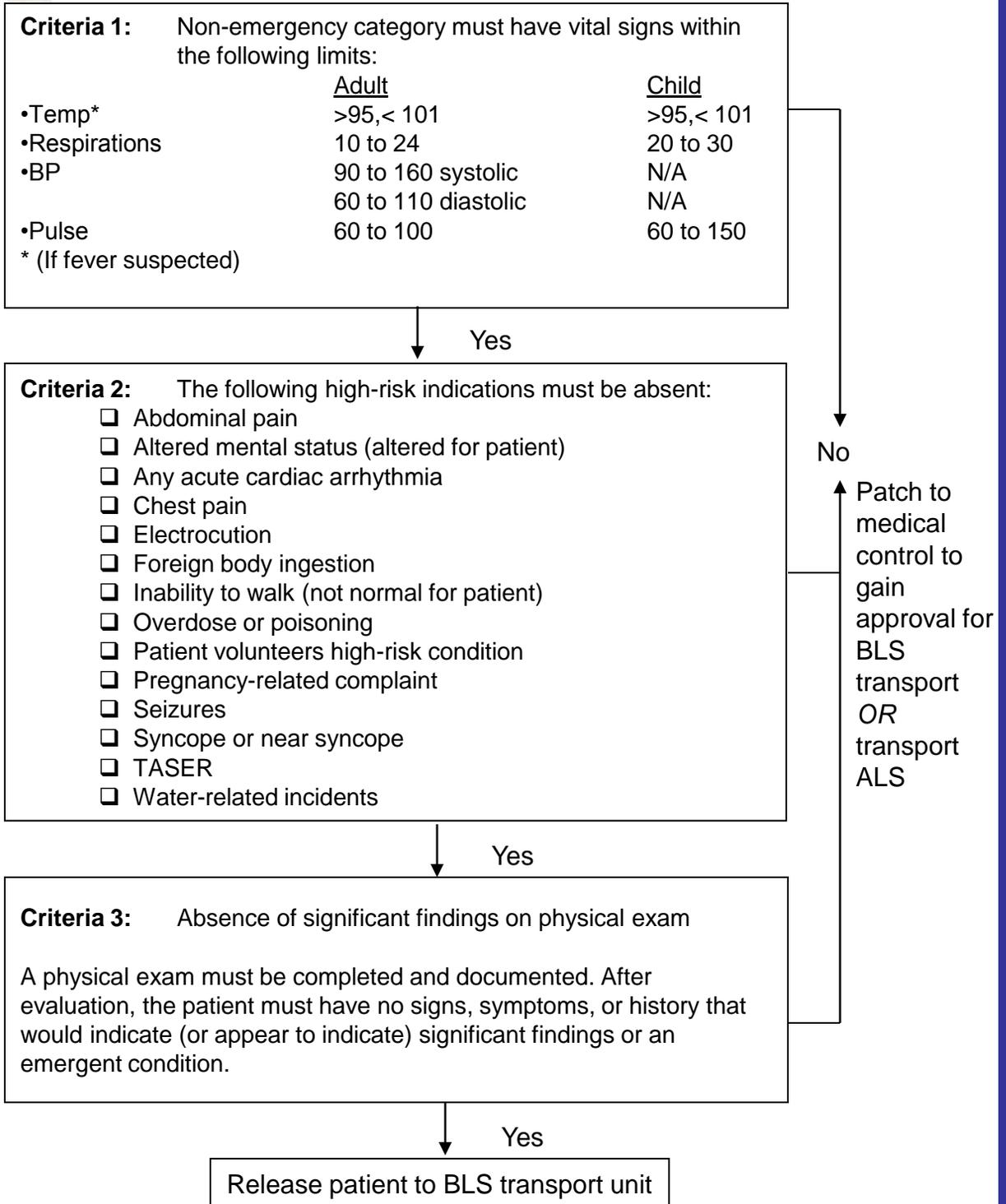
This document was developed after careful consideration of the following:

1. The patient's chief complaint and condition.
2. Patient situations that may require the presence of two ALS providers during transport to a receiving facility.
3. Ensuring the availability of qualified providers and sufficient apparatus to the residents, businesses, and visitors of the region.
4. Location of receiving facilities.
5. Ambulance staffing requirements.
6. An ALS provider is required to follow-up with the patient to the receiving facility in the following situations. Recognizing that it is impossible to produce a comprehensive list of all possible patient situations, the following are provided as examples of situations that may involve an unstable patient.
 - Acute Stroke
 - Altered mental status (altered for patient)
 - Cardiac arrest requiring transport
 - Controlled substance administration. (A controlled substance used by ALS providers may not be transferred to a different agency or air ambulance providers.)
 - Continuous IV medication infusion established
 - Eclampsia / preeclampsia
 - Electrical therapy used (e.g., synchronized cardioversion, defibrillation, or transcutaneous pacing)
 - Imminent delivery
 - Medication given without improvement or relief of symptoms
 - Restraints used. (A patient that is in police custody will require a PD rider or a handcuff key inside the ambulance during transport. The paramedic should have immediate access to keys needed to release handcuffs or other restraining devices.)
 - Request of ambulance paramedic
 - Seizures
 - Adult – active seizure or status epilepticus
 - Pediatric - first-time seizure, active seizure, unstable febrile seizure, or status epilepticus
 - STEMI
 - Trauma - all immediate (by injury) patients
 - Vaginal bleeding in pregnant patient with fetus of viable age (24 weeks)

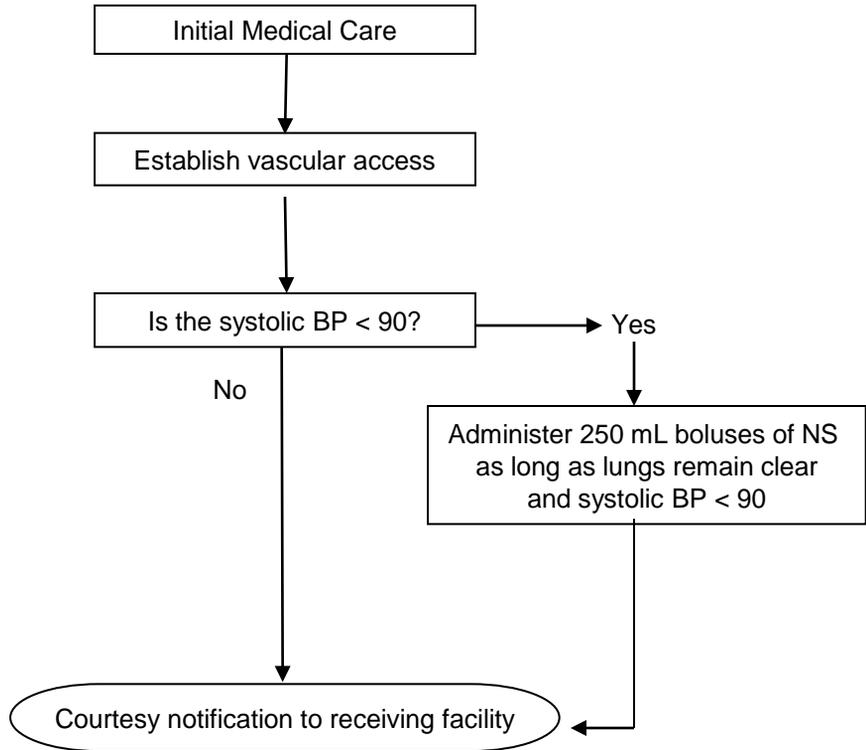
If an ALS provider chooses not to follow-up with the patient in any of the above situations, the member's rationale for that decision must be supported in his or her documentation.



ALS Release of Patients for BLS Transportation

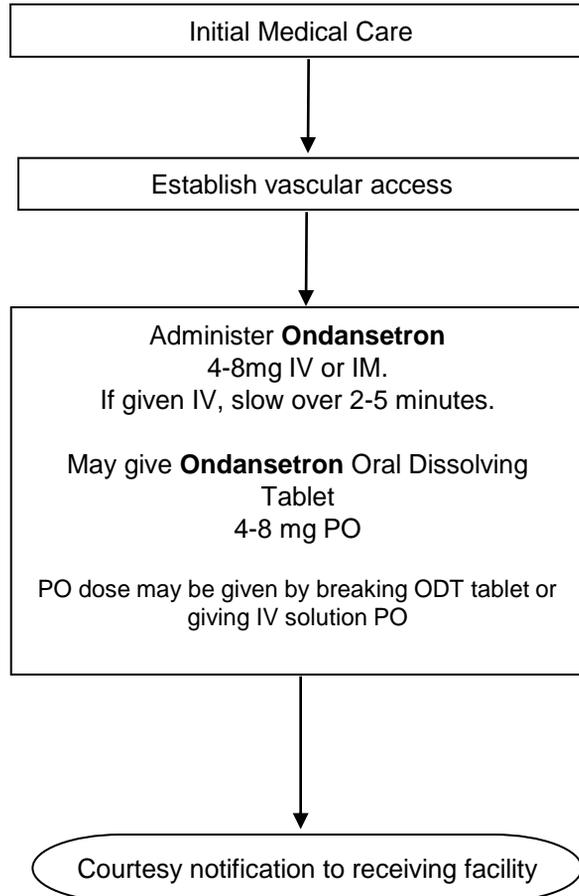


Abdominal Pain – Non-Traumatic, Non-Pregnant Adult (≥ 15 y/o)



Nausea / Vomiting

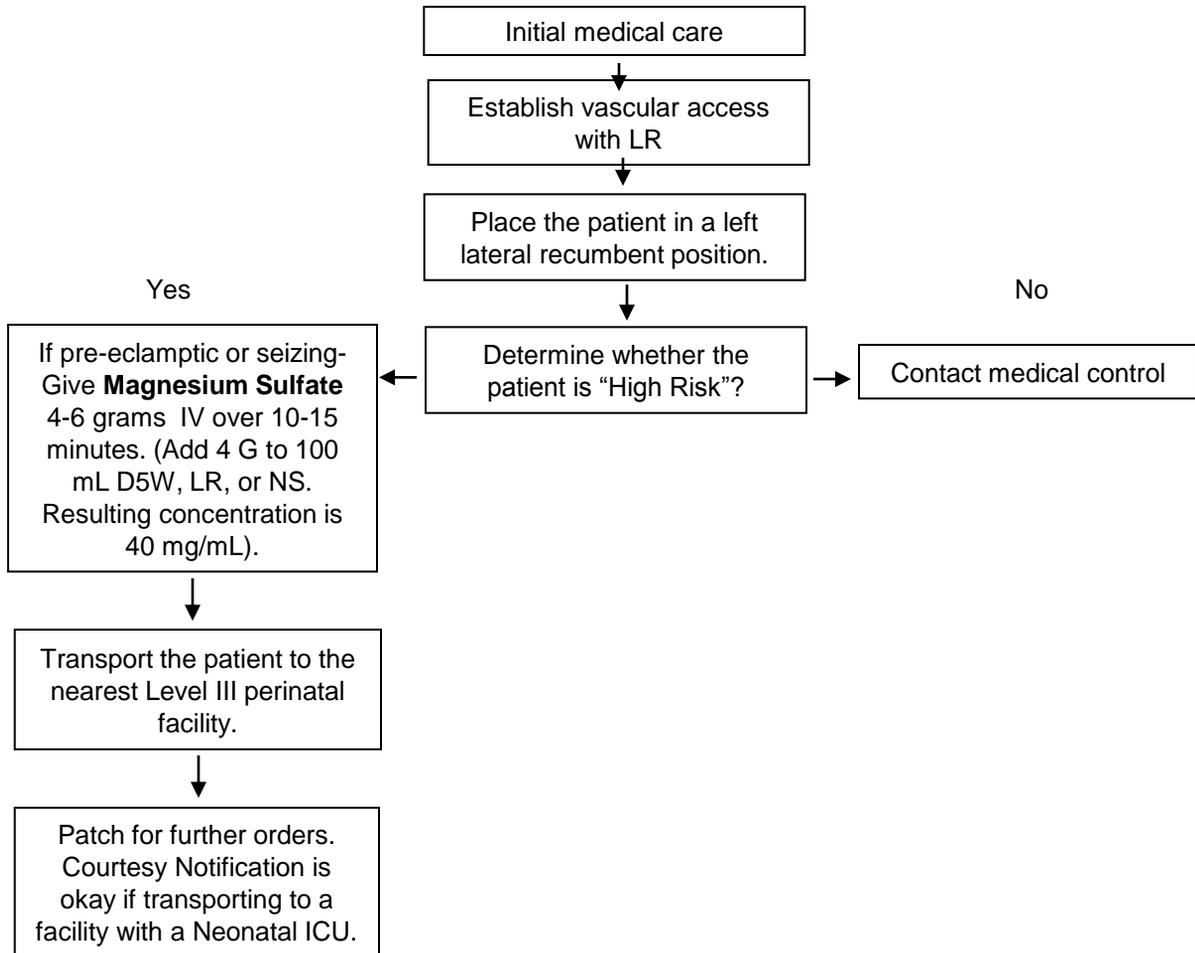
Adult (≥ 15 y/o)



Obstetrics

Adult (≥ 15 y/o)

Pregnancy (>20 weeks) with labor pains, abdominal pain, or "High Risk*".
See notes below.



Note:

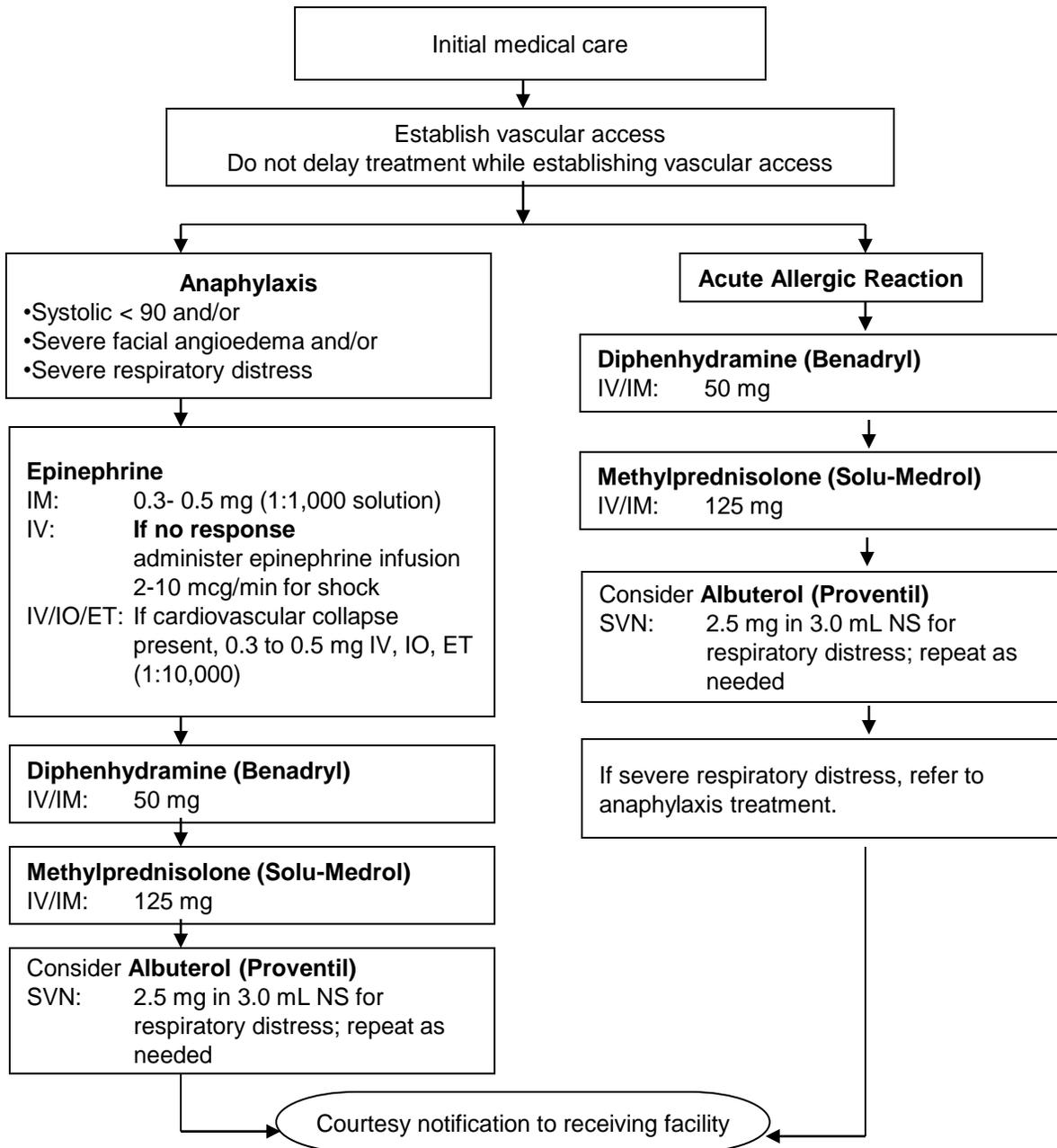
High risk pregnancies include: prematurity (<32 weeks), any bleeding in third trimester, pre-eclampsia/eclampsia (seizures), no prenatal care, twins or >, premature rupture of membranes, antepartum hemorrhage (abruptio placenta, placenta previa, and uterine rupture), or other complications of labor (breech 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 RN or Dr. will accompany the patient and EMS crew to L&D, according to hospital policy.

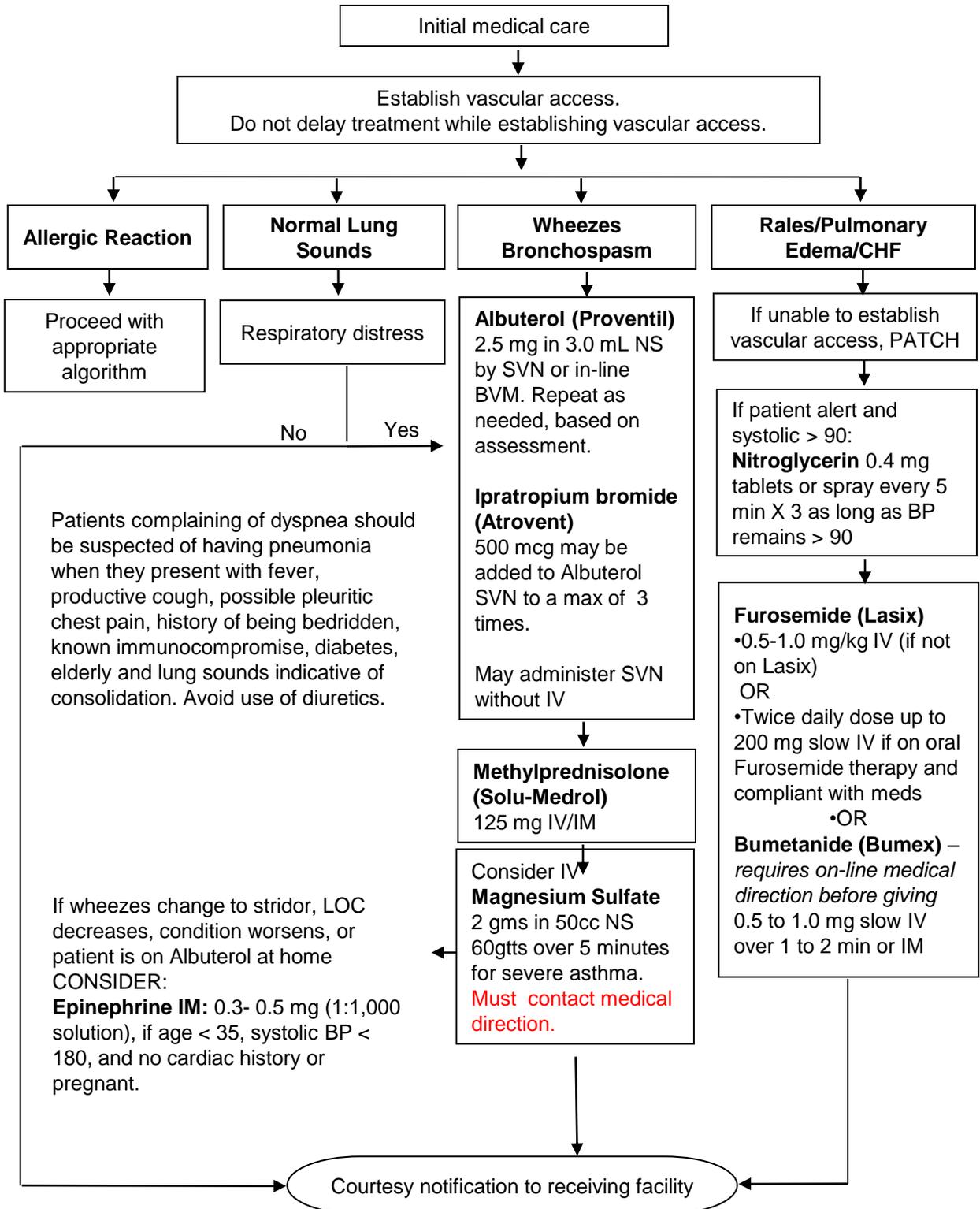
Allergic Reaction/Anaphylaxis

Adult (≥ 15 y/o)



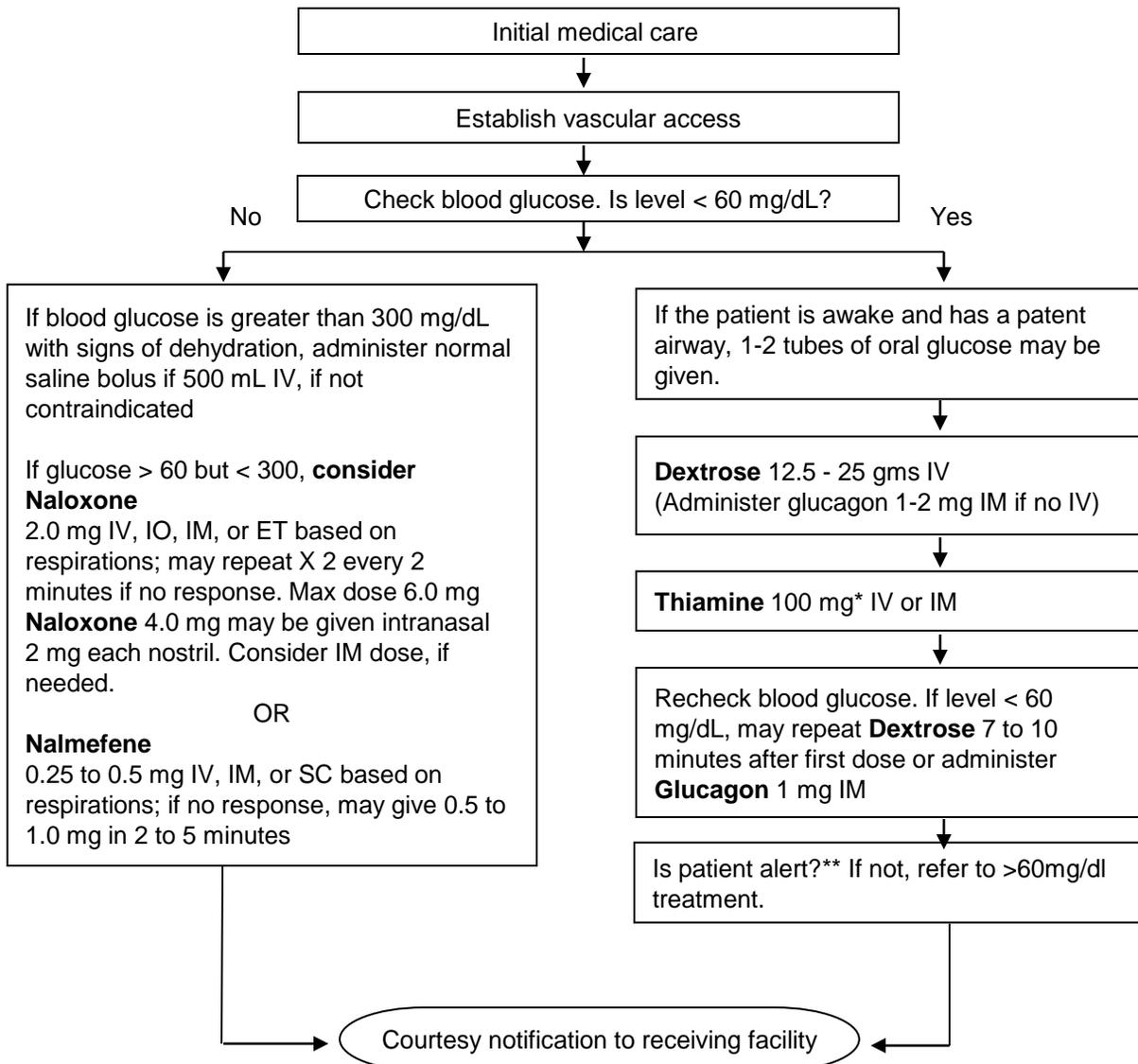
Mild Distress: Itching, isolated urticaria, nausea, no respiratory distress
 Severe Distress: Stridor, bronchospasm, severe abdominal pain, respiratory distress, tachycardia, shock, generalized urticaria, edema of lips, tongue or face (angioedema)

Respiratory Distress Adult (≥ 15 y/o)



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.



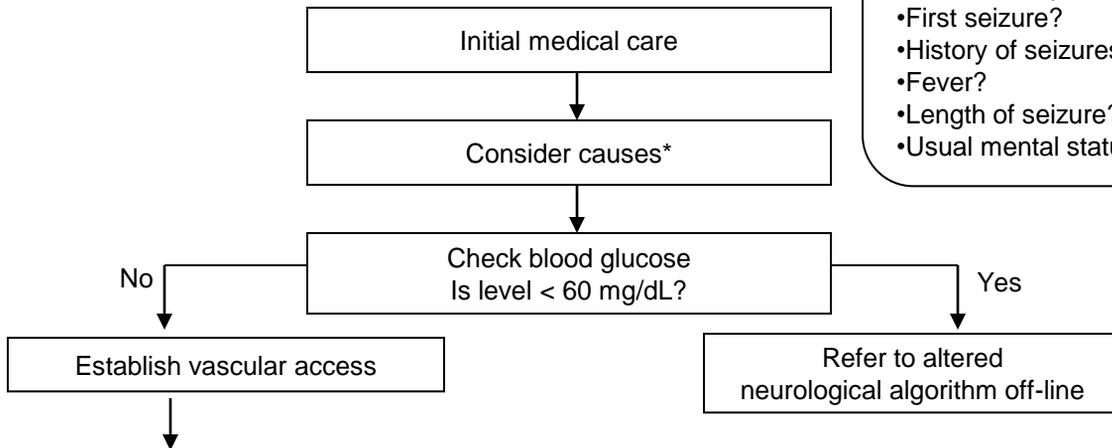
*If no history of alcoholism or malnourishment, thiamine may be withheld.

**If patient is refusing transport, remain on-scene to ensure that patient eats. Do not release patient unless blood sugar > 100. Refusal requires a patch (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?



****Lorazepam (Ativan)**

IV/IM: 2-4 mg. May repeat once in 10-15 minutes, if needed

Or

****Midazolam (Versed) FIRST CHOICE**

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 20 mg

IM: 5 mg up to 20 mg; 0.2 mg/kg (up to 20 mg) IM if no IV access

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

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).

Courtesy notification to receiving facility

*Consider underlying causes such as stroke, eclampsia, or drug use. Use appropriate algorithm.

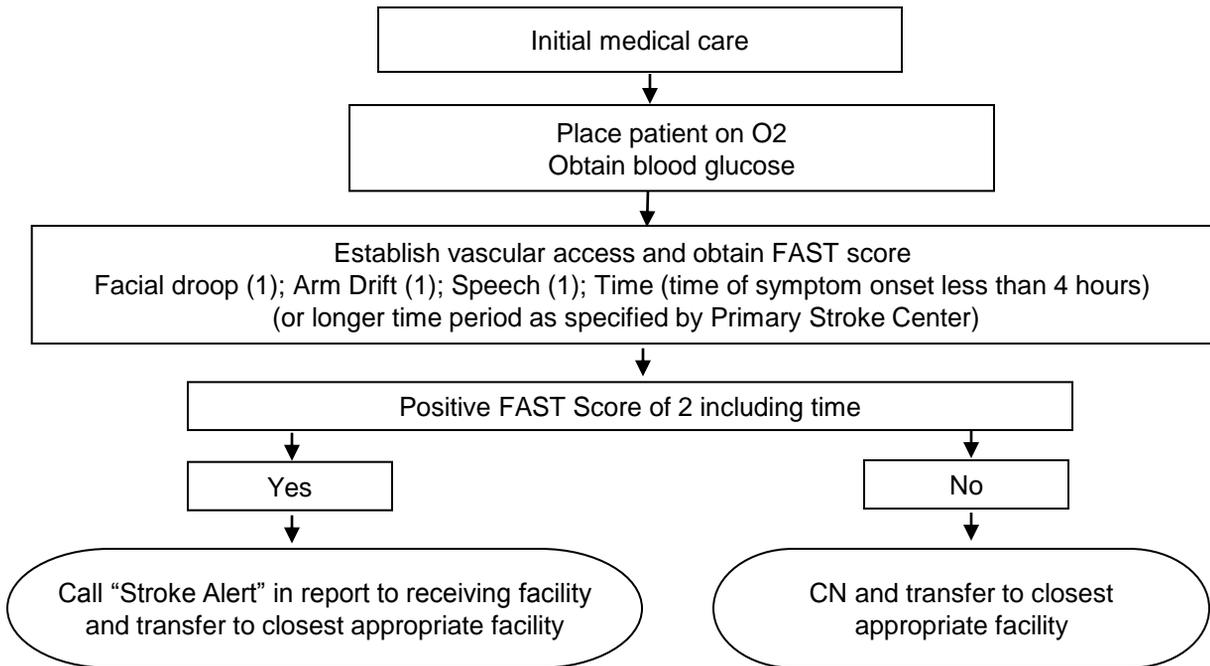
**Lorazepam, Midazolam, and Diazepam administration applies to seizures that last > 5 minutes, more than two seizures in one hour, or status epilepticus.

Notes:

1. Females in their third trimester of pregnancy that are seizing should be assumed to have eclampsia.
2. Benzodiazepines administered IV has been associated with respiratory depression and respiratory arrest, especially when used concomitantly with opioid analgesics for conscious sedation or when rapidly administered. For IM administration, inject deep into large muscle mass.

Stroke

Adult (≥ 15 y/o)



Plan: During their patch, 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 patch, 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 4 hours (or longer time period as specified by Primary Stroke Center).

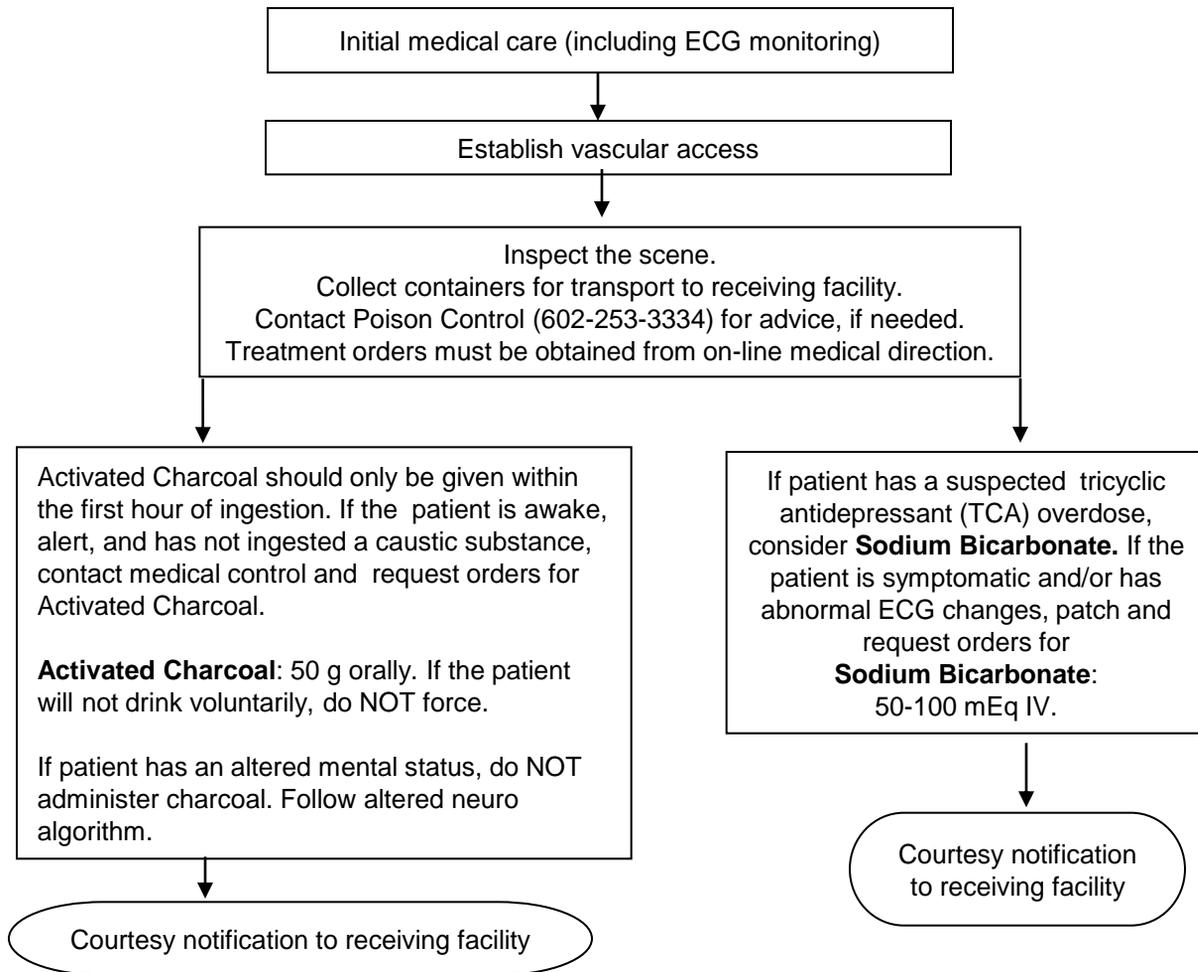
Non-candidates for Stroke Alert: Patients with complaint exclusively of generalized weakness, dizziness, syncope, loss of consciousness/coma, a fall, seizure, headache, head trauma/injury, neurological complaints of greater than 4 hours duration as determined from last time patient known to be without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

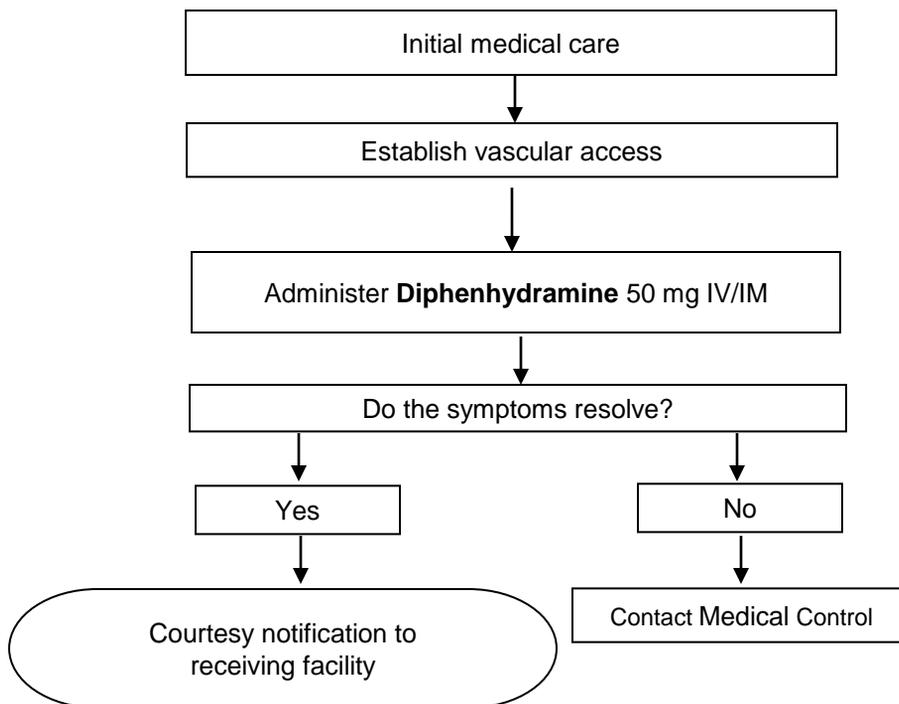
- Type of ingestion (What, when, how much.) Bring the substance ingested including packaging/pills to receiving center.
- Past history (medications, suicide attempts)
- Action taken by bystanders (induced emesis? "Antidote" given?)

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)



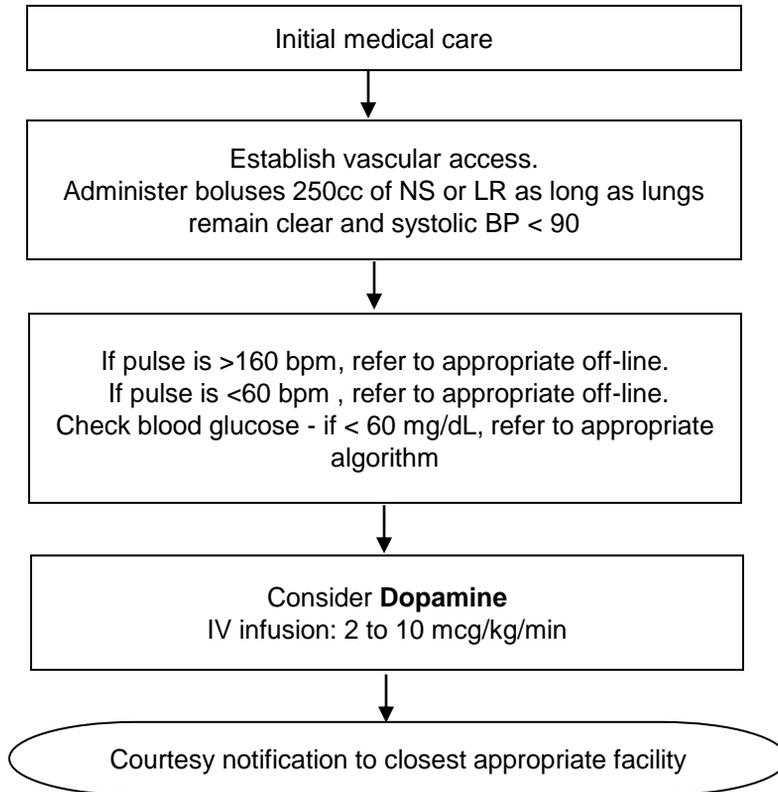
Dystonia is a neurological movement disorder characterized by involuntary muscle contractions, which force certain parts of the body into abnormal, sometimes painful, movements or postures. Dystonia can affect any part of the body including the arms and legs, trunk, neck, eyelids, face, or vocal cords.

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®)

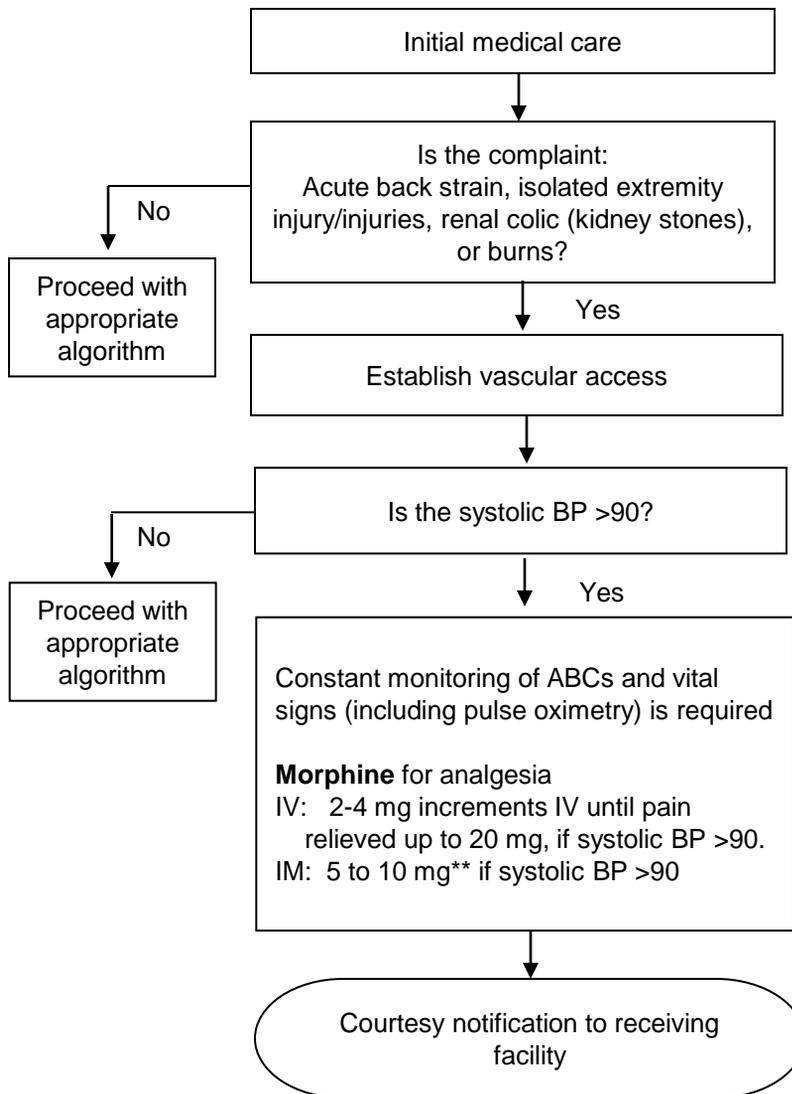
Shock/Hypotension Adult (≥ 15 y/o)



All patients with a syncopal episode or near-syncopal episode should be transported to the hospital via ambulance. Refusal requires a 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

Lorazepam (Ativan)

IV/IM: 2-4 mg. May repeat once in 10-15 minutes, if needed

Or

Midazolam (Versed) FIRST CHOICE

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: 2-5 mg up to 20 mg; 0.2 mg/kg (up to 20 mg) IM if no IV access

Age > 60: Reduce dose by half

Or

Diazepam (Valium)

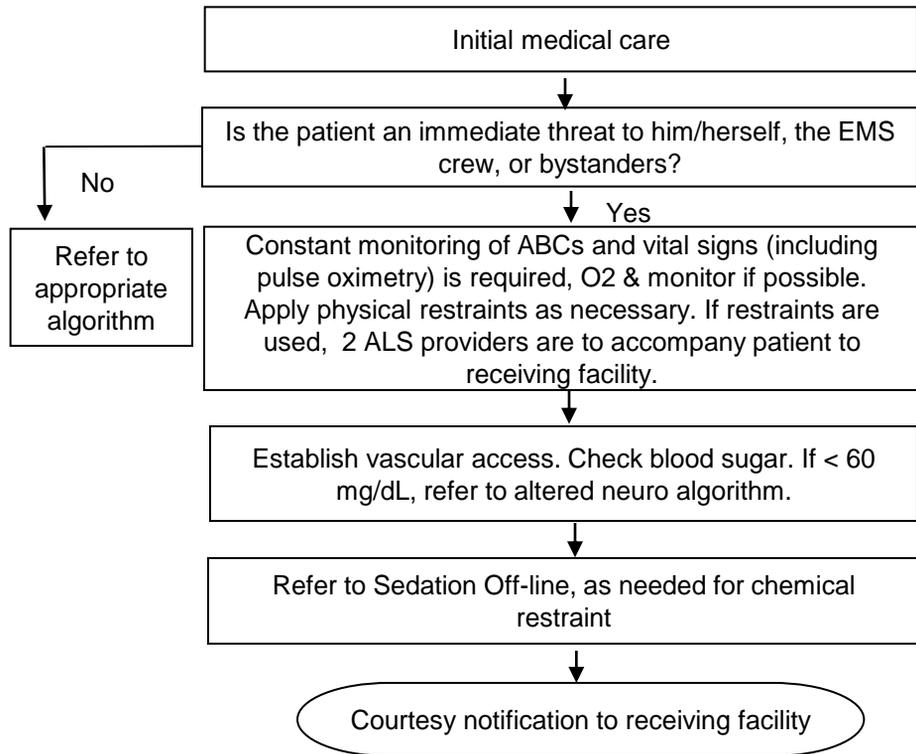
IV: 5 -10 mg in 2 mg increments no faster than 2 mg/min

Violent /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:

Benzodiazepines administered IV has been associated with respiratory depression and respiratory arrest, especially when used concomitantly with opioid analgesics for conscious sedation or when rapidly administered.



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.

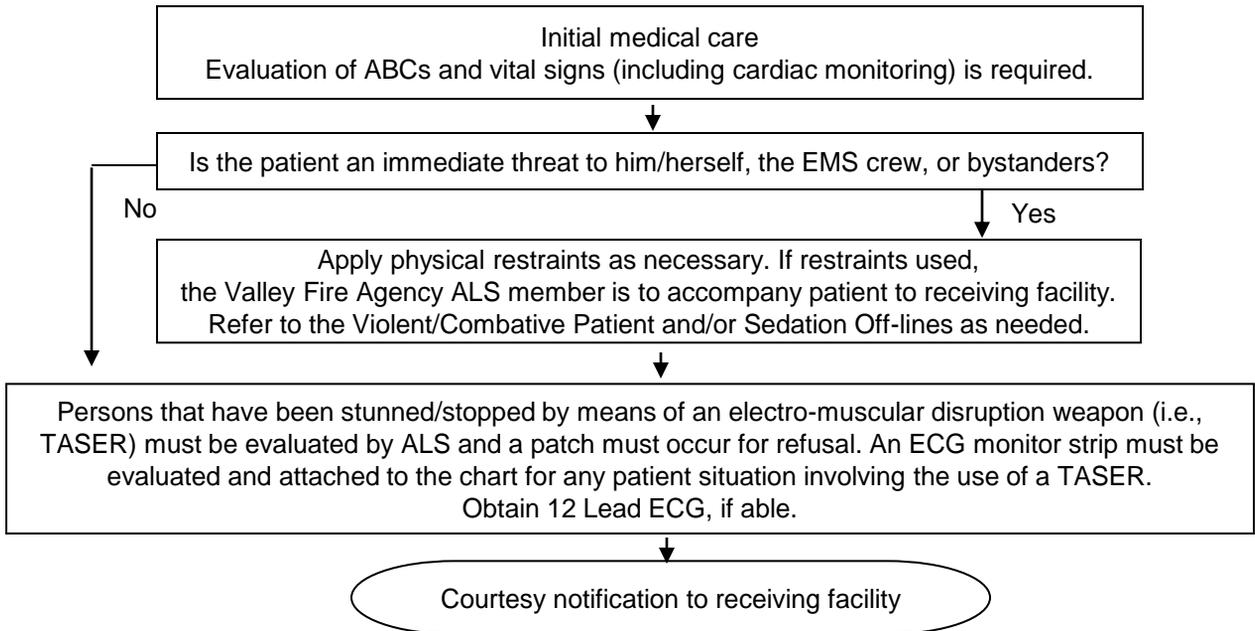
Type of Restraint - 1) Handcuffs may only be used as restraint devices when a law enforcement officer accompanies the patient to the hospital. A patient that is in police custody will require a handcuff key inside the ambulance during transport. The paramedic should have immediate access to keys needed 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 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

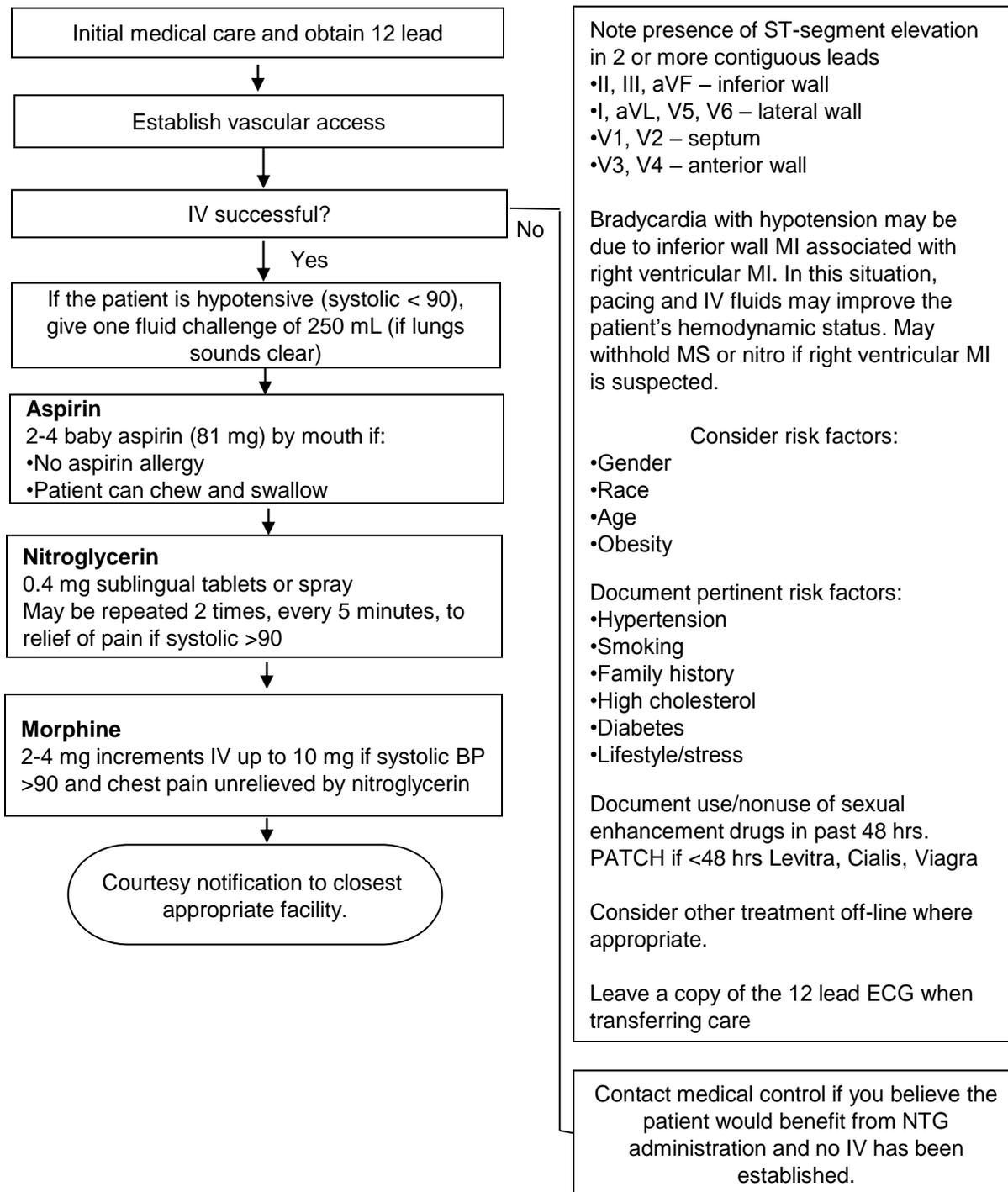
TASER Patients



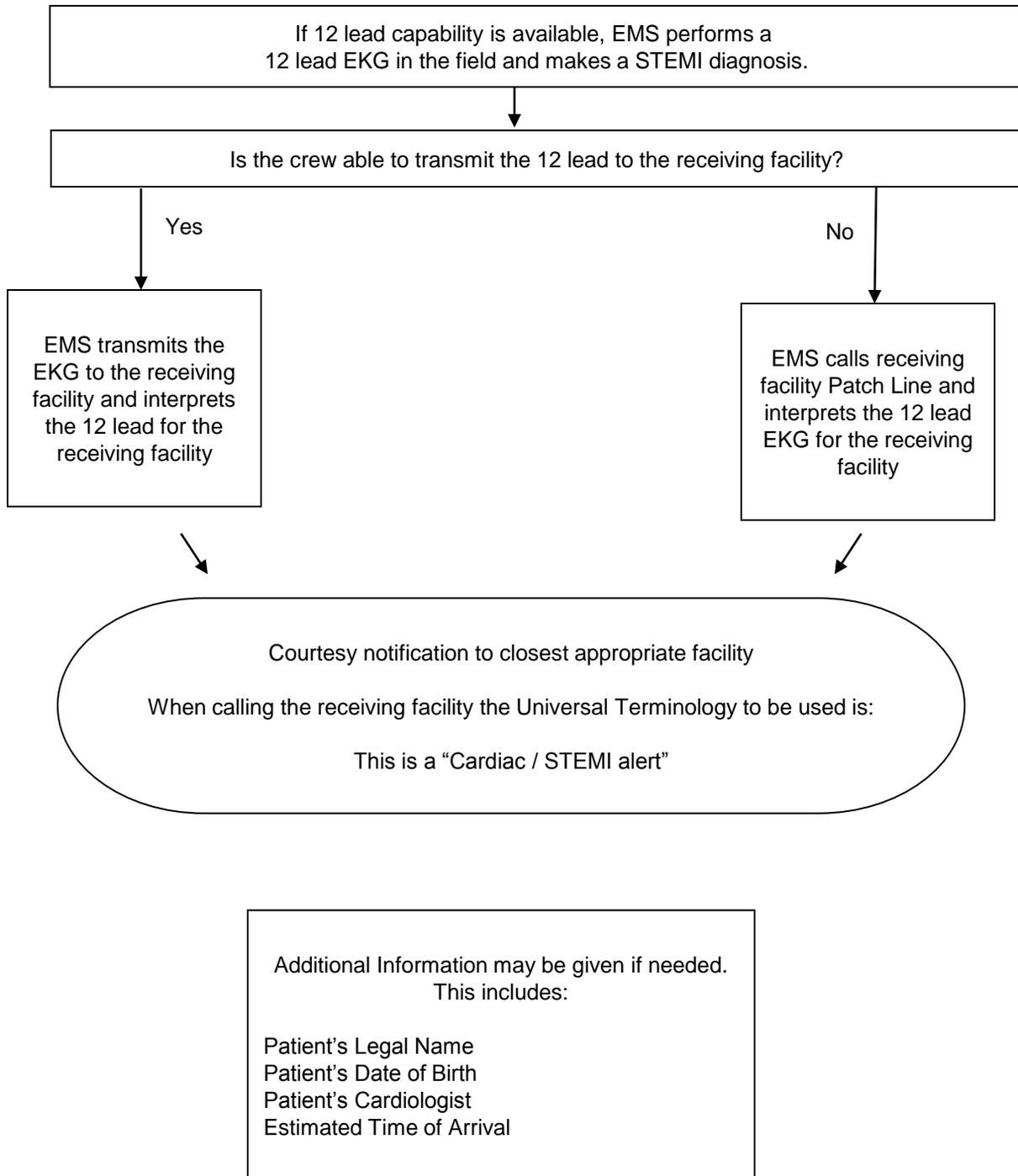
1. The TASER probes should not be removed by EMS providers unless they interfere with the safe transportation of the patient.
2. The patient should be transported to the most appropriate hospital.
3. When safe to do so, patients should be immediately evaluated, with particular attention to signs and 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. If one or both of the TASER probes requires removal for safe transportation:
 - 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.
8. If the TASER may be in a dangerous 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.

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.

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

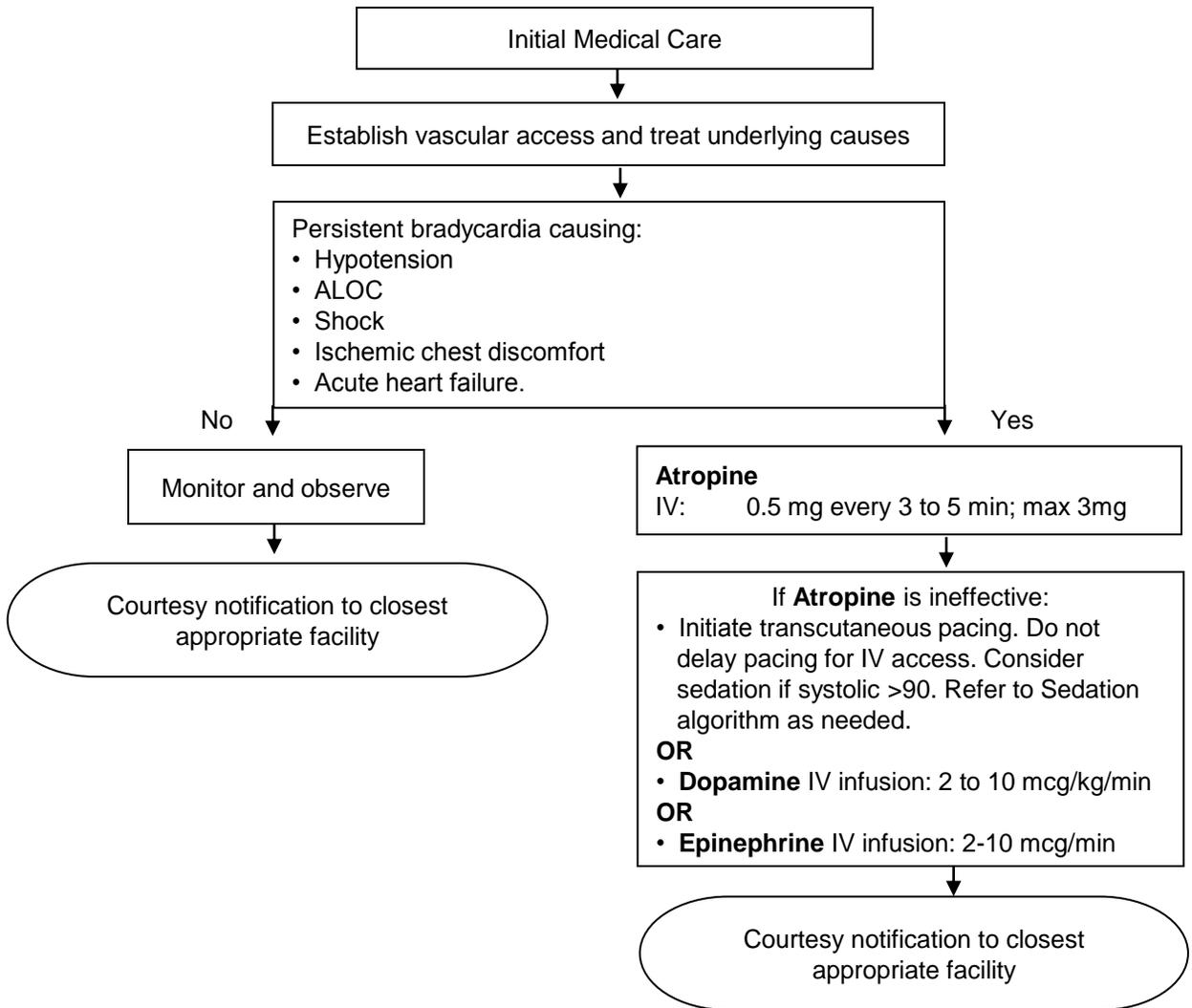


Notification Process for EMS STEMI Patients

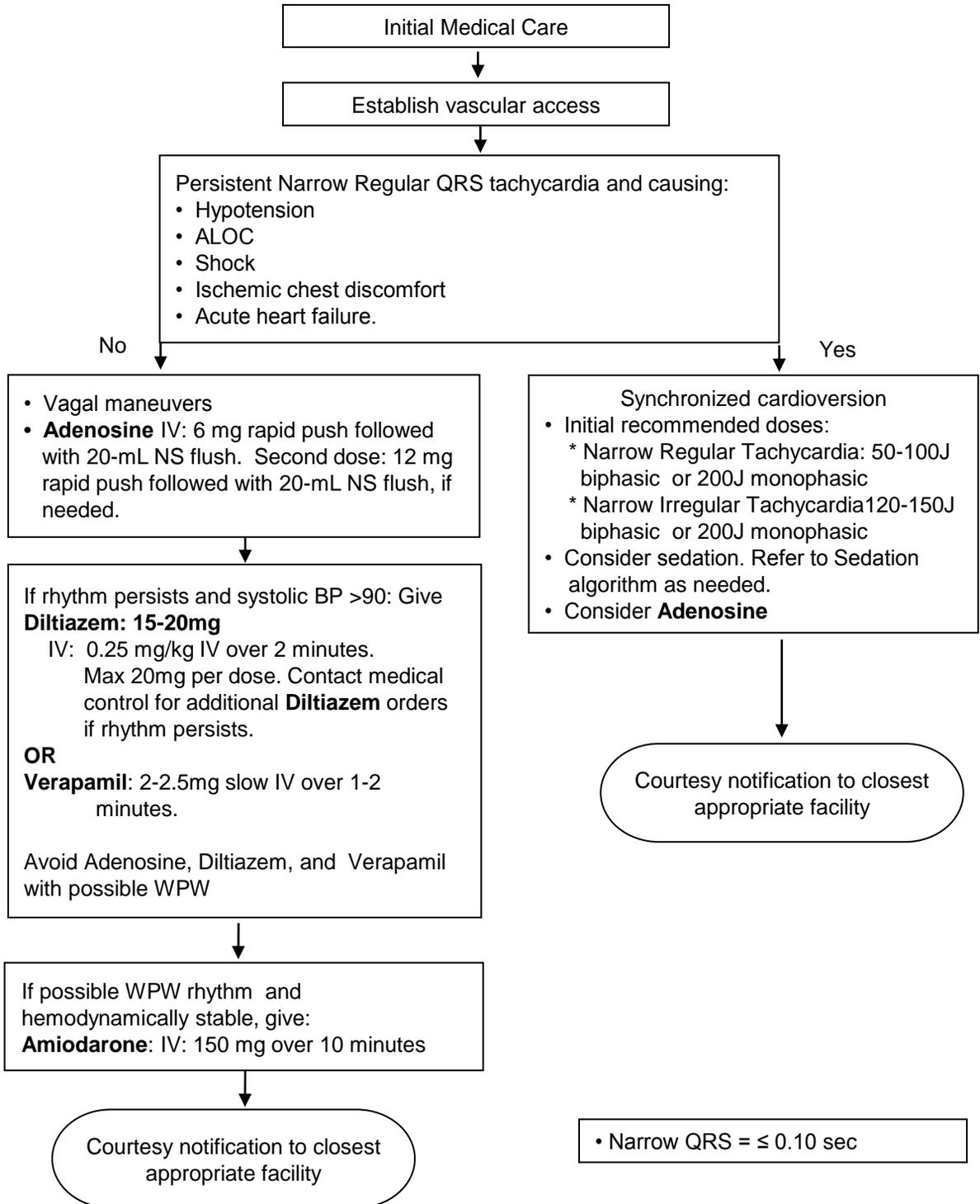


Symptomatic Bradycardia

Adult (≥ 15 y/o)

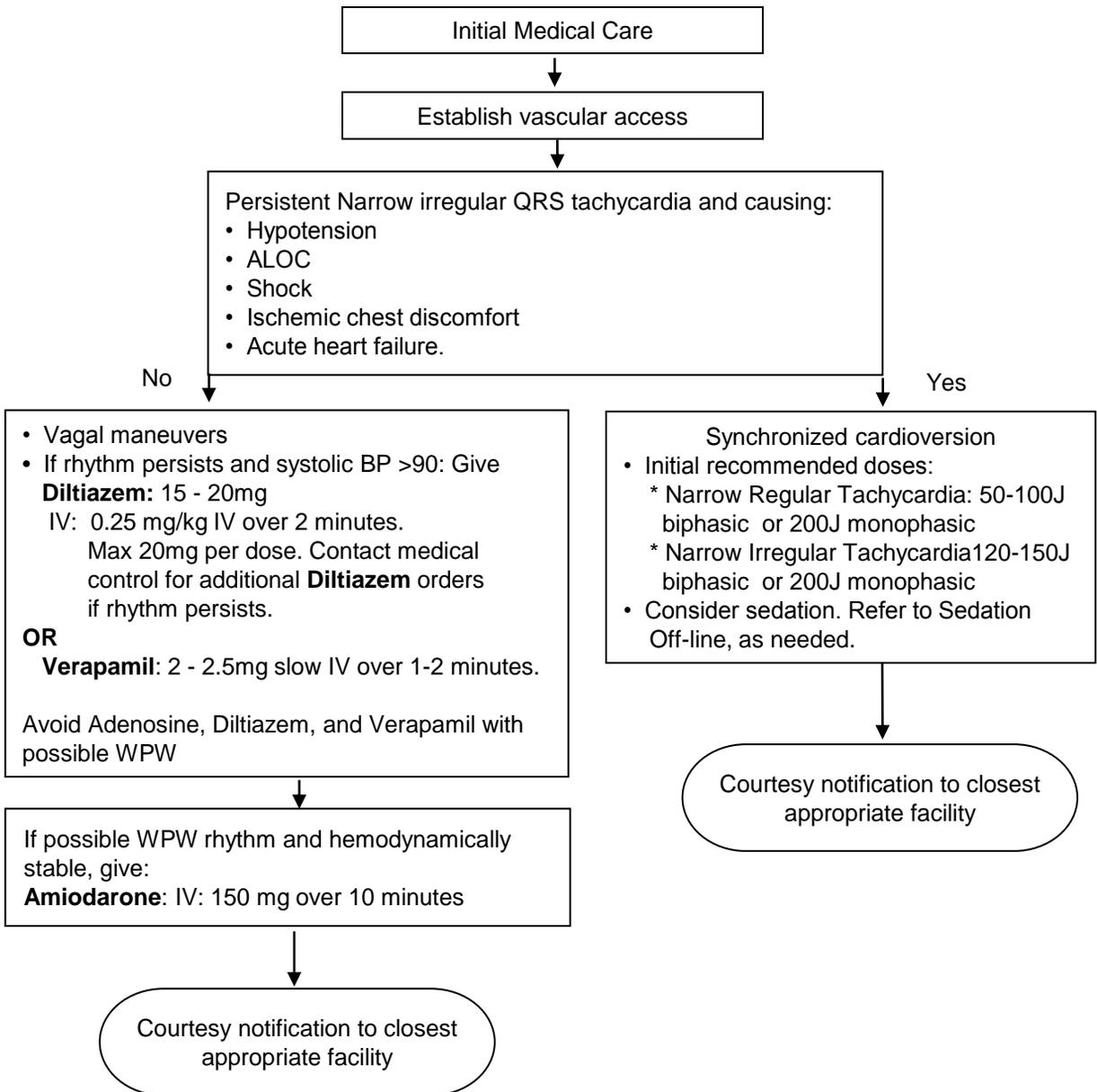


Narrow Regular QRS Tachycardia Adult (≥ 15 y/o)



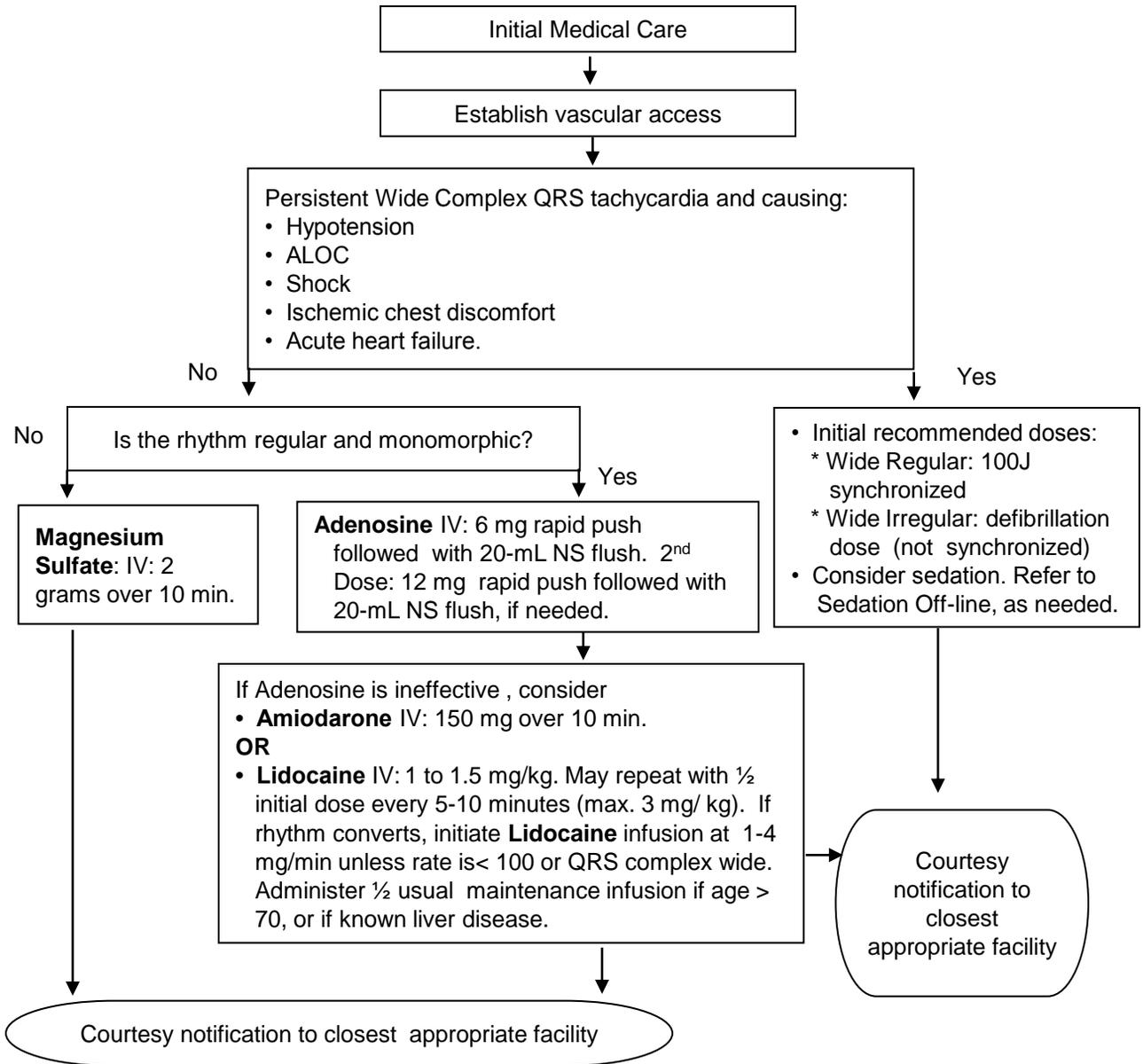
Atrial Fibrillation / Atrial Flutter

Adult (≥ 15 y/o)

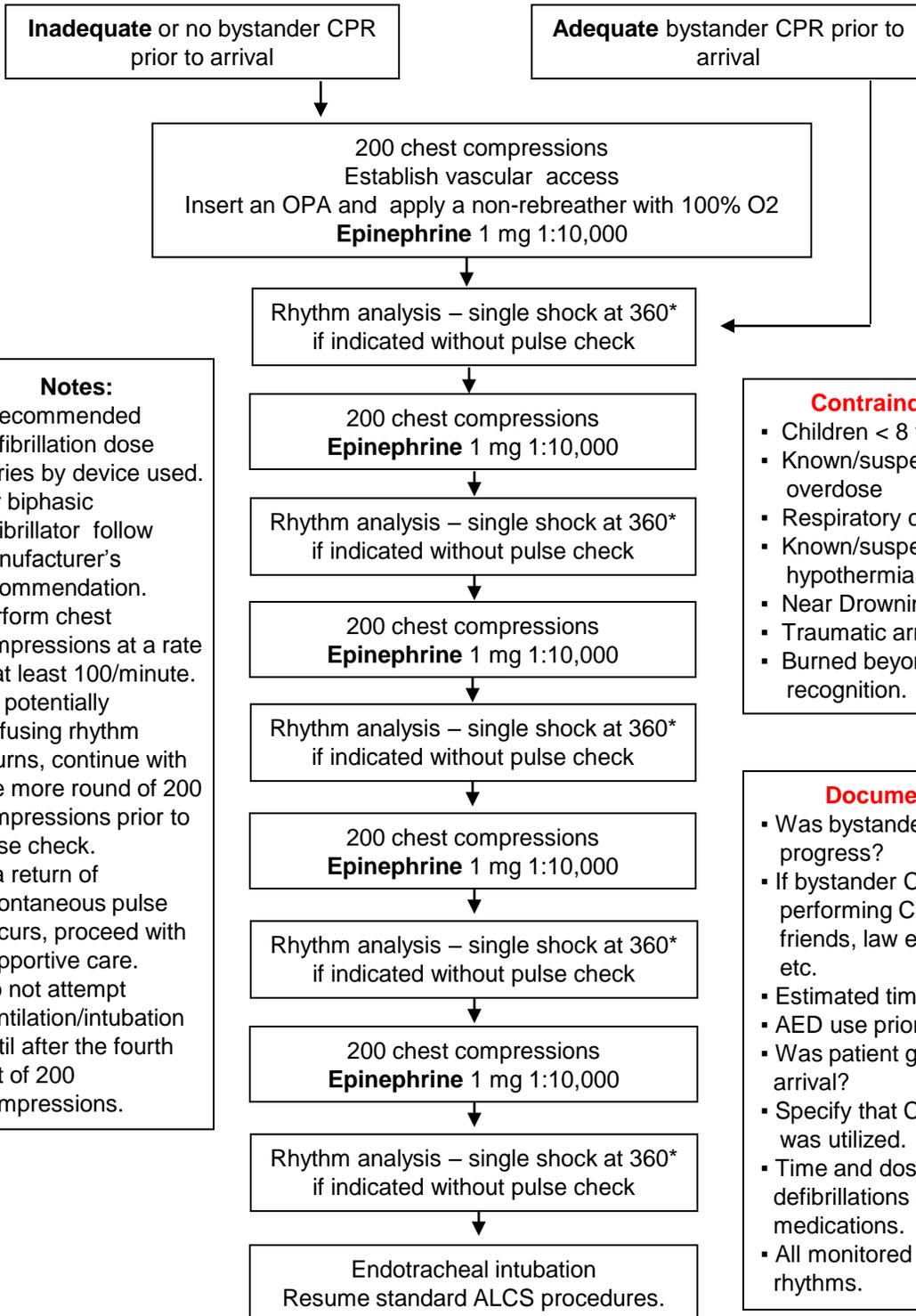


Wide Complex Tachycardia

Adult (≥ 15 y/o)



Cardiocerebral Resuscitation (CCR) Adult (>8y/o)



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, continue with one more 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.

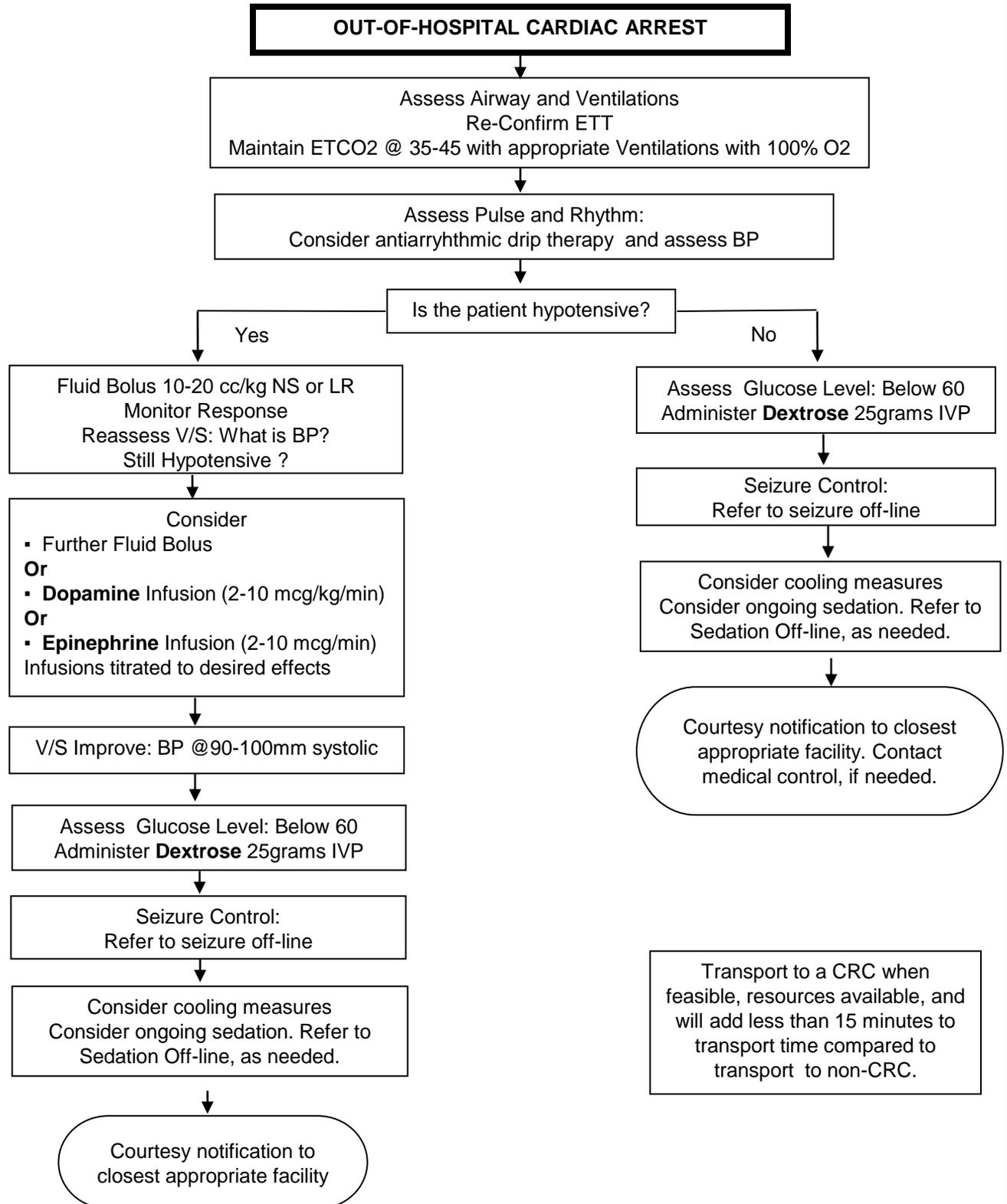
Contraindications:

- 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.

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



Cardiac Arrest Center/ Hypothermia 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

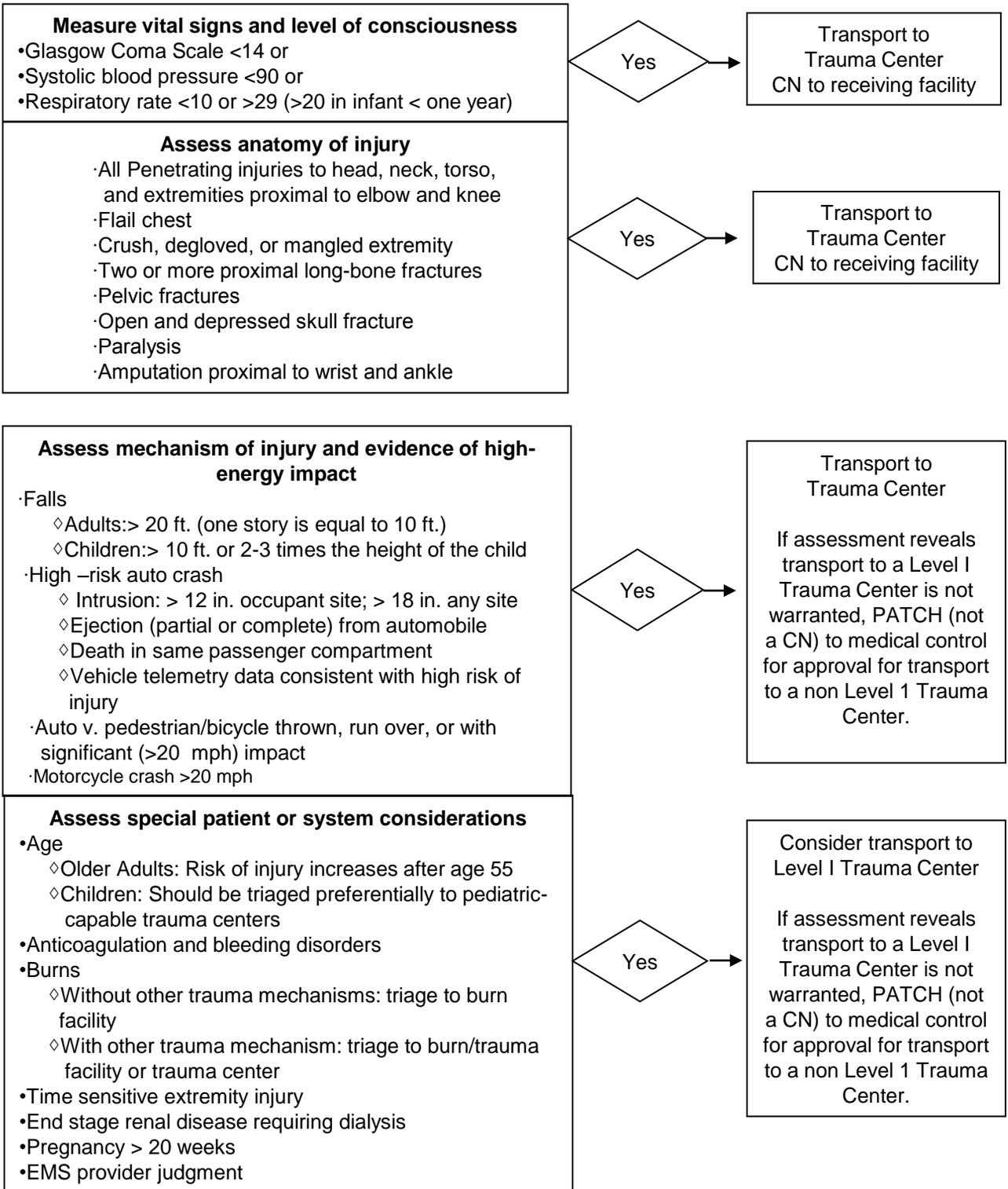
Yes

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

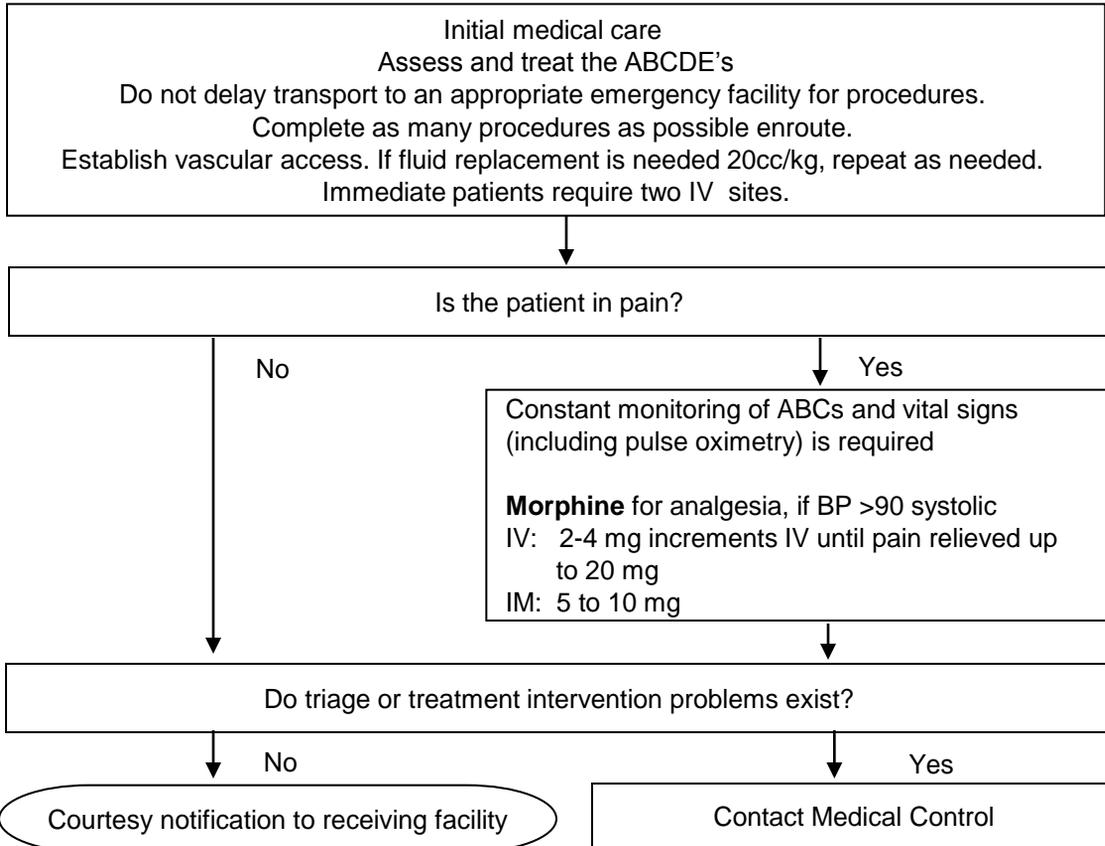
Trauma Triage



WHEN IN DOUBT, TAKE TO A TRAUMA CENTER

Trauma Management

Adult (≥ 15 y/o)



Head Injury

If patient has head injury:

- Elevate the head of the board approximately 3-4 inches (15-degrees)
- Ensure pt ventilations adequate at age appropriate rate. (Assist with BVM if necessary)
- Only those patients with clear evidence of herniation: blown pupil, and a rapidly decreasing GCS should be hyper-oxygenated at 20 breaths/min. Maintain ETCO₂ at 30.
- 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).
- 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.

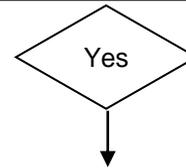
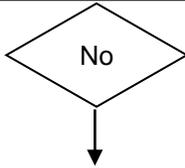
Pain

- 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.

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 term rehabilitation
11. Circumferential Burns

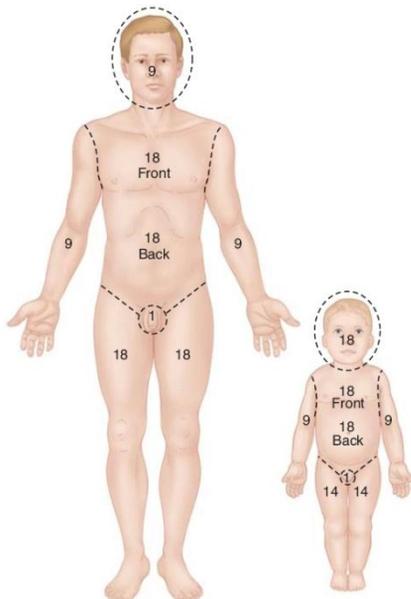


Courtesy notification to receiving facility of patient's choice.

Prepare patient for transport to burn center

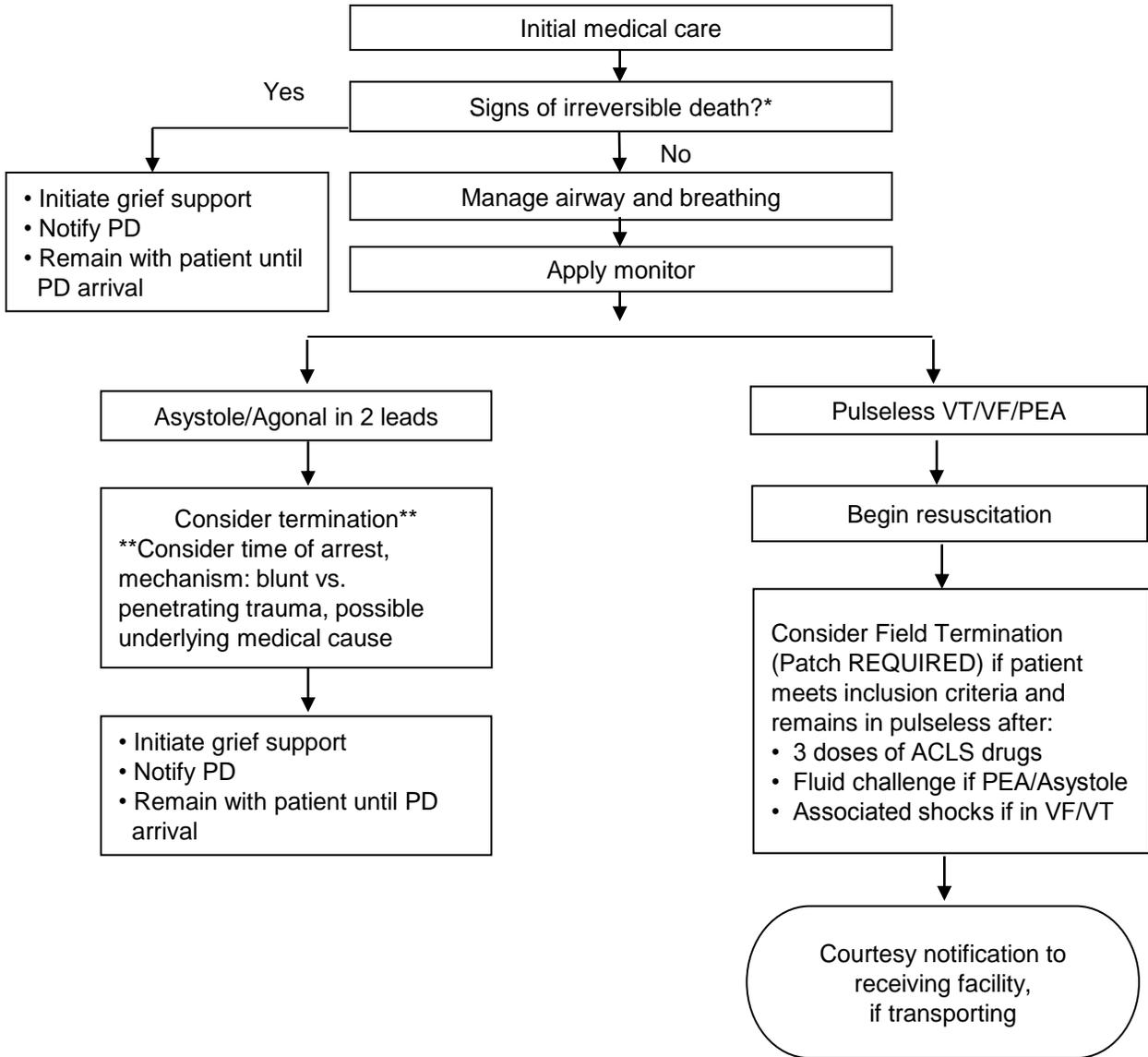
1. Estimate total body surface area (TBSA) burned using "Rule of Nines"
2. Give fluid replacement: Parkland Formula (Lactated Ringers preferred) $4\text{cc/LR} \times \text{Kg/wgt} \times \text{TBSA} = \text{fluids required for 24 hour period}$
Administer $\frac{1}{2}$ total volume in the first 8 hour.
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



Cardiopulmonary Arrest - Blunt Trauma

Adult (≥ 15 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

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

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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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)	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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

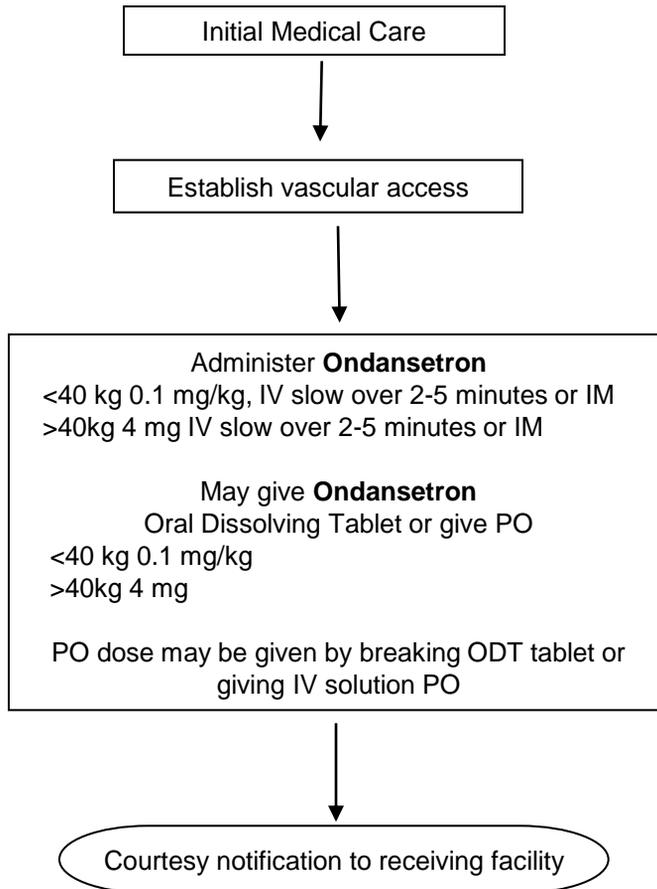
APGAR SCORE

	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

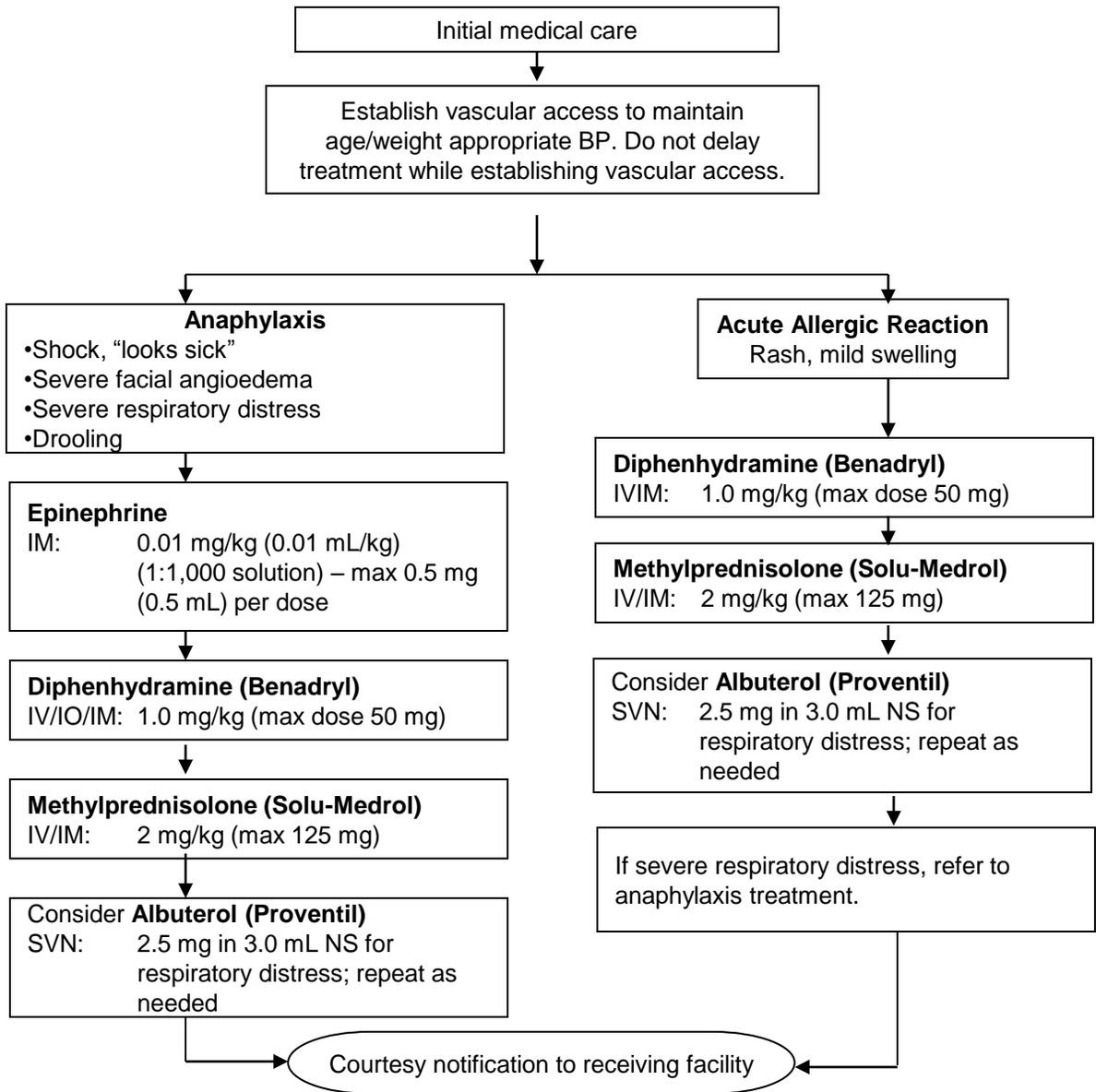
Pediatric Intubation & Vital Signs

PEDIATRIC INTUBATION AND VITAL SIGNS GUIDELINES						
AGE (YR)	WEIGHT (KG)	Lower Limit of Normal Systolic Blood Pressure	RESP	PULSE	ETT SIZE (mm)	ETT DEPTH
Premie	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 = $8 + (2 \times \text{years})$		ETT size = $\frac{16 + \text{years}}{4}$		May use cuffed or uncuffed ETT		
BP = $(2 \times \text{years}) + 70 =$ minimum systolic		ETT depth = $10 + \text{years} =$ cm at lips				
Probable sinus tachycardia				Probable SVT		
<ul style="list-style-type: none"> Compatible history consistent with known causes. 				<ul style="list-style-type: none"> Compatible history (vague, nonspecific); history of abrupt rate changes 		
<ul style="list-style-type: none"> P waves present/normal 				<ul style="list-style-type: none"> P waves absent/abnormal 		
<ul style="list-style-type: none"> Variable R-R; consistent PR 				<ul style="list-style-type: none"> HR not variable 		
<ul style="list-style-type: none"> Infants: rate usually $<220/\text{min}$ 				<ul style="list-style-type: none"> Infants: rate usually $>220/\text{min}$ 		
<ul style="list-style-type: none"> Children: rate usually $<180/\text{min}$ 				<ul style="list-style-type: none"> Children: rate usually $>180/\text{min}$ 		

Nausea / Vomiting Pediatric (≤ 14 y/o)



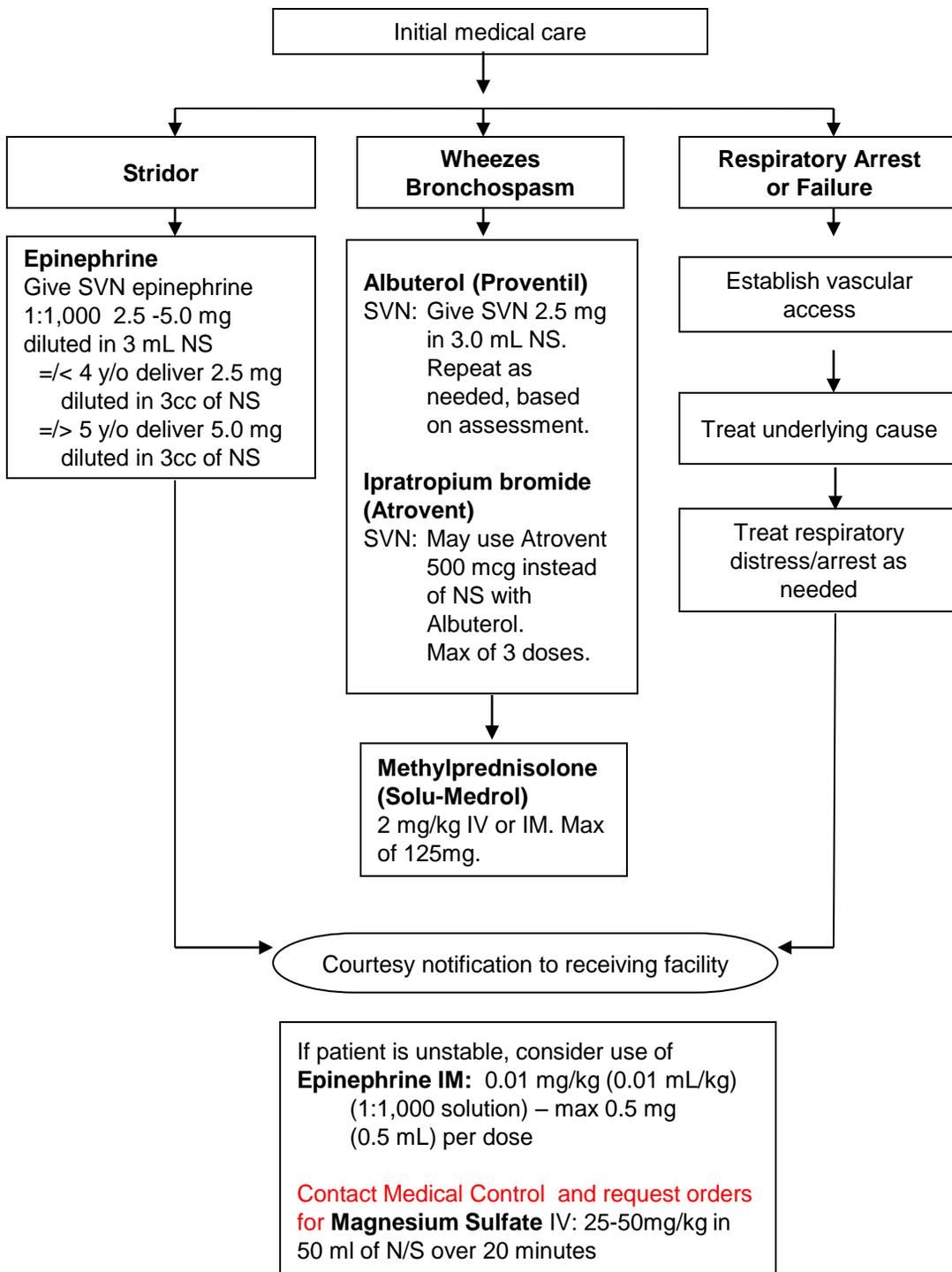
Allergic Reaction/Anaphylaxis Pediatric (≤14 y/o)



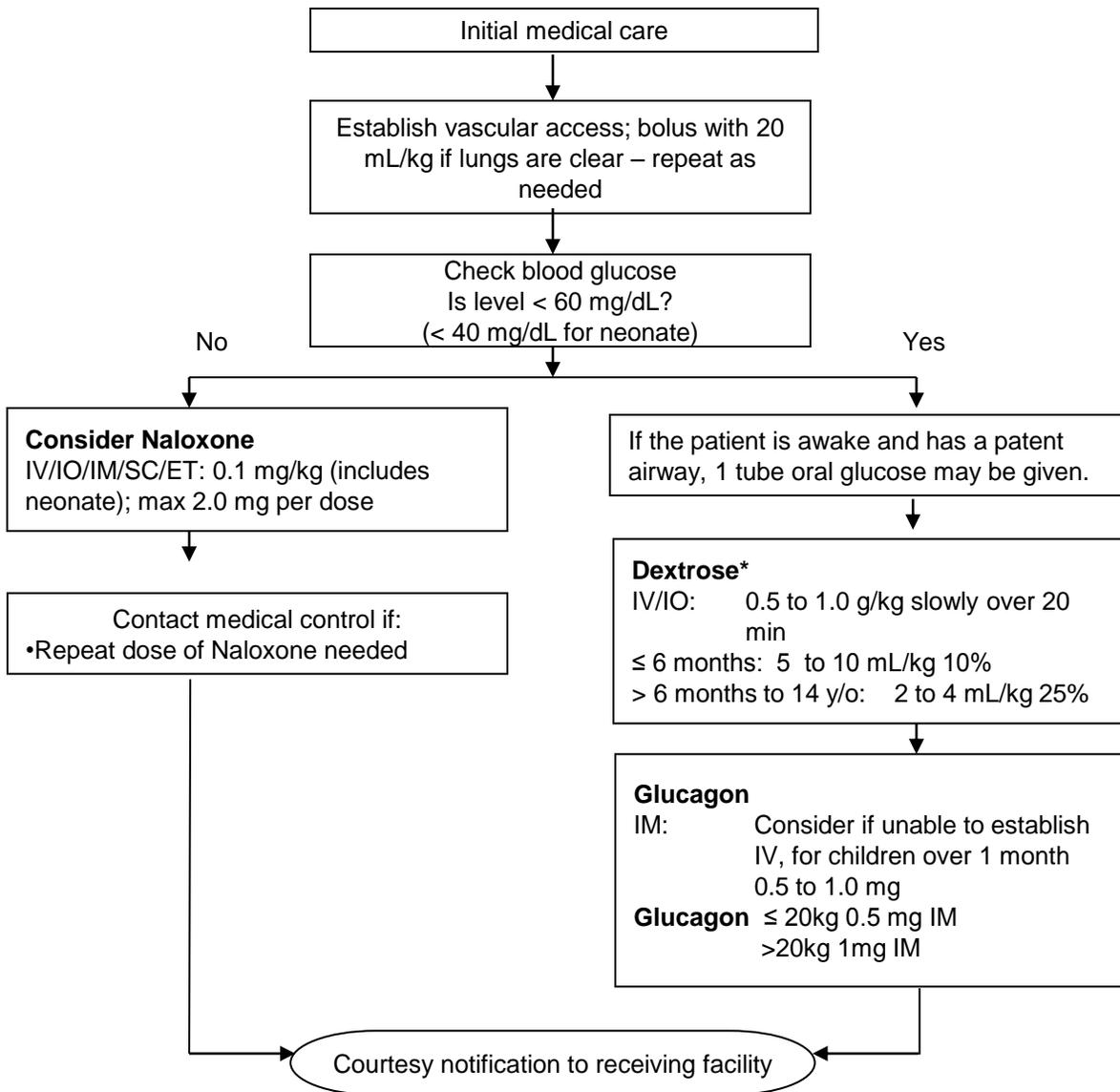
MILD DISTRESS:
Itching, isolated urticaria, nausea, no respiratory distress

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)



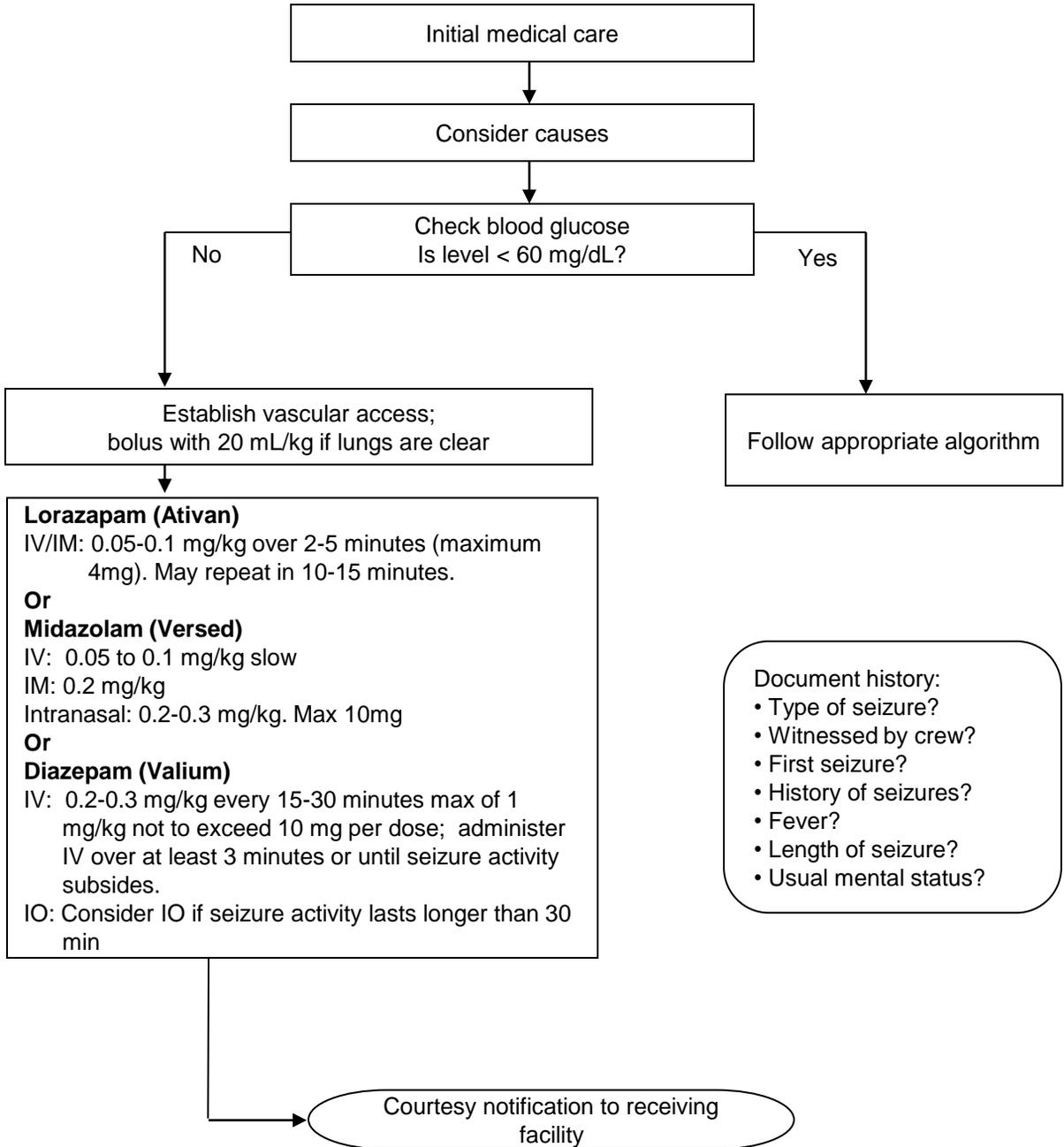
*Dextrose 10% = 4:1 dilution of dextrose 50%
 *Dextrose 25% = 1:1 dilution of dextrose 50%

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.

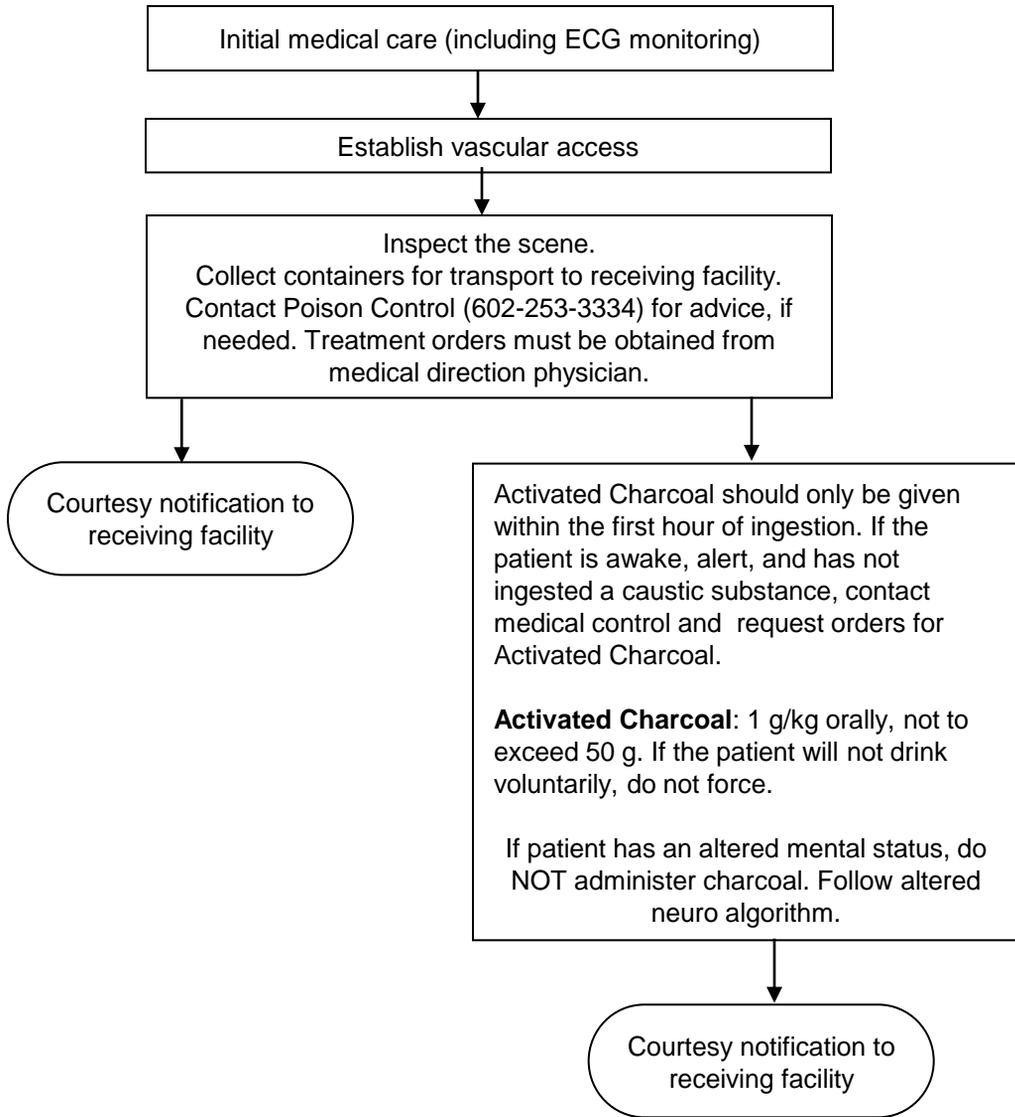
To prepare D-25, mix in 50ml syringe 25ml D-50 with 25ml NS. Produces 50ml D-25

Seizures Pediatric (≤14 y/o)

Note: Diazepam or Midazolam 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)



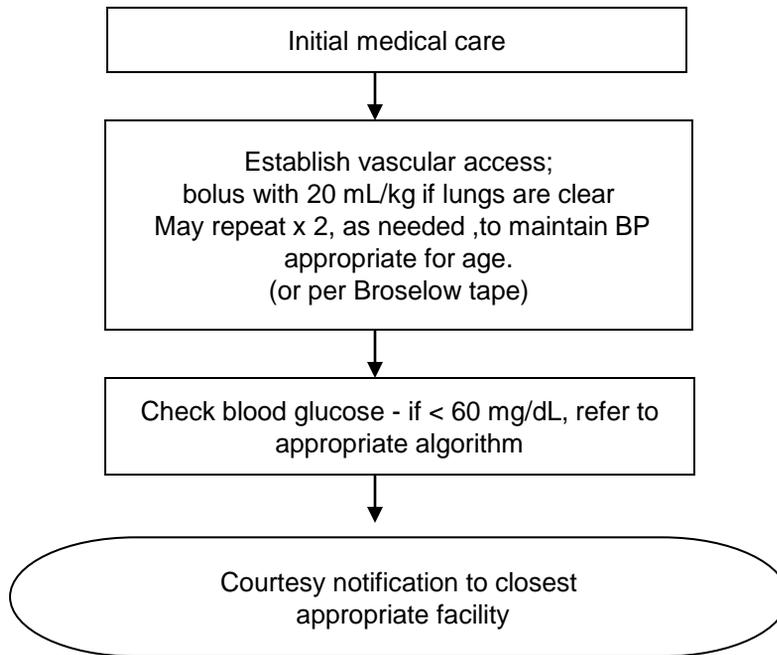
Document:

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

Notes regarding charcoal:

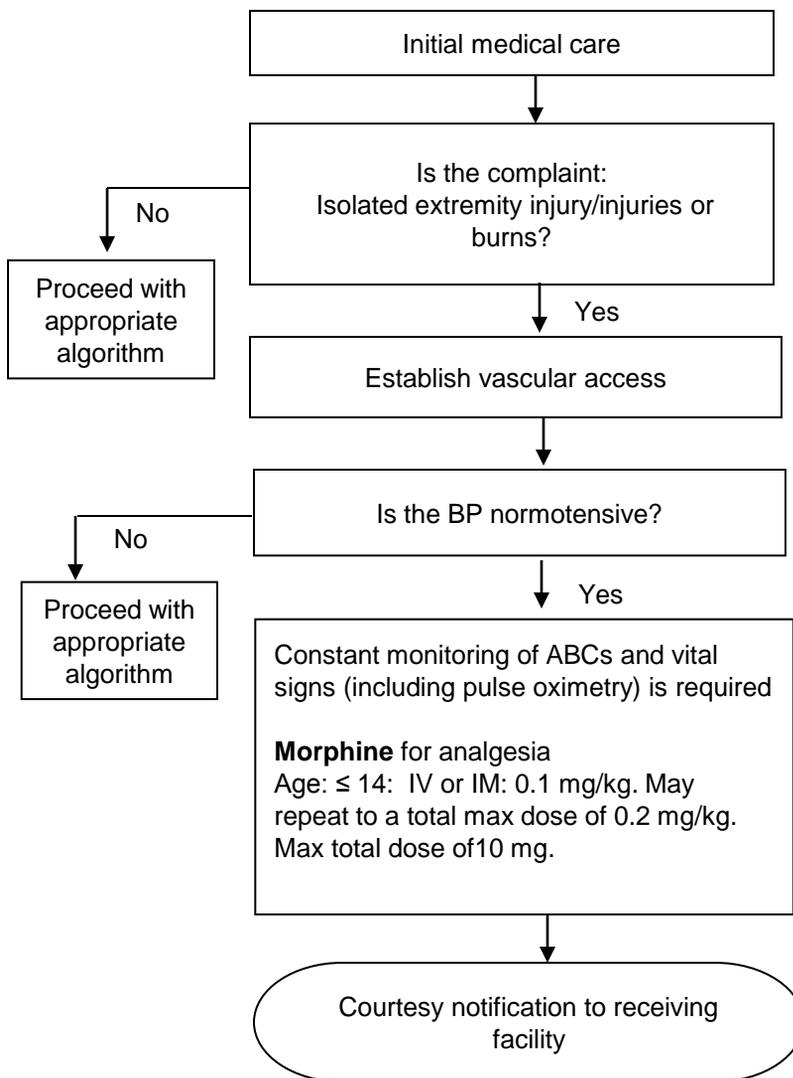
- Contraindications: Ingestion of caustics, ingestion of hydrocarbons (relative), oral administration to comatose patient, simultaneous administration of other oral medications.
- Ineffective for iron, lithium, heavy metals, and other ions.
- May reduce the effectiveness of other treatments (Mucomyst) 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

Lorazepam (Ativan)

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

Or

Midazolam (Versed) FIRST CHOICE

IV: 0.05 to 0.1 mg/kg slow IV push

IM: 0.2 mg/kg

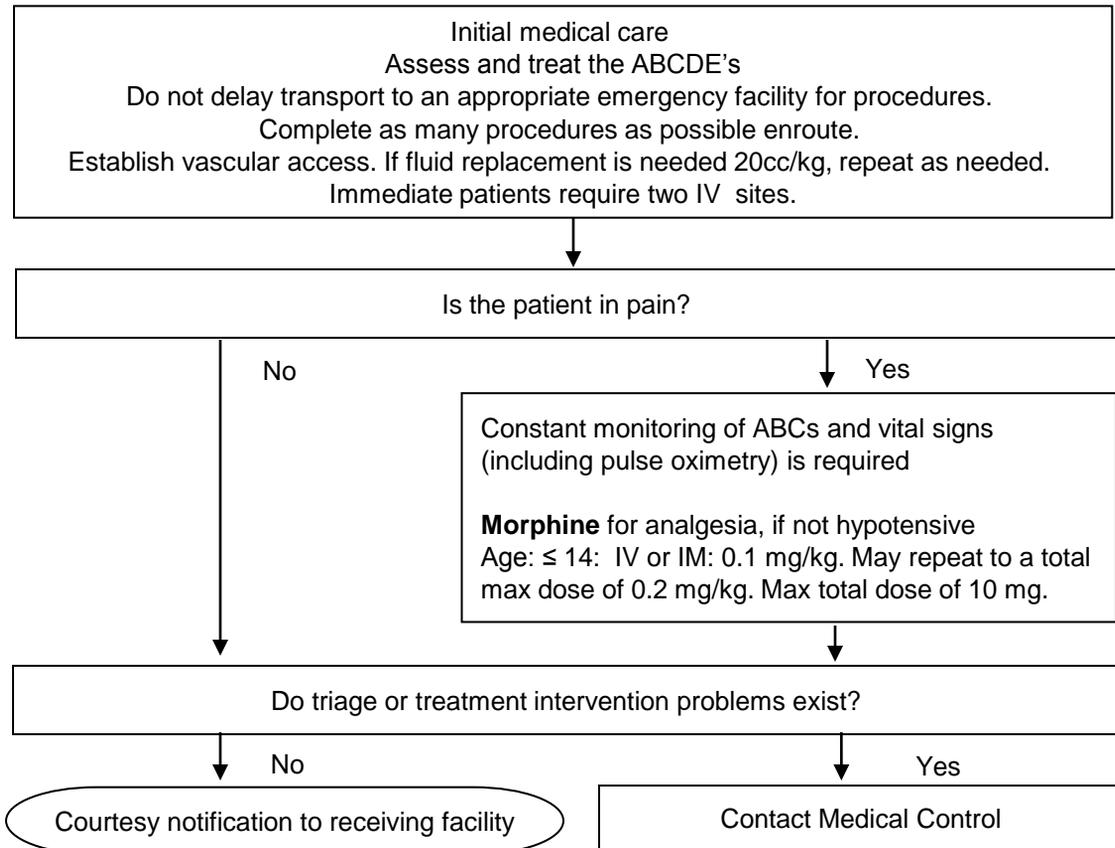
Or

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.

Trauma Management

Pediatric (≤ 14 y/o)



Head Injury

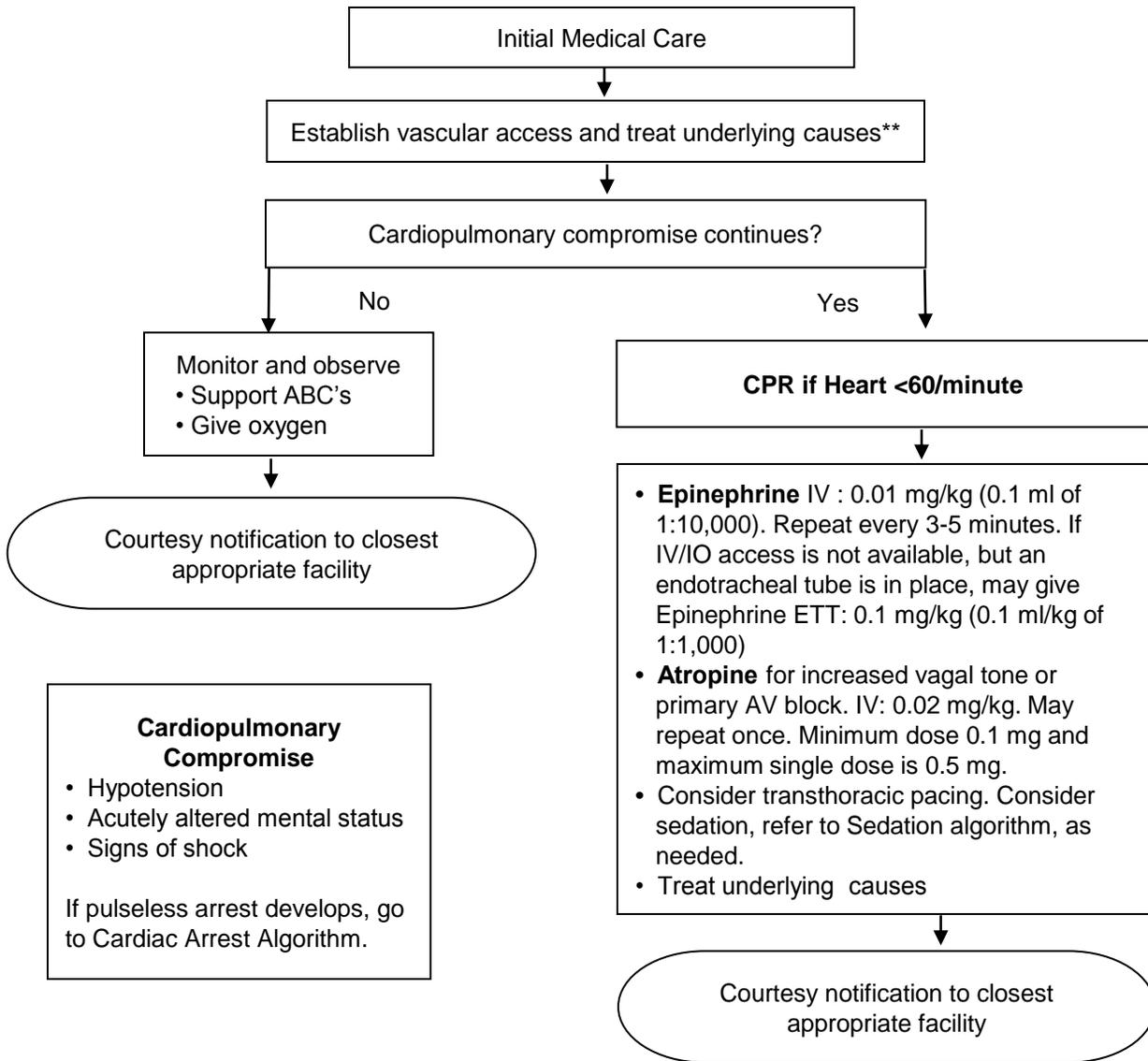
If patient has head injury:

1. Elevate the head of the board approximately 3-4 inches (15-degrees)
2. Ensure pt ventilations adequate at age appropriate rate. (Assist with BVM if necessary)
3. Only those patients with clear evidence of herniation: blown pupil, and a rapidly decreasing GCS should be hyper-oxygenated. Maintain ETCO₂ at 30.
4. 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.
5. 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.

Pain

1. Before administering meds for pain, ask the patient to quantify their pain on a 1 to 10 scale.
2. Document this information and use it as a guide to measure the effectiveness of analgesia.
3. 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.
4. Documentation must reflect rationale for IM route, if used.

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



Cardiopulmonary Compromise

- Hypotension
- Acutely altered mental status
- Signs of shock

If pulseless arrest develops, go to Cardiac Arrest Algorithm.

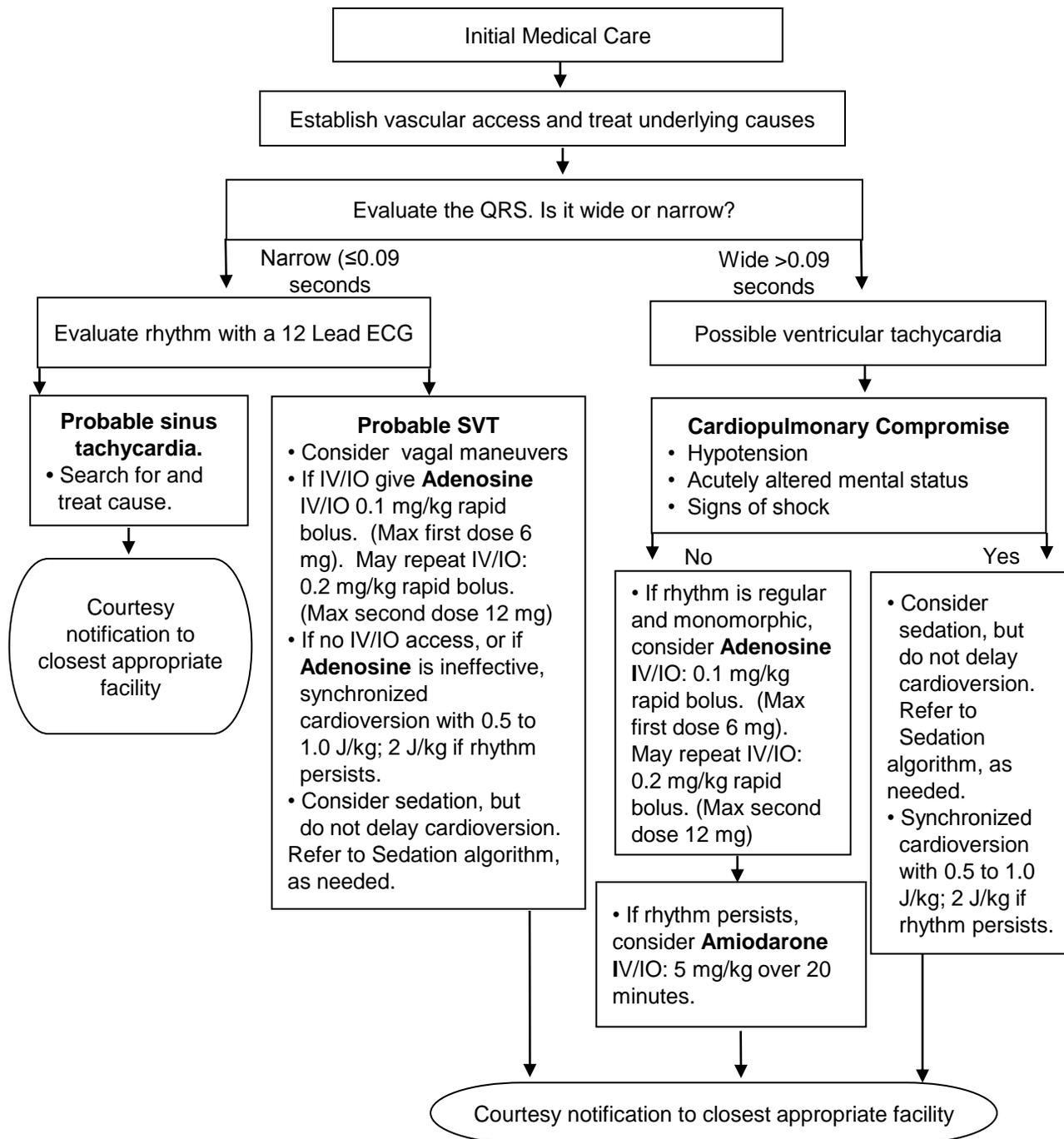
- **Epinephrine IV** : 0.01 mg/kg (0.1 ml of 1:10,000). Repeat every 3-5 minutes. If IV/IO access is not available, but an endotracheal tube is in place, may give Epinephrine ETT: 0.1 mg/kg (0.1 ml/kg of 1:1,000)
- **Atropine** for increased vagal tone or primary AV block. IV: 0.02 mg/kg. May repeat once. Minimum dose 0.1 mg and maximum single dose is 0.5 mg.
- Consider transthoracic pacing. Consider sedation, refer to Sedation algorithm, as needed.
- Treat underlying causes

- *Hypoxemia (give oxygen, support ventilation)
- *Hypovolemia (replace volume; 20mL/kg of NS)
- *Hypothermia (warming measures)
- *Hyper/hypokalemia and metabolic disorders (treatment requires patch)
- *Head Injury(give oxygen, support ventilation)
- *Heart block (consider atropine, chronotropic drugs , early pacing)
- *Heart transplant -may require pacing -Contact medical control.
- *Tamponade (volume infusion)
- *Tension pneumothorax (needle decompression)
- *Toxins/poisons/drugs (treatment requires patch)

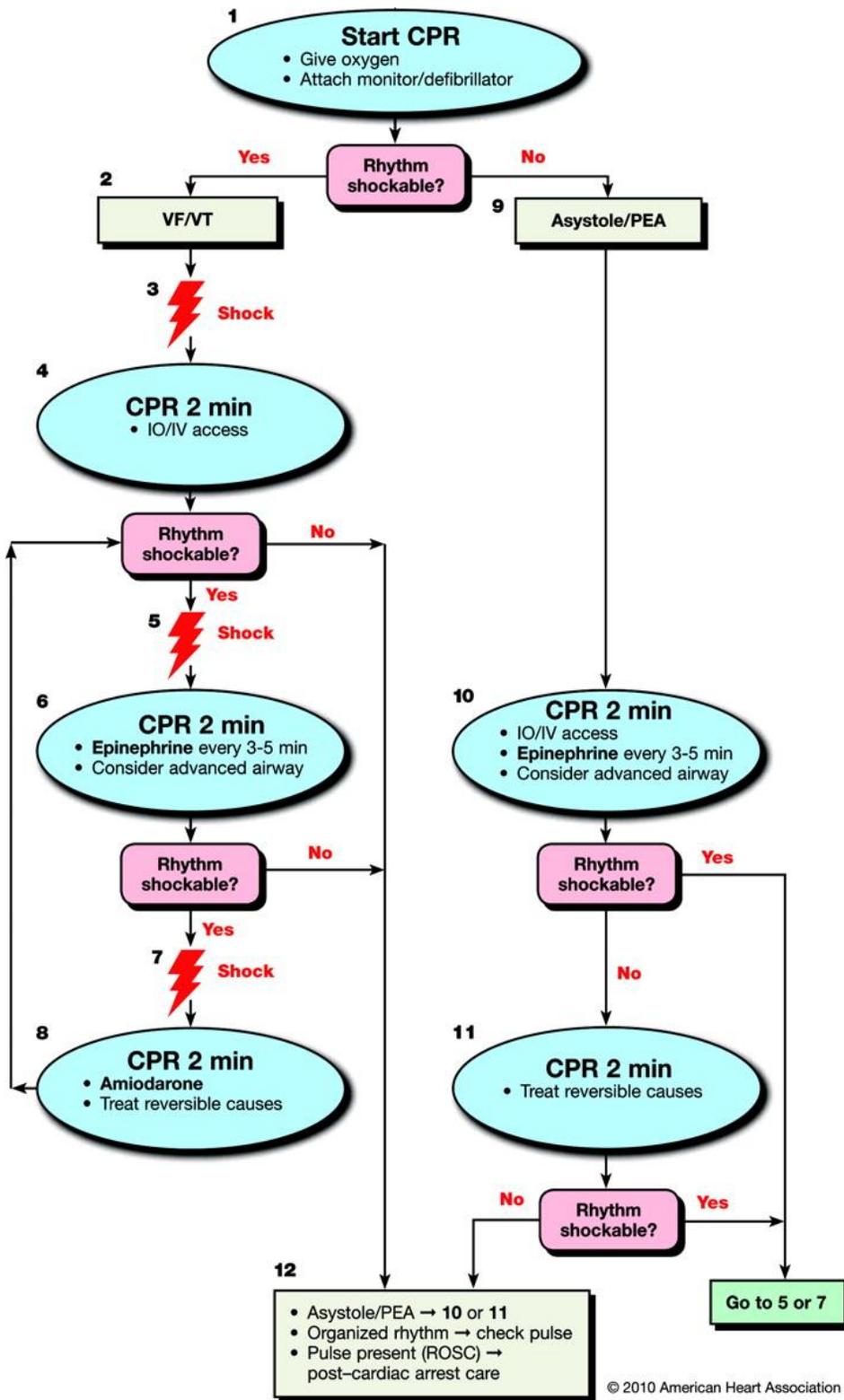
Tachycardia

Pediatric (≤ 14 y/o)

With a Pulse and Poor Perfusion



Pediatric Cardiac Arrest



CPR Quality

- Push hard ($\geq 1/3$ of anterior-posterior diameter of chest) 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, 15:2 compression-ventilation ratio
- Quantitative waveform capnography. If <10 , attempt to improve CPR quality

Shock Energy for defibrillation

- First shock 2 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 1:10,000. 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 6-8 seconds (8-10 breaths per minute)

Return of Spontaneous Circulation (ROSC)

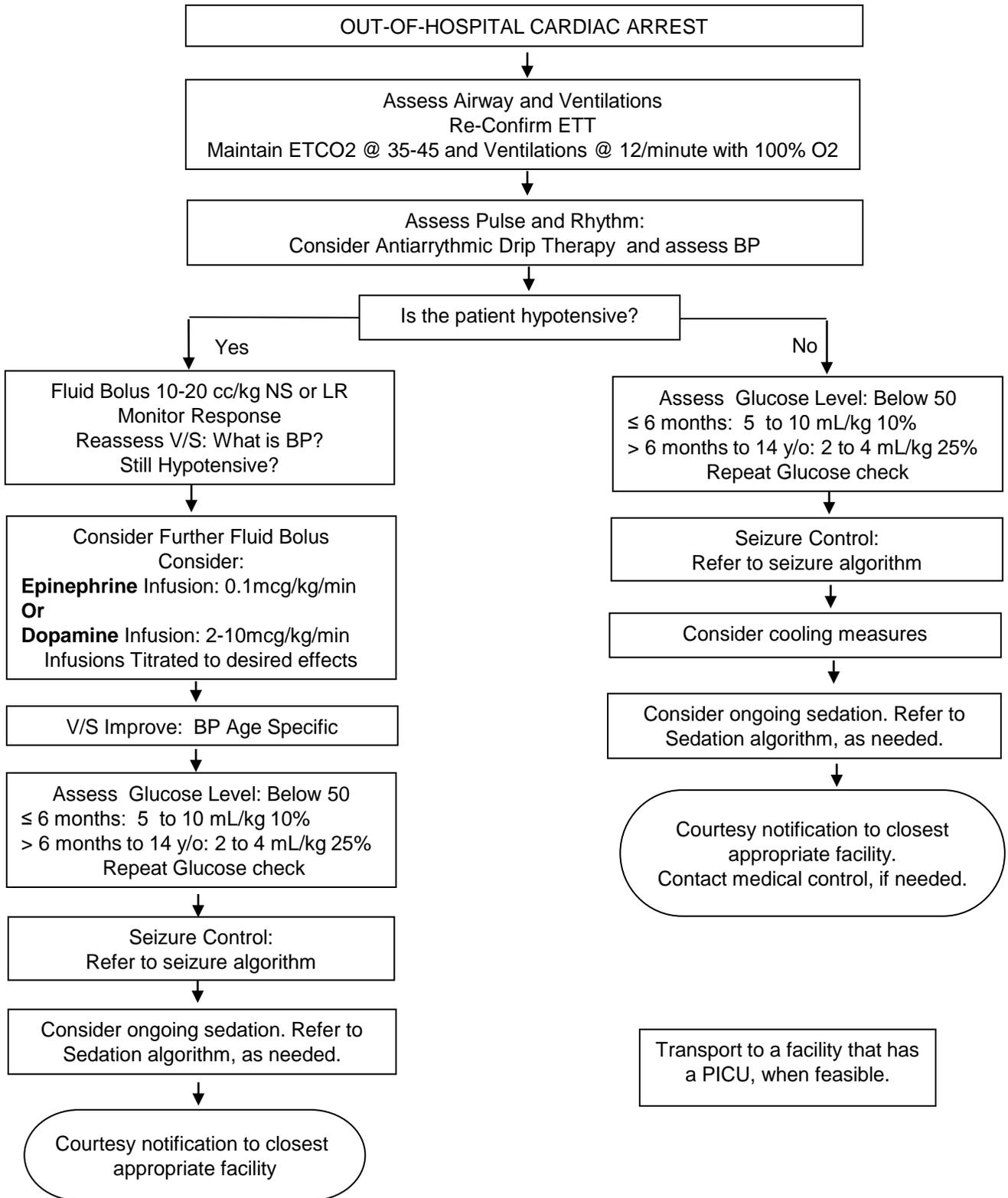
- Pulse and blood pressure

Reversible Causes

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

© 2010 American Heart Association

Post-Arrest Stabilization Pediatric (≤14 y/o)



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)

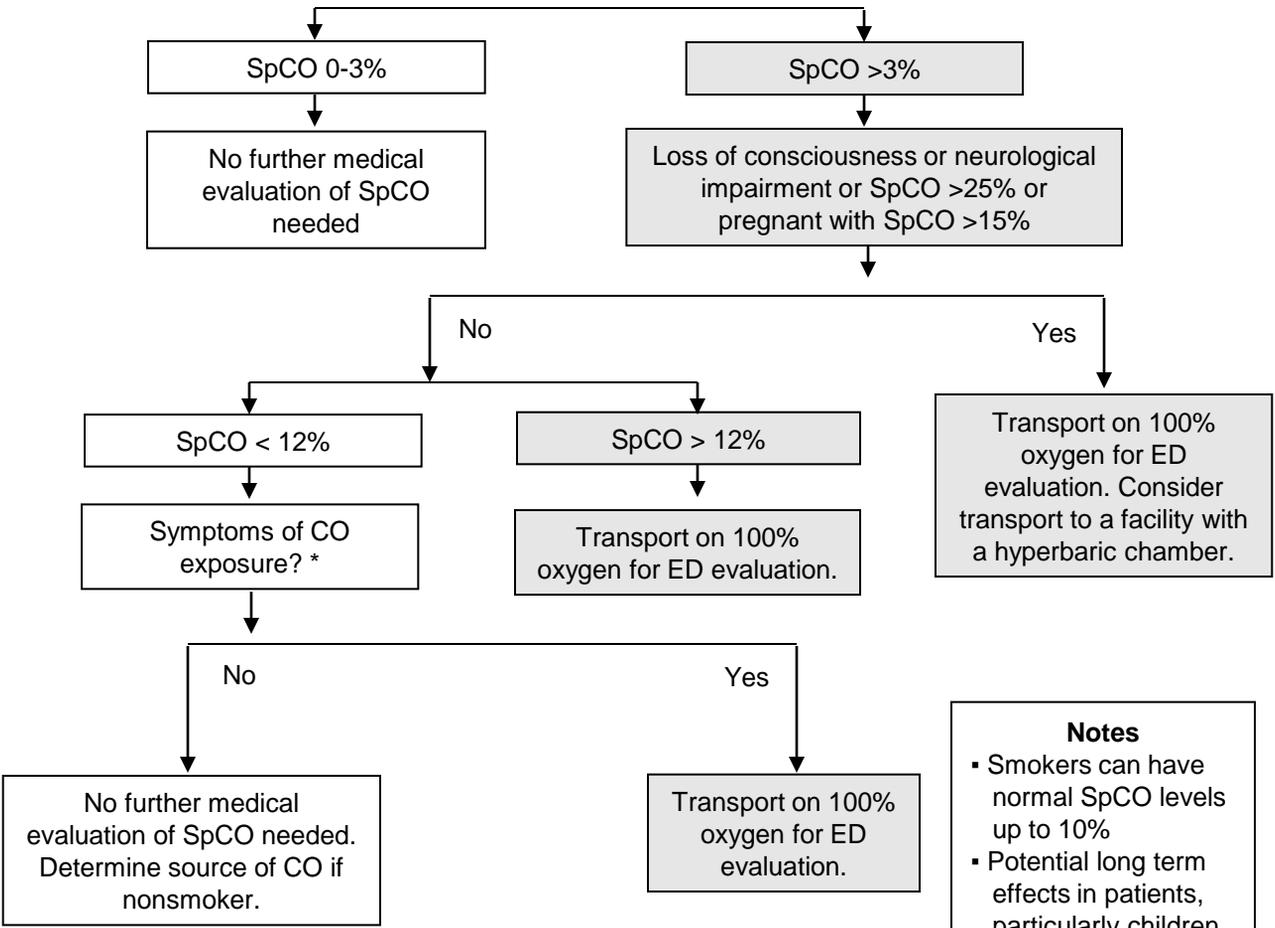
Refer to specific Guidelines for exposures to:

- 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

Carbon Monoxide Poisoning

Measure SpCO
 SpCO should be measured in firefighters during rehab, smoke inhalation patients, occupants of building with CO detectors alarm activation, or patients with symptoms suggestive of CO poisoning

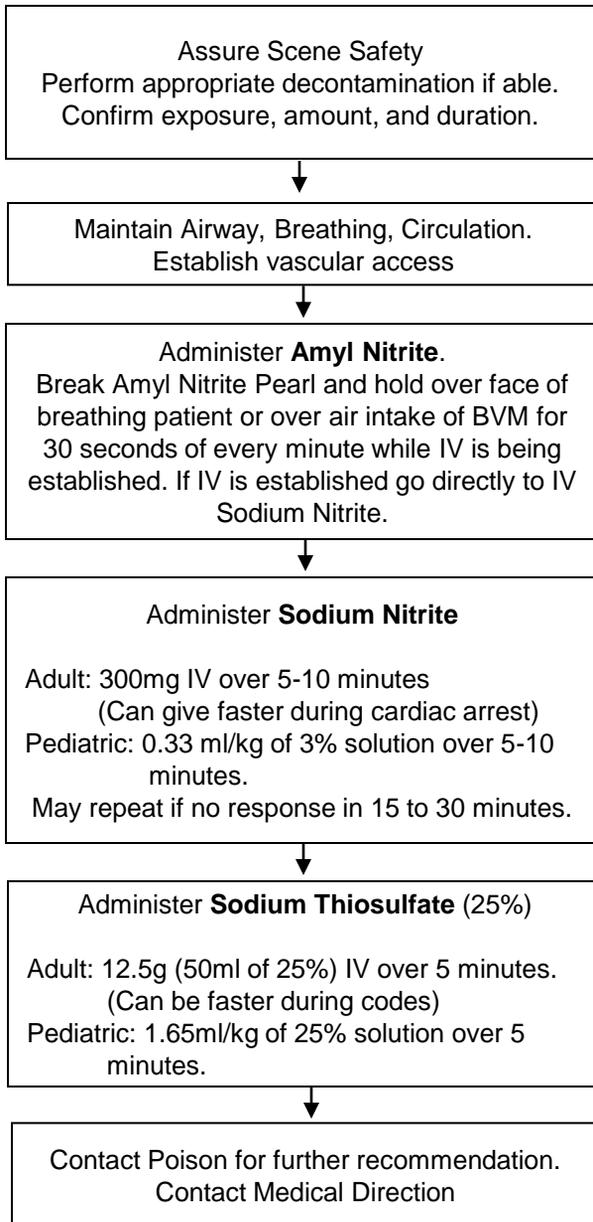


Notes

- 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 patch to Medical Control for Medical Direction
- Consider transport to facility with a hyperbaric chamber
 - Scottsdale Osborn
 - St Joes

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

Cyanide Poisoning Option 1



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%

Cyanide Poisoning Option 2

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

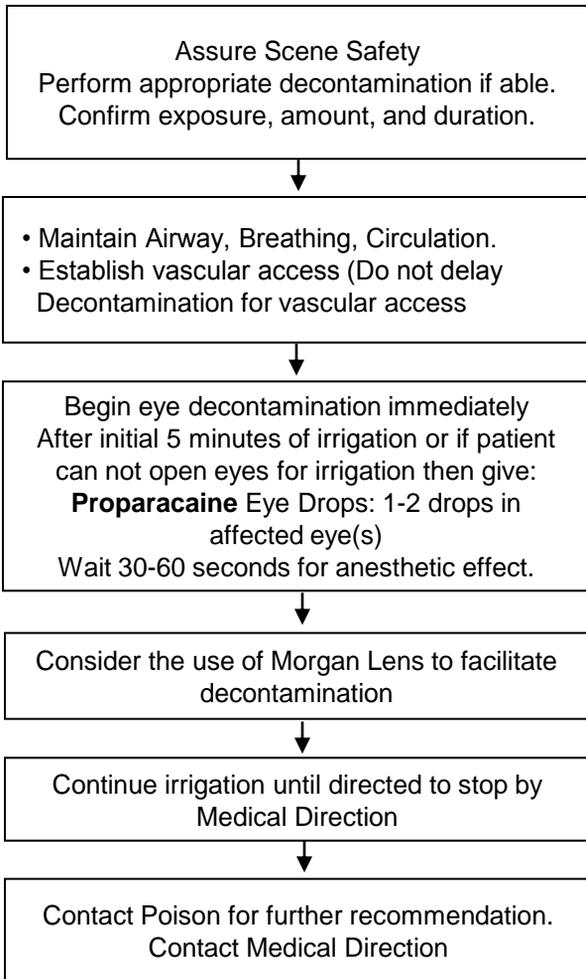
Signs and Symptoms

- 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

Eye Decontamination

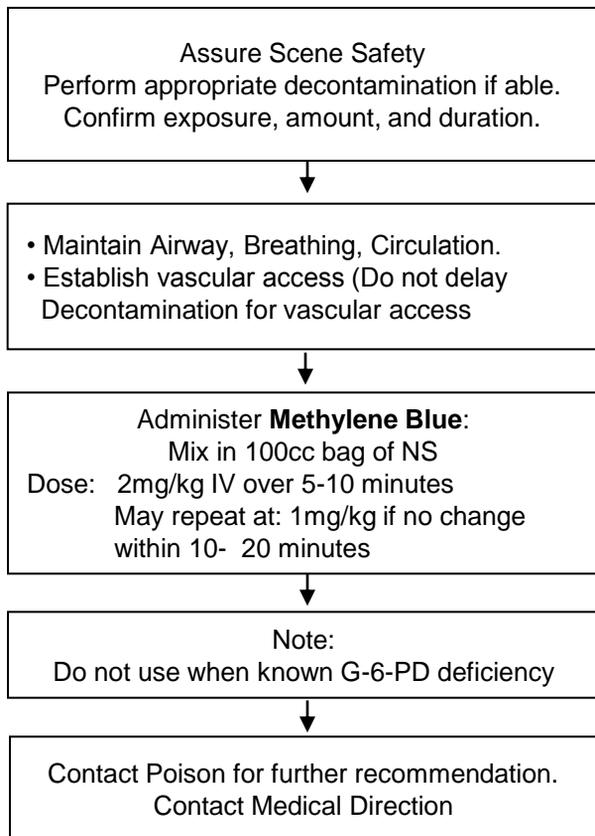


Poison Control
602-253-3334

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.

Methemoglobinemia



Poison Control
602-253-3334

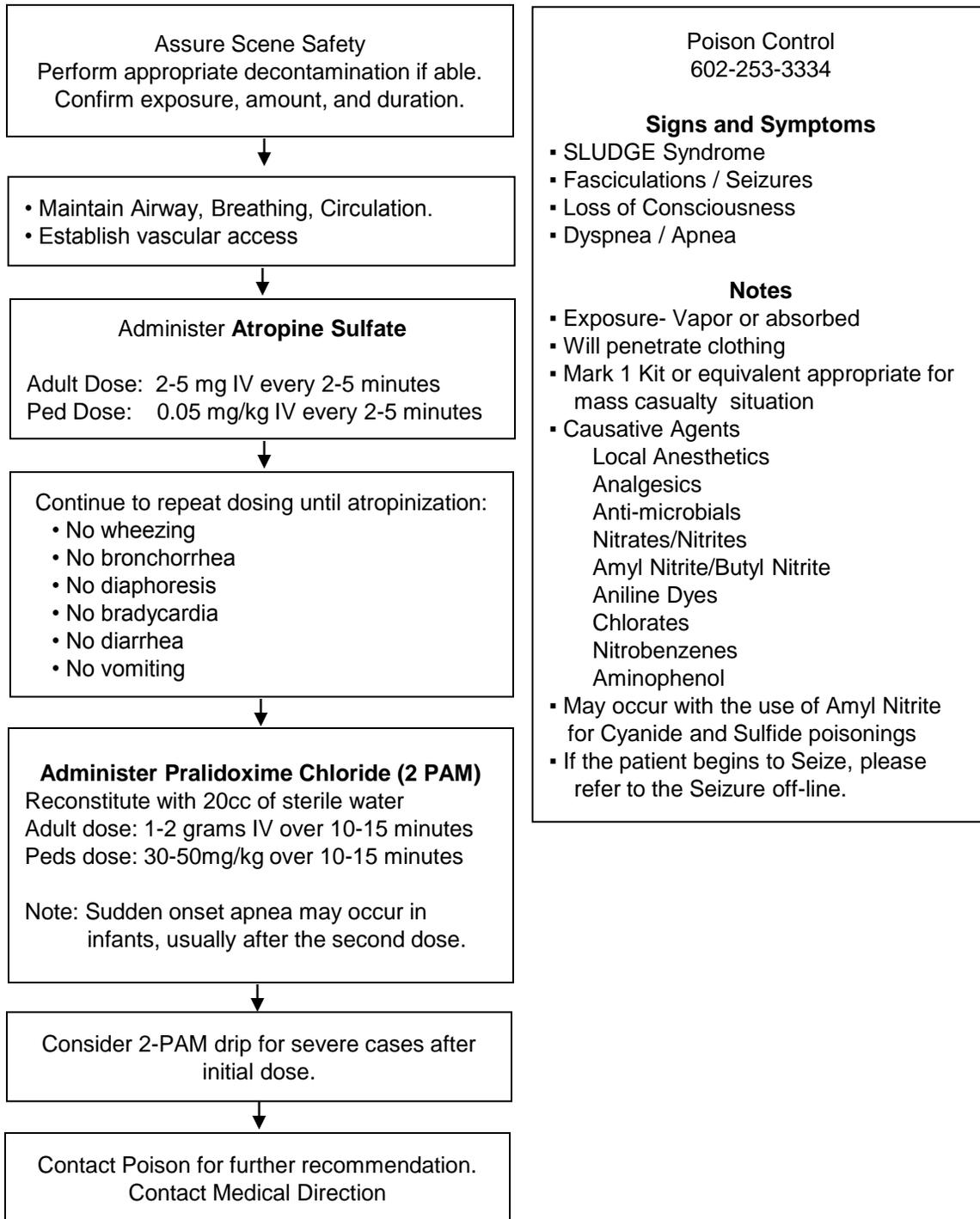
Signs and Symptoms

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

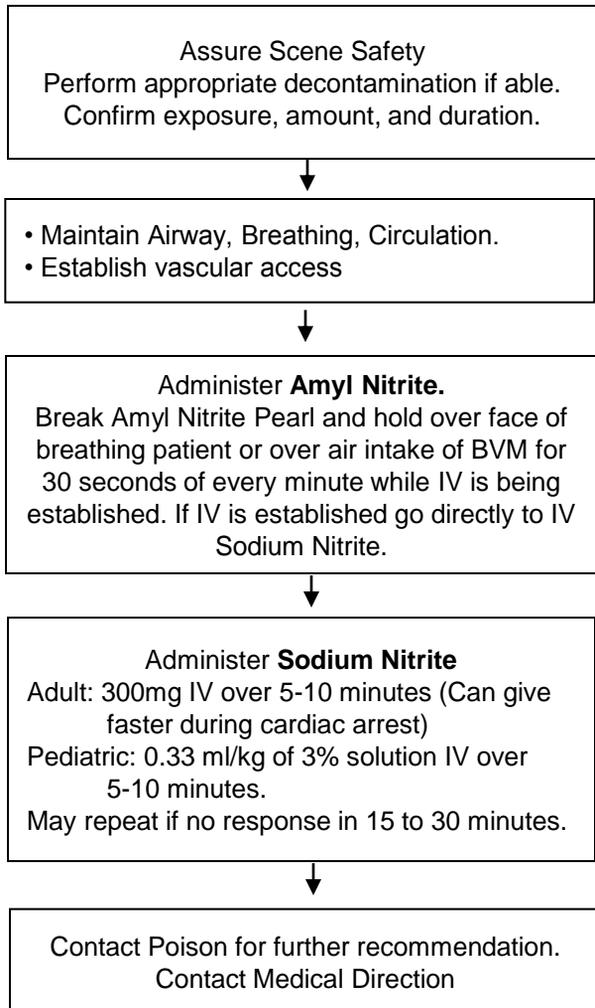
Notes

- 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



Sulfide Poisoning



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

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

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:
 - Proximal Tibia (Peds or Adults)
 - Distal Tibia (Adults only)
 - Proximal Humerus (Adults only)
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

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.
 1. **WARNING:** Do not exceed pressures of 10 cm H₂O.
6. Refer to Respiratory Distress Off-line, as needed
7. Refer to Sedation algorithm, 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

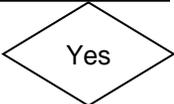
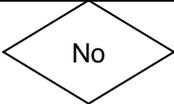
12 Lead Indications

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

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.



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

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

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

STEPS FOR 12 LEAD ECG INTERPRETATION

A Step by Step Analysis of 12 lead ECG's
RULE #1 – NEVER RELY ON THE INTERPRETIVE 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 = $\leq .12$ sec or ≤ 120 ms
 PR Interval Duration = $\leq .20$ sec or ≤ 200 ms
 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

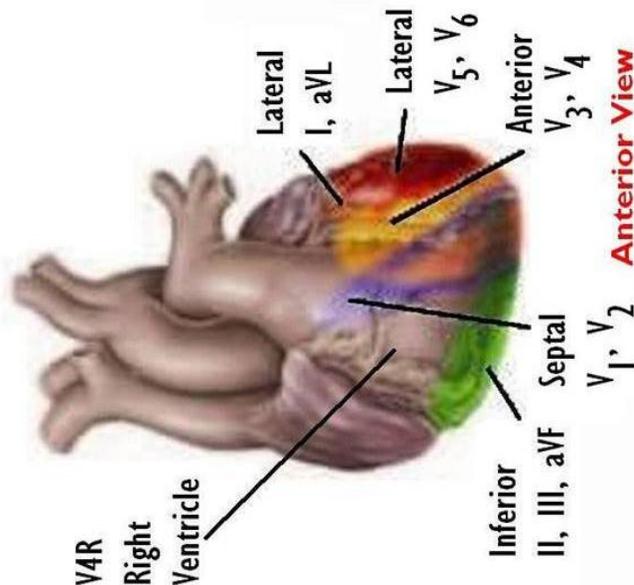
Maintain a high index of suspicion, especially in those patients with significant cardiac risk factors (i.e. diabetes, HTN, obese, hereditary, elderly) Be a good detective:

Remember Anginal Equivalents and Atypical Presentations

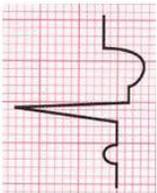
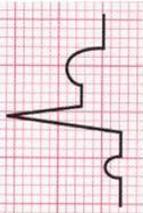
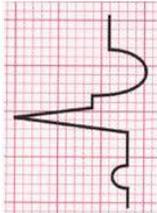
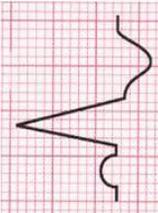
Step #8 = If There Is Acute Infarction

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 !!!

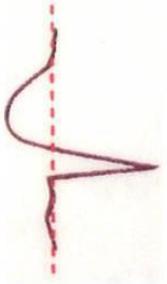


Location	Indicative	Reciprocal changes	Affected coronary artery
Lateral	I, aVL, V5, V6	V1, V2, V3	LCA—circumflex branch
Inferior	II, III, aVF	I, aVL	RCA—posterior descending branch
Septal	V1, V2	No specific leads directly view, look for indicative changes	LCA—LADA, septal branch
Anterior	V3, V4	II, III,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

<p>Normal</p> <ul style="list-style-type: none"> • Non-diagnostic or baseline with no abnormalities 	
<p>Ischemia</p> <ul style="list-style-type: none"> • 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 	
<p>Injury</p> <ul style="list-style-type: none"> • Suspicious for injury or infarction—ST segment elevated, T wave may invert, T wave may be tall and peaked • Signifies an acute injury process 	
<p>Injury or Infarct</p> <ul style="list-style-type: none"> • Suspicious for injury or infarction—ST segment elevated, T wave may invert, abnormal Q wave may be present • Signifies an acute injury process 	
<p>Suspicious for Injury</p> <ul style="list-style-type: none"> • Suspicious for injury—new onset bundle branch block 	

<p>Ischemia Pattern</p> <p>Inverted T-waves or S-T segment depression > 1mm (one small box) in two automatically contiguous leads</p> <p>Ischemia: a decreased supply of oxygenated blood to tissue</p>	<p>Left anterior descending artery (LAD) Right Coronary Artery (RCA) Circumflex artery (Cx)</p> <p>*There may be an overlap in blood supply by the RCA and Cx artery depending on which artery is dominant.</p>
<p>Injury Pattern</p> <p>S-T segment elevation > 1mm (one small box) in two anatomically contiguous leads</p> <p>Injury: damage to tissue, may be irreversible</p>	
<p>Infarct Pattern</p> <p>Wide pathologic Q-waves wider than .04 sec. or 40 ms (one small box) in two anatomically contiguous leads</p> <p>Infarct: Death to tissue, usually due to lack of oxygenate bloodflow</p>	

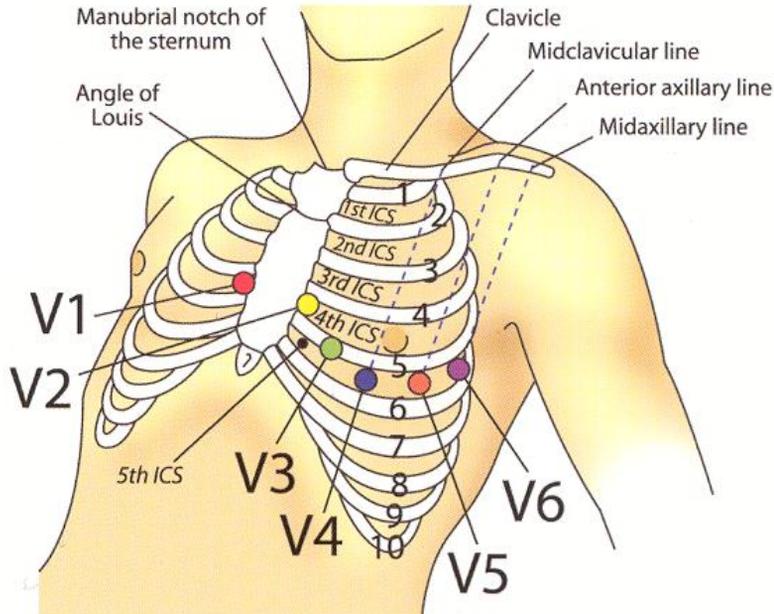
LEADS VR4 in a Right-sided ECG RIGHT VENTRICULAR INFARCTION



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 (RV1) 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 RV1, 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 RV1 accompanying inferior Wall MI, mostly related to a lack of recognition of RV involvement: failure to run V4R chest leads.

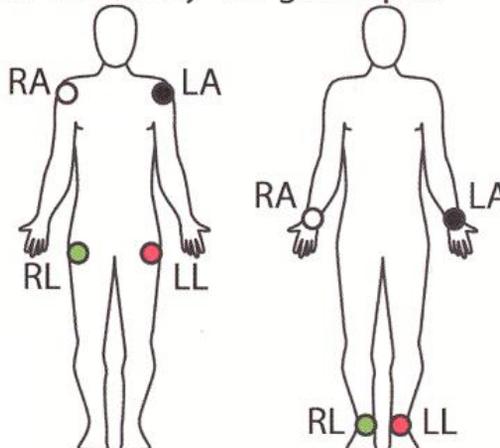


- V1 = Right side of sternum, 4th intercostal space
- V2 = Left side of sternum, 4th intercostal space
- V3 = Midway between V2 and V4
- V4 = Left midclavicular line, 5th intercostal space
- V5 = Left anterior axillary line, same level as V4
- V6 = Left midaxillary line, same level as V4
- V4R = Right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



Cardiac Receiving Centers

Current as of 1/6/2011

Arizona Heart Hospital - Phoenix
Arizona Regional Medical Center - Apache Junction
Arizona Regional Medical Center - Mesa
Arrowhead Hospital - Glendale
Banner Desert Medical Center - Mesa
Banner Estrella Medical Center - Phoenix
Banner Good Samaritan Medical Center - Phoenix
Banner Heart Hospital - Mesa
Banner Thunderbird Medical Center - Glendale
Carondelet St. Joseph's Hospital - Tucson
Carondelet St. Mary's Hospital - Tucson
Chandler Regional Medical Center - Chandler
Flagstaff Medical Center - Flagstaff
John C. Lincoln Deer Valley Hospital - Phoenix
John C. Lincoln North Mountain Hospital - Phoenix
Kingman Regional Medical Center - Kingman
Maricopa Medical Center - Phoenix
Mayo Clinic Hospital - Phoenix
Mercy Gilbert Medical Center - Gilbert
Mountain Vista Medical Center - Mesa
Northwest Medical Center - Tucson
Paradise Valley Hospital - Phoenix
Phoenix Children's Hospital - Phoenix
Scottsdale Healthcare Osborn Medical Center - Scottsdale
Scottsdale Healthcare Shea Medical Center - Scottsdale
St. Joseph's Hospital - Phoenix
St. Luke's Medical Center - Phoenix
Tucson Heart Hospital - Tucson
Tucson Medical Center - Tucson
University Medical Center - Tucson
Verde Valley Medical Center - Cottonwood
West Valley Hospital - Goodyear
Yavapai Regional Medical Center, West Campus - Prescott
Yuma Regional Medical Center - Yuma

Trauma Center Locations

Trauma
Centers
as of 6-1-2011

	Scottsdale Healthcare Osborn	Maricopa Medical Center	Banner Good Sam	St. Joes	JCL North Mountain	Phoenix Children's Hospital
Adult \geq 15y/o	Yes	Yes	Yes	Yes	Yes	No
Pediatric \leq 14y/o	No	Yes	No	No	No	Yes
Burns (any age)	No	Yes	No	No	No	No
OB > 20weeks	No	Yes	Yes	Yes	No	No

Primary Stroke Centers

The Arizona Stroke Consortium has identified 14 hospitals as Primary Stroke Centers (PSC) for the Phoenix Metropolitan area.

The following hospitals have met the criteria to become a Primary Stroke Center:

Arrowhead Hospital
18701 North 67th Avenue
Glendale, AZ 85308
623-561-1000

Banner Baywood Medical Center
6644 E. Baywood Avenue
Mesa, AZ 85206
480-321-2000

Banner Boswell Memorial Center
10401 W. Thunderbird Blvd.
Sun City, AZ 85351
623-977-7211

Banner Del E. Webb Memorial Center
14502 West Meeker Blvd
Sun City West, AZ 85375
623-214-4000

Banner Good Samaritan Medical Center
1111 East McDowell Road
Phoenix, AZ 85006
602-239-2000

Banner Thunderbird Medical Center
5555 W. Thunderbird Road
Glendale, AZ 85306
602-865-5555

Barrow Neurological Institute
at St. Joseph's Hospital and Medical Center
350 West Thomas Road
Phoenix, AZ 85013
602-406-3600

John C. Lincoln Hospital North Mountain
250 East Dunlap
Phoenix, AZ 85020
602-870-6060

Primary Stroke Center Continued:

Mayo Clinic Hospital
5777 East Mayo Blvd.
Phoenix, AZ 85054
480-515-6296

Scottsdale Healthcare Osborn
7400 East Osborn Road
Scottsdale, AZ 85251
480-882-4000

The following hospitals have provisionally met the criteria to become a Primary Stroke Center:

Chandler Regional Medical Center
475 South Dobson Rd
Chandler, AZ 85224
480-728-3000

Mercy Gilbert Medical Center
3555 S. Val Vista Drive
Gilbert, AZ 85297
480-728-8000

Phoenix Baptist Hospital
2000 W. Bethany Home Road
Phoenix, Arizona 85015
602-249-0212

West Valley Hospital
13677 W. McDowell Rd.
Goodyear, AZ 85395
623-882-1500

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 4 hours (or longer time period as specified by Primary Stroke Center).

Level III Perinatal Facilities

Current as of
1-6-2011

Banner Desert Medical Center
Banner Thunderbird Medical Center
Maricopa Medical Center
Banner Good Samaritan Medical Center
St. Joseph's Hospital
Scottsdale Shea

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.

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

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 bronchospasm
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	<u>Cardiovascular:</u> bradycardia, hypotension, asystole/cardiac arrest, atrio-ventricular block, Torsades de Pointes, congestive heart failure. <u>GI & Hepatic:</u> nausea, vomiting, abnormal liver function tests. <u>Skin:</u> slate-blue pigmentation. <u>Other:</u> 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 bronchospasm
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, severe 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, 2 nd or 3 rd 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/Stridor 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

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.
Lidocaine (if Amiodarone is unavailable)	
Indications	Cardiac arrest, suppression of ventricular arrhythmias
Contraindications	Patients with conduction disturbances (2 nd and 3 rd 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 mcg/min after conversion. Pediatric dose: 1mg/kg may repeat x1 for VF/Pulseless V-tach, and unstable V-tach
Lorazepam (Ativan)	
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 Induced Hypertension, Pre Term Labor, severe asthma
Contraindications	Renal disease, heart block, recent MI
Side Effects	Respiratory and CNS depression, hypotension
Dosage, route	<p>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.</p> <p>Eclamptic, Pre-eclamptic, and Pregnancy Induced Hypertension (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).</p> <p>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).</p> <p>Asthma Adult: 2 Grams in 50ml of N/S given over 5 minutes.</p>
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
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
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. Max total dose of 10mg.

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 (Zofran)	
Indications	Nausea, vomiting
Contraindications	Hypersensitivity. Use with caution in patients with hepatic impairment
Side Effects	<u>CNS:</u> Headache, malaise, fatigue, dizziness, fever, sedation, extrapyramidal syndrome <u>Cardiovascular:</u> Chest pain, arrhythmias. <u>Respiratory:</u> Hypoxia. <u>GI & Hepatic:</u> Diarrhea, constipation, abdominal pain, xerostomia, decreased appetite. <u>Skin:</u> 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
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 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 (Ophthalmic)

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		Epinephrine Infusion Chart	
Mix 2 Gm in 500 mL of NS (4/mg/ml)		Mix 2 mg of 1:1,000 (2000mcg) in 250 mL of NS (8/mcg/ml)	
Dose ordered in mcg/min	Amount to infuse in mcg/min or ml/hr	Dose ordered in mcg/min	Amount to infuse in mcg/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 mcgts/min or ml/hr
400	15
800	30
1200	45
1600	60

	Monophasic				ZOLL Biphasic Anything below 75 Joules 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			

References

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- Cardio Cerebral Resuscitation, State of Arizona Bureau of EMS
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